January 2012
Revised March 2012
Revised May 2012
Revised September 17, 2012

# Warren County
# Shenandoah Farms Sanitary District
# Road and Drainage Study

# FINAL

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# TABLE OF CONTENTS

I. INTRODUCTION ..... 1
II. PROJECT DESCRIPTION ..... 1
FIGURE 1 – OVERALL SITE MAP ..... 2
III. SITE DESCRIPTION ..... 3
IV. ROADWAY INVENTORY AND FUNCTIONAL CLASSIFICATION ..... 3
FIGURE 2 - ROAD SECTIONS ..... 7
V. EXISTING ROADWAY CONDITIONS ..... 8
FIGURE 3 – ROADWAY INSPECTION REPORT FORM ..... 10
VI. ULTIMATE ROAD AND PAVEMENT SECTION ..... 11
VII. CONSTRUCTION SCHEDULE ..... 12
VIII. RESIDENT ROADWAY SURVEY AND EVALUATION QUESTIONNAIRE & RESULTS ..... 12
FIGURE 4 – RESIDENT ROADWAY SURVEY AND EVALUATION QUESTIONNAIRE ..... 13
IX. STORMWATER MANAGEMENT ..... 15
General ..... 15
A. Culvert Tables ..... 16
B. Ditch Tables ..... 18
X. RECOMMENDATIONS ..... 19
XI. CONCLUSION ..... 21

APPENDIX A Roadway Inspection Reports & Map Panels (Included in Separate Binder)
APPENDIX B Roadway Inventory & Functional Classifications
APPENDIX C Resident Roadway Survey and Evaluation Questionnaire
APPENDIX D Typical Culvert Installation and Private Entrance Details
APPENDIX E Storm Water Management Culvert Tables, Ditch Tables and Map Panels
APPENDIX E-1 Culvert Tables by Road Names
APPENDIX E-2 Culvert Tables by Map Panels
APPENDIX E-3 Ditch Tables by Road Names
APPENDIX E-4 Ditch Tables by Map Panels
APPENDIX F Geotechnical Pavement Evaluations
(Old Oak Lane, Drummer Hill Road & High Top Road)
APPENDIX G Public Notices and News Releases
APPENDIX H Public Comments and Feedback

# Shenandoah Farms Road & Drainage Study
# Legend

## Abbreviations

| | |
|---|---|
| ADT | Average Daily Trips |
| CBR | California Bearing Ratio |
| CMP | Corrugated Metal Pipe |
| CT | Court |
| DA | Drainage Area |
| DBL | Double |
| EC-1 | Erosion Control Stone |
| EC-2 | Erosion Control Jute Mesh |
| EC-3 A&B | Erosion Control Stabilization Mat |
| HDPE | High Density Polyethylene Pipe |
| LF | Lineal Feet |
| NTS | Not to Scale |
| OP | Outlet Protection |
| PE | Private Entrance |
| PHR&A | Patton Harris Rust & Associates |
| POSF | Property Owners Shenandoah Farms |
| RCP | Reinforced Concrete Pipe |
| SD | Special Design (Drainage Structure or Ditch) |
| SFPO | Shenandoah Farms Property Owner |
| SFSD | Shenandoah Farms Sanitary District |
| SM | Asphalt Surface Mix |
| TPD | Trips Per Day |
| VDOT | Virginia Department of Transportation |

# I. INTRODUCTION

In September 2010, Patton Harris Rust & Associates was commissioned to evaluate the conditions of the existing road and stormwater conveyance systems within the road right-of-ways located in the Shenandoah Farms Sanitary District located primarily in the Shenandoah District in Warren County, VA. The scope of this project included evaluating and recording the existing conditions of the roadway surface, shoulder and ditch lines, culvert and drainage systems, and other things such as sight distance problems and safety items potentially having adverse impacts on the roadway and stormwater conveyance systems.

This report is intended to provide Warren County with guidelines and recommendations for maintenance and construction improvements of the private roads located in the Shenandoah Farms Sanitary District. These general guidelines and recommendations include recommended methods for repair, corrective action, maintenance and new construction which can then be provided to a contractor(s) chosen by Warren County for construction of the proposed improvements.

The roadways within the Shenandoah Farms Sanitary District were evaluated in the field by representatives of PHR+A and Warren County beginning in November 2010 and culminating in July 2011.

The report that follows includes appendices with supplemental information to assist in developing a roadway maintenance plan as well as aid in future roadway and/or drainage projects.

# II. PROJECT DESCRIPTION

The Shenandoah Farms Sanitary District roadway evaluation includes multiple interrelated tasks aimed at achieving a comprehensive report that includes both existing conditions and future steps necessary to ensure a safe and adequate means of access for the residents of Shenandoah Farms Sanitary District. The tasks associated with the project include the following:

1. Analysis of existing road conditions for all roadways within the Shenandoah Farms Sanitary District.
2. Analysis of existing drainage system associated with the roadway network.
3. Analysis of trip distribution of roadway network.
4. Using trip distribution, develop a functional classification with a hierarchy of three roadway classifications.
5. Develop typical roadway cross sections which would adequately support projected traffic volumes for each of the three roadway classifications.
6. Assist in the development of an implementation plan for future roadway improvements.

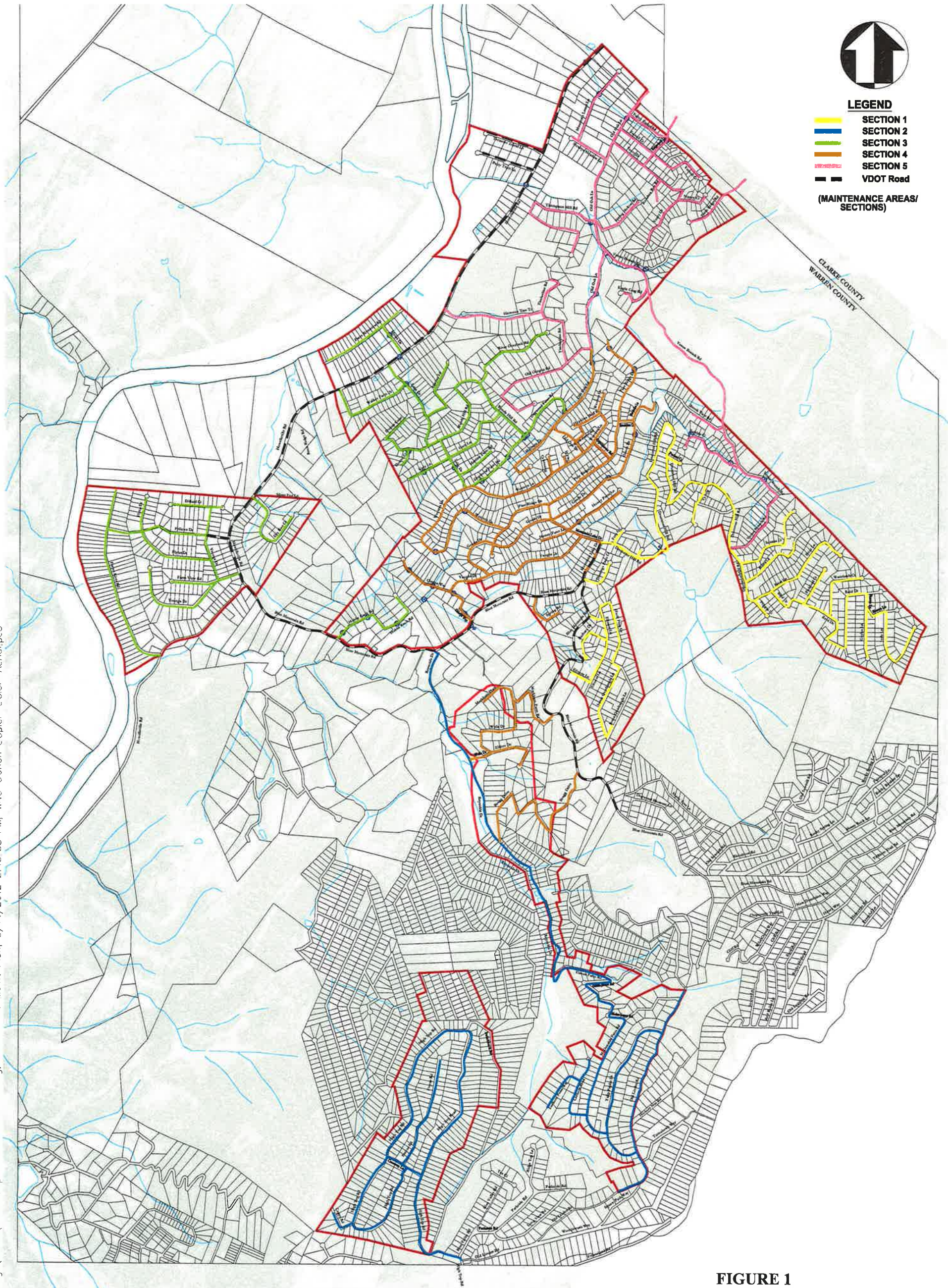



FIGURE 1

# Overall Plan
# SHENANDOAH FARMS
## WARREN COUNTY, VIRGINIA
## SCALE: 1"=1000' DATE: 11-10-10

P:\Project\12972 shenandoah farms\2-0\Engr\Plans\Base Map 11-10-200Scale.dwg, 1000Sc-Rd Maint Plan, 5/14/2012 2:15:38 PM, WNC Canon Copier-Color-Aerial.pc3

## III. SITE DESCRIPTION

The Shenandoah Farms Sanitary District consists of approximately 2,500 lots 1,000 of which are developed with single family homes. These lots are served by approximately 90 roads totaling approximately 43.38 miles of dedicated public roadways. (See Figure 1 Overall Plan). The Sanitary District encompasses the portion of the development located within Warren County adjacent to the Shenandoah River and its access is provided by three primary roads in the State road system Howellsville Road, Blue Mountain Road, Freezeland Road and Manor Drive in Clarke County. The Sanitary District roadways are constructed with an open ditch section and the roadway widths vary within the community.

## IV. ROADWAY INVENTORY AND FUNCTIONAL CLASSIFICATION

With the use of the Warren County Geographic Information System and the existing subdivision mapping, PHR&A developed a base plan of the entire Shenandoah Farms Sanitary District. The base plan includes: all existing roads and road names, property lines and lot numbers, and topographic contours. The base plan was used to identify roadway lengths, intersections, and the number of lots located along each roadway. The base plan was also used as a basis for developing the trip generation estimates and trip distribution network for the subdivision.

Typically, trip generation estimates assume that 10 trips per day are generated for each single family lot within a residential development. Given the location of Shenandoah Farms Sanitary District relative to Front Royal and other destination areas, we believe that it is appropriate to reduce the estimated trip generation from 10 trips per day to 8 trips per day for each lot within the subdivision. Additionally, PHR&A assumed that Shenandoah Farms Sanitary District, at full build out, will only have trips generated from about 75 percent of the total lots as some homeowners may own multiple lots.

The trip distribution for the subdivision is the measurement of vehicle trips that accrue on each roadway within a subdivision. The trip distribution network is a series of sections or links, measured from intersection to intersection along each roadway. The sections for the subdivision are labeled 1 thru 8 then broken down into specific subsections. Each subsection of roadway includes the total number of lots located along that particular section of roadway (approximate driveway locations were assumed for estimating purposes). The coinciding trip generation was applied to each subsection (trips/subsection). The trips were distributed throughout the subdivision and the total trips per day or average daily trips (ADT) were then calculated.

| Section | Road Name | Length (Ft.) | Lots | Total Est. ADT | Functional Classification | |
|---|---|---|---|---|---|---|
| 5 | Barbara Drive | 1,162 | 9 | 100 | A | |
| 2 | Benson Court | 422 | 6 | 42 | A | |
| 3 | Bobbie Court | 1,584 | 26 | 162 | B | |
| 5 | Bragg Drive | 4,066 | 32 | 224 | B | |

| Section | Road Name | Length (Ft.) | Lots | Total Est. ADT | Functional Classification | |
|---|---|---|---|---|---|---|
| 3 | Briar Lane | 2,165 | 47 | 1,682 | C | |
| 3 | Brook View Road | 1,003 | 34 | 220 | B | |
| 2/3 | Brookview Lane | 1,584 | 4 | 200 | B | |
| 8 | Cappy Road | 739 | 9 | 60 | A | |
| 4 | Cindy's Way | 2,323 | 22 | 156 | B | |
| 6 | Cliffside Road | 1,690 | 12 | 230 | B | |
| 2 | Copenhaver Road | 528 | (included in 2J & K) | | | |
| 8 | Crossway Lane | 845 | | 1,154 | C | |
| 7 | Dillard Court | 1,426 | 22 | 386 | B | |
| 2 | Dogwood Farm Road | 3,326 | 47 | 334 | B | |
| 4 | Donna Court | 898 | 33 | 198 | B | |
| 2/3 | Drummer Hill Road | 11,405 | 117 | 1,840 | C | |
| 7 | Dry Run Court | 2,112 | 30 | 212 | B | |
| 1 | Eagles Crag Road | 1,056 | 7 | 52 | A | |
| 5 | Ehlers Drive | 1,267 | 16 | 214 | B | |
| 5 | Elinore Lane | 2,006 | 15 | 98 | A | |
| 6 | Elseas Farm Road | 1,478 | (inlcuded in Heim Jones) | | | |
| 7 | Farm View Road | 1,531 | 24 | 656 | C | |
| 1 | Farms Ridge Road | 2,640 | 15 | 391 | B | |
| 7 | Farms River Road | 4,277 | 69 | 342 | C | |
| 2 | Farms Riverview Road | 2,006 | 39 | 516 | B | |
| 7 | Fellows Drive | 2,851 | 26 | 452 | B | |
| 3 | Fern Court | 475 | 10 | 72 | A | |
| 7 | Flynn Drive | 2,640 | 41 | 304 | B | |
| 8 | Freeze Road | 2,640 | 39 | 270 | B | |
| 2/4 | Gary Lane | 2,904 | 48 | 178 | B | |
| 3 | Gayles Lane | 1,109 | 27 | 314 | B | |
| 2/4 | Goode Drive | 6,125 | 76 | 1,213 | C | |
| 2 | Heavens Tree Trail | 2,323 | 10 | 66 | B | |
| 6 | Heim Jones Road | 2,112 | 28 | 238 | B | |
| 8 | High Top Road | 14,150 | 288 | 4,208 | C | |
| 4 | Hobbs Knobb Road | 2,429 | 41 | 238 | B | |
| 2 | Honey Farm Lane | 2,165 | 30 | 218 | B | |
| 2 | Hopkins Bluff Road | 528 | 11 | 76 | A | |
| 5 | Huck Finn Drive | 2,482 | 61 | 778 | C | |
| 3 | Jennings Farm Court | 898 | 13 | 86 | A | |
| 5 | Joans Quadrangle Road | 2,640 | 45 | 304 | B | |
| 3 | Judy Lane | 2,112 | 36 | 228 | B | |

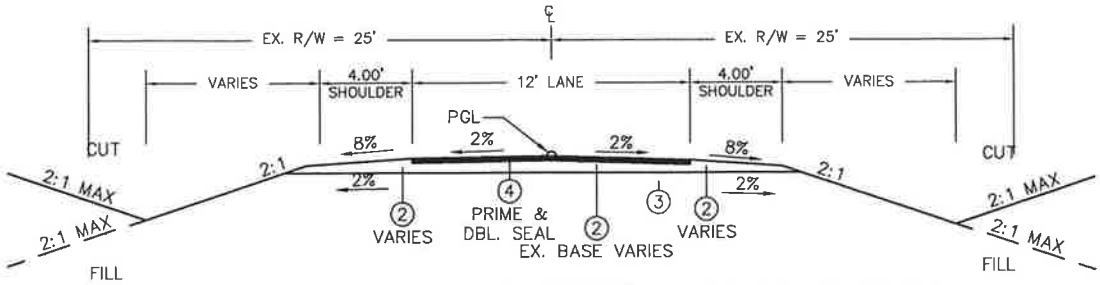
| Section | Road Name | Length (Ft.) | Lots | Total Est. ADT | Functional Classification | |
|---|---|---|---|---|---|---|
| 3 | Kits Court | 950 | 17 | 110 | B | |
| 2 | Lake Drive | 4,224 | 33 | 2,914 | C | |
| 3 | Little Place | 211 | 6 | 42 | A | |
| 6 | Lookout Point Way | 1,162 | 14 | 110 | A | |
| 2 | Marino Lane | 1,584 | 7 | 42 | A | |
| 5 | Markham Farm Road | 1,531 | 5 | 136 | B | |
| 2 | Markham Place | 528 | (included in Markham Farm Road) | | | |
| 2 | Martin Farms Road | 898 | 12 | 80 | A | |
| 6 | McDonalds Farm Road | 3,062 | 48 | 554 | C | |
| 2 | McIlwee Court | 1,848 | 27 | 178 | B | |
| 1 | Mosby Meadow Lane | 950 | 34 | 244 | B | |
| 3 | Mountain Lake Drive | 1,584 | 24 | 3,376 | C | |
| 1 | Mountain Laurel Lane | 1,690 | (part of Mosby Meadow) | | | |
| 2 | Myers Drive | 792 | 4 | 258 | B | |
| 1 | Nancy Court | 581 | 13 | 88 | A | |
| 6 | Old Linden Road | 3,960 | 31 | 626 | C | |
| 1 | Old Oak Lane | 6,706 | 41 | 7,564 | C | |
| 2 | Old Oregon Road | 9,346 | 34 | 542 | C | |
| 2 | Otto Place | 211 | 2 | 16 | A | |
| 3 | Parker Circle | 422 | 5 | 32 | A | |
| 3 | Peggys Court | 634 | 9 | 62 | A | |
| 3 | Pickford Court | 950 | 16 | 108 | A | |
| 2 | Pine Ridge Drive | 6,758 | 93 | 2,512 | C | |
| 3 | Reid Drive | 4,646 | 51 | 1,818 | C | |
| 5 | Reynolds Drive | 8,448 | 35 | 2,842 | C | |
| 1 | Ridgewood Lane | 1,690 | | 288 | B | |
| 3 | Riley Court | 2,112 | 30 | 192 | B | |
| 2 | River Overlook Road | 2,112 | 29 | 184 | B | |
| 1 | Roaches Run Road | 528 | | 3 | A | |
| 2 | Scott Farm Road | 739 | (included in Hopkins Bluff Road) | | | |
| 3 | Sharon Lane | 528 | 12 | 300 | B | |
| 1 | Spring Hollow Road | 1,320 | 16 | 108 | A | |
| 1/5 | Spring Road | 950 | 13 | 88 | A | |
| 3 | Susans Court | 2,006 | 29 | 180 | B | |
| 1 | Thompson Mill Road | 3,485 | 27 | 184 | B | |
| 2 | Timberline Ridge Road | 2,587 | 11 | 214 | B | |
| 6 | Tomahawk Way | 1,750 | 10 | 1,442 | C | access road |
| 6 | Tulip Poplar Drive | 3,960 | 42 | 854 | C | |

| Section | Road Name | Length (Ft.) | Lots | Total Est. ADT | Functional Classification | |
|---|---|---|---|---|---|---|
| 1 | Valley Farms Road | 1,003 | 21 | 136 | B | |
| 4 | Vaught Drive | 3,485 | 59 | 1,213 | C | |
| 3 | Venus Branch Road | 9,029 | 43 | 2,842 | C | |
| 1 | Vesey Drive | 3,379 | 87 | 1,011 | C | |
| 4 | Walker Farm Drive | 2,112 | 24 | 168 | B | |
| 3 | Wambach Court | 1,478 | 24 | 158 | B | |
| 5 | Wells Drive | 2,534 | 16 | 104 | B | |
| 2 | Wendy Hill Road | 4,118 | 42 | 450 | B | |
| 2/4 | Western Lane | 8,976 | 141 | 1,504 | C | |
| 1 | Yarnell Court | 2,323 | 39 | 332 | B | |
| 7 | Youngs Drive | 4,224 | 50 | 477 | B | |

A Functional Classification was established for each section of roadway given the characteristics and magnitude of service to be provided. (See Figure 2). Three functional classes were established for the subdivision including the total estimated ADT (Average Daily Trips). The functional classifications are:

1. A – Less than 110 trips (ADT)
2. B – 111 to 500 trips (ADT)
3. C – Greater than 500 trips (ADT)

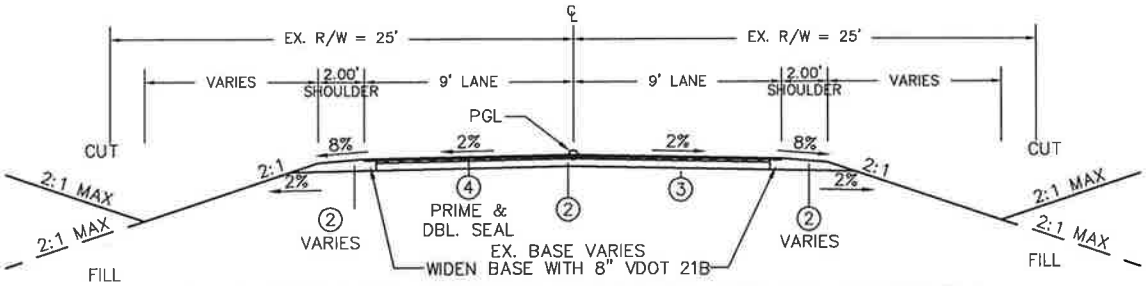
The functional classification for each section (link) of roadway is shown in the table above and detailed in Appendix B. Note that Howellsville Road, Blue Mountain Road, Treasure Island Lane, Patty Tract Lane and Fellows Drive are State maintained roadways within the subdivision and therefore not included in this analysis.




## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION A (110 TRIPS OR LESS)**

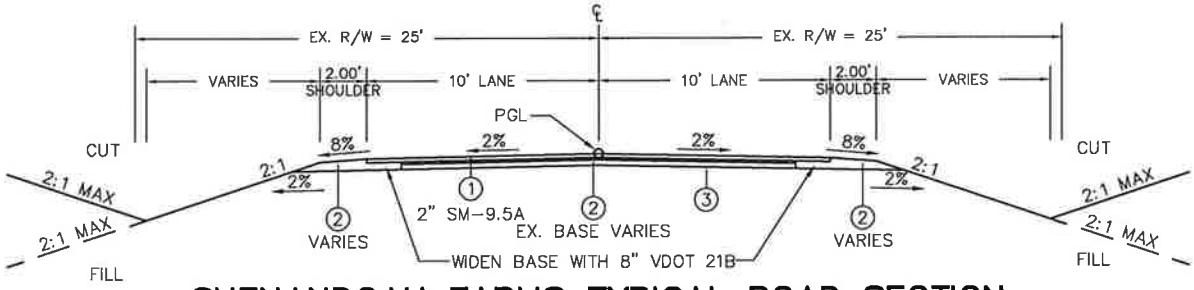
**N.T.S.**




## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION B (111 TO 500 TRIPS)**

**N.T.S.**




## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION C (GREATER THAN 500 TRIPS)**

**N.T.S.**

LEGEND:

1. SM-9.5A SURFACE ASPHALT, 2"
2. VDOT-21B AGGREGATE, 8" MIN.
3. WELL COMPACTED SUBGRADE
4. PRIME & DBL. SEAL

**FIGURE 2**

NOTES:
1. DRAINAGE DITCHES SHALL BE A MINIMUM OF 12" DEEP.
2. PAVEMENT DESIGN BASED UPON A MINIMUM CBR VALUE OF 6.

REVISED 05-14-12

| FIGURE 9 | SHENANDOAH FARMS ROAD SECTIONS | DATE: AUG., 2011<br>PHR+A # 12972-2-0<br>SCALE: AS SHOWN | Patton Harris Rust & Associates<br>Engineers. Surveyors. Planners. Landscape Architects.<br>PHR+A A Pennoni Company<br>58 Kenmore Street<br>Harrisonburg, VA 22801<br>T 540.434.0202<br>F 540.434.0221 |
|---|---|---|---|

## V. EXISTING ROADWAY CONDITIONS

Roadway inspections were conducted from November 2010 to July 2011 to observe and document the existing conditions of the roads within the Shenandoah Farms Sanitary District. These inspections were detailed (see Figure 3) and a copy of the inspection reports for each roadway can be found in Appendix A. The inspections included random measurements of existing road surfaces and shoulders along with the locations of existing road crossing and private culvert pipes and some minor excavations to determine depth of stone. To facilitate the roadway inspection and evaluation, map panels were prepared to a scale of 1" = 200'. This effort resulted in the preparation of 36 individual map panels which indicated the roadway name, configuration of the lots and property lines and, by using the Warren County GIS, topographical information. Notes regarding observations made, culvert pipe location, size and condition are noted on these map panels and inspection reports. To help when reviewing the inspection reports, the individual inspection reports reference the map panels that were used to prepare the report for the specific road. Both the roadway inspection reports and map panels are included in Appendix A. While more detailed comments are included in the inspection report in Appendix A, the following are some general comments regarding the overall roadway system.

1) All surfaces were stone aggregate of VDOT type 21A or 21B with the exception of sections of Mountain Lake Drive, Drummer Hill Road, Old Oak Lane, Ridgewood Lane, High Top Road and Brookview Lane. Portions of the existing paved sections contain potholes and broken pavement as well as clay soil pumping through the surface, particularly the paved portion located along the western section of Drummer Hill Road. These observations would tend to show pavement was placed on a poorly constructed sub grade. To determine the existing pavement structure, core drill samples were taken on March 20, 2012 on the paved portions of Drummer Hill Road, Old Oak Lane and High Top Road to determine actual pavement and sub grade structure. The sampling was conducted by ECS Mid-Atlantic, the geotechnical firm hired by the County to provide geotechnical services. This effort involved four (4) core samples taken and analyzed by ECS LLC on both Old Oak Lane and Drummer Hill Road and two (2) samples on High Top Road. The results of sampling indicate that the subgrade on most of the roadways was satisfactory for road material consisting of tan sandy gravel with the exception of the western section of Drummer Hill Road (State 3+50 and 9+50) which contained some clay material and minimal stone sub-base material. The combination of clay material and minimum stone base has resulted in deterioration of the subgrade and existing surface failure. It is recommended that at a minimum that this area of Drummer Hill Road be reconstructed prior to approaching VDOT for road acceptance into their secondary system.

   In regards to Old Oak Lane and High Top Road while less than desirable stone sub-base material these roadways appeared to be in good condition and recommend they be maintained to allow VDOT to consider them for acceptance in their secondary roadway system in the future. A copy of the full report by ECS Mid Atlantic can be found in Appendix F.

2) The width of the travel surfaces varied and ranged from 8' to 17'. Shoulder width varied from 1' to 4'. Most of the subdivision roads had an overall width, including the shoulders, measured at 15' – 22'. It appeared that the more heavily traveled roads had a travel surface of 15' – 17' while the less traveled and cul-de-sac streets had widths of 8' – 12'. The overall average width of the traveled aggregate surface was 12'. Heavily traveled gravel roadways had in excess of 3" of stone while many other roads had little or no stone and natural soils served as the road base.

3) Roadway shoulders, where they existed, were primarily grass. The roadway system overall has very limited shoulders making it difficult for two cars to pass.

4) Most of the roadside ditches appeared to function satisfactory. There were numerous ditches however which need to be redefined or the shoulders graded to create a ditch line. Some examples are Lake Drive and Walker Farm Road where soil and vegetation extended above the pavement elevation along significant portions of the road. These conditions do not allow for water to drain from the surface, which usually results in surface deterioration.

5) Where most roadways terminated at a cul-de-sac the cul-de-sacs were not constructed in accordance with VDOT standards. In most instances the roadway simply terminated with individual entrances extended off varying directions from the area of a proposed cul-de-sac.

6) Observations made during the roadway inspections indicated that not all roadways were located, extended or terminated in accordance with the available plans and outside of what appeared to be the road right-of-way. In many instances the cul-de-sacs were not constructed and in some cases, such as Heaven Tree Lane, extended beyond the proposed cul-de-sac to Howellsville Road. For this reason and prior to any proposed roadway improvements survey should be performed to verify the location of the right-of-way limits and make certain that the proposed improvements will be made within the deeded right-of-way limits.

7) As a part of the roadway inspections, a roadway signage inventory was conducted. Based upon field observations it appears all roadway identification signage has been constructed and is in good condition. There was very limited traffic signage such as stop, yield or speed limit signs. The primary signage deficiency noted was the need to install stop signs at the roadway intersections.

**Shenandoah Farms Subdivision**

**Roadway Inspection Report**

**Map Panel(s):**

**Name of Roadway:** _____

**From:** _____ **To:** _____

**Inspection Date:** _____

**Inspected By:** _____

**Existing Surface (stone or asphalt):** _____ **Width of Stone or Asphalt Travel Surface:** _____

**Width of Shoulders:** _____ **Type (grass, stone):** _____

**Existing Culverts:** Roadway (R )/Private (P) Location Size Type Length Condition

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

**Culvert Pipes Needed:**

Driveway (describe & give location): _____

Road Crossing (describe & give location): _____

**Signage:** All Signage in Place?:

**Roadway** (Stop/Yield, Etc.) Yes/No **Street Identification:** (Street Name) Yes/No

Signage Needed? Describe Type (Roadway ~ Stop/Yield or Street Name) & Location

_____

_____

**Site Distance**:

Problems at Private Entrance horizontal or vertical curve locations or street intersections? Yes/No

If Yes, provide description and location: _____

Obscured by Vegetation/Trees Yes/No If yes, describe and give location: _____

_____

Guardrail needed? Specify Location(s) _____

_____

Comments

(Provide comments regarding overall condition of roadway or any specific safety concerns or areas of deterioration or concern)

_____

**FIGURE 3**

## VI. ULTIMATE ROAD AND PAVEMENT SECTION

An ultimate road and pavement section had been proposed for each of the three roadway functional classifications. The existing primary roadway structure throughout the Shenandoah Farms Sanitary District was found to be generally adequate to provide a base for improvements to handle car related vehicle trips. The existing structure is generally not capable of carrying heavy construction truck activity especially during the spring and fall weather conditions.

The proposed width and pavement surface of the three pavement sections varies based on the total number of trips estimated on each section of roadway. In the higher traffic areas (Class C), the pavement section utilizes 2" of an SM 9.5A asphalt pavement. In the higher traffic areas, the roadway widths should also be increased, where possible, to better accommodate passing vehicles. The wider roadway widths will decrease the deterioration of the roadway edge from vehicle tires and will also decrease the deterioration of the shoulders. In the lower traffic areas (Class A and B), the pavement sections will utilize a prime and double seal surface treatment. The prime and double seal surface is a good alternative for areas that are not heavily traveled or do not have signs of major deterioration. The pavement design is based upon a minimum CBR value of 6.

All of the pavement sections, where widening is to occur, will utilize an 8" 21B aggregate base layer on the compacted subgrade. The 8" 21B aggregate base will provide adequate strength in the pavement structure for the anticipated vehicular traffic. Areas that appear to have a subgrade failure should be excavated to a depth of ±12" and the unacceptable materials should be removed and replaced with suitable material, typically 8" of open-graded base (OGB) aggregate, and then capped with 8" of 21B aggregate prior to surfacing. The 21B aggregate should extend 1' beyond the edge of pavement. The typical cross-sections can be seen in Figure 2 and Appendix B.

VDOT reviewed the typical road sections included in the report and indicated they could not give a blanket approval of the sections due to potential changes in VDOT specifications. A detailed set of plans would need to be submitted for review and approval for items such as the horizontal and vertical alignment, drainage, pavement design and soil analysis and service requirements. To be eligible for acceptance into VDOT's secondary street system, private roads need to meet VDOT's latest edition of the Secondary Street Acceptance Requirements (SSAR) Regulation, VDOT's Road Design Manual – Pavement Design Guide for Subdivision and Secondary Roads, Drainage Manual, Staunton's Subdivision Street Design checklist, and/or) Rural Additions Policy (if applicable).

VDOT suggested that each roadway section be reviewed independently prior to design and construction, to determine any applicable requirements. If any of VDOT's requirements cannot be achieved, the Sanitary District may seek the Department's review and approval of a design waiver. The 12' wide streets designated as Functional Classification A are not eligible for VDOT acceptance due to the minimum width requirements.

## VII. CONSTRUCTION SCHEDULE

Roadway construction is expensive. The schedule for construction of roadway improvements to be made in the Shenandoah Farms Sanitary District will be prioritized and determined by Warren County with input from the POSF Board and other stakeholders and will depend upon many factors. These factors include but are not limited to:

1) Safety Concerns. Areas where safety is an issue should be one of the primary focuses for funding and taken care of as soon as possible.

2) Available Funding. The single most significant factor in scheduling and construction of roadway improvements is available funding. The magnitude of improvements needed is most often hampered by the lack of available funds from Federal, State and Local entities including limited funds from the Property Owner's Association and/or Sanitary District. While limited funds for major projects may not be available, simply maintaining the existing roadways should be the main priority. Capital road improvement funds are often not available and unless some outside funding assistance is provided such as through revenue sharing funds no new improvements are constructed. Projects that are eligible for federal and state aid such as revenue sharing should also be considered a priority to take advantage of available assistance.

3) Roadways considered for funding should also include those which when improvements are completed would serve or benefit the greatest number of residents or traveling public. This Roadway Drainage Study includes a privatization or classification of roadways based upon the number of estimated average trips per day (ADT). The findings of this report should be reviewed with consideration given to those roadway improvements that would serve the greatest number of residents.

4) Continuing Maintenance Issues. Funding consideration should be given to roadways which are considered "high maintenance" roadways. These roadways, or sections thereof, are roadways where significant maintenance funds are being spent on a continuing basis whereby if certain improvements were constructed would limit or eliminate the continued high maintenance costs.

## VIII. RESIDENT ROADWAY SURVEY AND EVALUATION QUESTIONNAIRE & RESULTS

In August 2011 residents of the Shenandoah Farms Sanitary District were sent and requested to complete a "Resident Roadway Survey and Evaluation Questionnaire." This survey was conducted as a part of and in conjunction with the overall roadway study commissioned by the County. The survey was sent to approximately 1,900 property owners of Shenandoah Farms Sanitary District. Responses to the survey were to be completed and returned to the Sanitary District. Approximately 1,900 questionnaires were sent and 152 responses were received or approximately 8% of the residents responded to the survey. A copy of the survey questionnaire is included in this summary as Figure 4. A completed copy of the survey including the survey cover letter to the property owners is included in Appendix C.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name _____
Address _____
_____
E-Mail _____

What is the name of the roadway you live on or serves your lot? _____

What roadways, including the one you live on or serves your lot, do you most often use to exit or enter the subdivision to go to work, school, shopping etc.? (1) being the roadway you live on or serves your lot and (2) through (5) those roads you would use to enter or exit the subdivision and rate their condition.

| | Roadway | Condition | | | | |
|---|---|---|---|---|---|---|
| | | Poor | | Fair | | Good |
| (1) | _____ | 1 | 2 | 3 | 4 | 5 |
| (2) | _____ | 1 | 2 | 3 | 4 | 5 |
| (3) | _____ | 1 | 2 | 3 | 4 | 5 |
| (4) | _____ | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

_____
_____

What, in your opinion, are the most needed improvements to the roadway on which you live?

_____
_____

What, in your opinion, are the most needed improvements to the roadways other than the one you live on? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

_____
_____

Have you observed any drainage problems on the roadway on which you live? Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

_____
_____
_____

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**FIGURE 4**

The purpose of the survey was to make residents aware of the roadway inspections and receive resident input regarding their opinions of the condition of the roadways they normally travel. The information received regarding other roadways traveled in addition to the one on which they lived would help in determining the roadway classification. The survey also requested the property owner to comment regarding what they felt were the most critical needs of the roadways in the Sanitary District.

The roadways included in the survey results are listed in alphabetical order and can be found in Appendix C. Column 1 of the survey includes the number of surveys received from property owners who live on the roadway listed. Column 2 is the resident's assessment of the roadway on which they live and column 3 indicates what the "most needed improvements" to roadways were based upon the resident's assessment.

The following are some general comments regarding the survey results:

- A letter requesting input from residents and date of questionnaire was August 15, 2011. A copy of letter and questionnaire are included in Appendix C.

- Approximately 1,900 survey questionnaires were sent to property owners of the Sanitary District.

- 152 surveys were returned from the residents or approximately an 8% response to the survey. Several surveys that were returned indicated the property owner had not visited the site in years, no improvements needed or simply no comments.

- Of the questionnaires returned, the following indicates the number and percentage of responses returned by residents of the roadway listed.

  9% of the total responses returned were from residents of High Top Road, 6% from Tulip Poplar Drive and 5% from Wendy Hill Road, Western Lane and Youngs Drive and as follows:

  | | | | |
  |---|---|---|---|
  | 1) | High Top Road | 9% | (13) |
  | 2) | Tulip Poplar Drive | 6% | (8) |
  | 3) | Wendy Hill Road | 5% | (7) |
  | 4) | Western Lane | 5% | (7) |
  | 5) | Youngs Drive | 5% | (7) |

  The remaining responses were from residents of other various roadways as indicated by the "Roadway Survey Results" summary in Appendix C.

- As expected, the majority of those returning the questionnaire felt the most needed improvements were the need to improve the road surface including paving, pothole repair and culvert pipe construction, ditch grading and pipe cleaning. Responses summarized as follows:

| | Total Number of Comments | % |
|---|---|---|
| 1) Dust Control | 15 | 6% |
| 2) Road Surface | 122 | 52% |
| 3) Site Distance | 22 | 9% |
| 4) Signage | 12 | 5% |
| 5) Culvert Pipes | 65 | 28% |
| | 236 | 100% |

- Included as a part of the survey questionnaire, residents were requested to list other roadways they used in addition to the one on which they lived and rate their condition. The roadways listed most often and in the most need of improvements were:

| Road | Number of Comments |
|---|---|
| High Top Road | 15 |
| Tulip Poplar Drive | 9 |
| Wendy Hill | 7 |
| Youngs Drive | 7 |
| Other Roadways | (various) |

- Safety. The following are some comments made by the residents in the survey regarding safety issues.

  1) Guardrail needed on Thompson Mill Road and High Top Road.
  2) Lake Drive is often very dangerous to travel and not passable during inclement weather.
  3) Reflective markers needed in Freeze Road.
  4) Speeding in the subdivision was a problem.
  5) Large rock protruding in the roadway of Tomahawk Drive.
  6) Mountain Lake Drive is dangerous due to congestion as a result of school traffic.
  7) Roadway “caving in” on Cindy’s Way.

Due to safety concerns it is recommended that these items be investigated and addressed if possible.

## IX. STORMWATER MANAGEMENT

### General

A major element of the Road and Drainage Study involved identification and computations of the various drainage areas located within the Shenandoah Farms Sanitary District. Delineation of the various drainage areas was conducted after which computations were made to determine storm water discharge from each area. Using this information and the data collected during the roadway inspections, a determination of proposed culvert and ditch locations and their sizes were made. Private culverts were sized but not located since this determination would be made by the

property developer. Using the information collected by the roadway inspections and the computated drainage data, the culvert tables and map panels were prepared. The Map Panels and tables indicate the location of existing culverts, both roadway and private. The location of culverts identified by the inspections and the location of proposed culverts were identified on the map panels. Included, and based upon the drainage calculations, the map panels and culvert tables reflect the pipe sizes, both roadway and private entrance culverts, proposed for future development along with ditch sizes and lining type. A detailed summary of the existing and proposed culverts and their sizes along with the ditch sizes and linings can be found in Appendix E. Note that it is recommended that at a minimum 18" pipes or their equivalency be constructed, where adequate cover and conditions allow, for easier cleaning. This information should be referenced when considering roadway and drainage improvements and by builders and lot owners when planning home construction to adequately size the culverts and ditches. The culverts and ditches are listed in order by road name and also in order by Map Panel number in two sets of tables one set for culverts and one set for ditches. The culvert tables reflect the culverts and ditches that are shown on the Map Panels.

There are columns common to both sets of tables. The Road Location column is the mileage from the beginning of the road stationing to the culvert or downstream end of the ditch. The beginning of the road (0+00) was set arbitrarily but generally it was set at the intersection where the road can be accessed. Map Panel number is the Map Panel that shows the culvert or the ditch location.

The column Hydrologic Soils Group displays the hydrologic soils group of the soils covering the drainage area of the culvert. Most of Shenandoah Farms Sanitary District is covered with B or D soils. B soils produce less runoff from a given rain than does C or D soils. For that reason a recommended culvert in an area having B soils is usually smaller than the culvert for same sized drainage area having C or D soils. Culverts in areas with C soils were sized as if the soils were D soils.

The column Drainage Area To Culvert or Ditch in Acres is the total drainage area to that culvert or the downstream end of the ditch. The area includes all the drainage areas that flow to that culvert or ditch. Drainage areas shown on the Map Panels have been measured using 4 foot topography and are outlined with dashed lines.

More than one drainage area shown on the Map Panel may flow to a culvert or ditch. The drainage areas that flow to Private culverts were estimated from the road culvert drainage area information. The total drainage area shown for the culverts and ditches depends on the existence of all mapped upstream culverts and ditches. If the upstream culverts and ditches do not exist, the area to the culvert may be larger or smaller.

## A. Culvert Tables

These tables reflect the culverts that are shown on the Map Panels. The culverts are listed in two tables, one in order by road name and another table in order by Map Panel number. The culvert name is the initials of the road and then the station number. The culvert name BD 1+25 designates a culvert, 125 feet from the beginning of Barbara Drive. The Road Location column is

the mileage from the beginning of the road stationing to the culvert. The beginning of the road (0+00) was set arbitrarily but generally it was set at the intersection where the road can be accessed.

Two pipe diameters are shown for each culvert location in the column Recommended 2 Year Culvert Size and Recommended 10 Year Culvert Size. The Recommended 2 Year Culvert Size is the diameter of a culvert that should not be over topped more than once every 2 years. The column Recommended 10 Year Culvert Size is the diameter of a culvert that should not be over topped more than once every 10 years. The culvert sizes in these columns are for either reinforced concrete pipe (RCP) or high density polyethylene (HDPE) installed at a slope of no less than 0.5%. The sizes shown depend on the existence of upstream culverts and ditches. If the upstream culverts and ditches are not in place to divert runoff, the culvert may not be adequate. RCP pipe should be used if the cover over the pipe will be less than 2 feet. At the peak flow capacity of the culvert the water surface just upstream of the culvert will be 1.5 times the culvert diameter.

The column R = Road P = Private indicates if the culver is to be under the road (R) or is to be under a private driveway entrance to a Lot (P).

The column E= Existing, N= needed and P = possible determined from DA mapping indicates if the culvert exists (E), or if field inspections determined a culvert was needed (N), or, if through examination, of the road alignment and topography on the Map Panels , that a culvert should possibly be located at that point (P). Possible (P) locations were only proposed for road culverts.
The column Length Feet is the length in feet of the existing culverts or an estimate of the length of a Needed or Possible culvert. A (?) associated with a number indicates that the length of an existing culvert could not be determined or, for Needed or Possible culverts, an estimate based on the road width.

The column Culvert Diameter Inches, is the Existing culvert diameter in inches or an uncalculated estimate of the diameter of a Needed or Possible culvert. A (?) associated with a number indicates that the diameter of an existing culvert could not be determined. The Existing culvert diameters can be compared to the Recommended sizes to estimate the adequacy of the Existing culverts. The diameter in this column for N or P culverts can be ignored. SP in the columns means the culvert requires a special design to accommodate a large discharge.

The Column Number of culverts is the number of existing culverts of the same diameter at this location. In a few cases there are culverts of different diameters at the same location. When there are Existing culverts of different diameters they are listed on different lines and each assigned the total drainage area to that location.

The column Culvert Material is the material of the Existing culvert made of or for Needed or Possible culverts HDPE is (high density poly ethylene) has been added to the table. If the cover for the Needed or Possible culvert is less than 2 feet the culvert should be reinforced concrete pipe (RCP) particularly for culverts in the road.

The column Map Panel Number is the Map Panel that shows the location of the culvert.

The column Lot Number is the lot number where the Private culvert is located. A (?) indicates a Private culvert for which the lot number could not be determined.

The column Hydrologic Soils Group displays the hydrologic soils group of the soils covering the drainage area of the culvert. Most of Shenandoah Farms Sanitary District is covered with B or D soils. B soils produce less runoff from a given rain than does C or D soils. For that reason a recommended culvert in an area having B soils is usually smaller than the culvert for same sized drainage area having C or D soils. Culverts in areas with C soils were sized as if the soils were D soils.

The column Drainage Area To Culvert in Acres is the total drainage area to that culvert. The area includes all the drainage areas that flow to that culvert. Drainage areas shown on the Map Panels have been measured from 4 foot topography and are outlined with dashed lines. More than one drainage area shown on the Map Panel may flow to a culvert. The drainage areas that flow to Private culverts were estimated from the road culvert drainage area information. The total drainage areas shown for the culverts depend on the existence of all mapped upstream culverts and ditches. If the upstream culverts and ditches do not exist, the area to the culvert may be larger or smaller.

The column E= Drainage Area Estimated indicates that the drainage area was estimated from a measured drainage area. The estimates are mostly very small areas of only an acre or two.

**B. Ditch Tables**

The ditch label is the initials of the road and then the station number where the ditch enters a culvert, leaves the road, or starts from a culvert. The ditch label BD 1+25R for example designates a ditch that enters the culvert BD 1+25 from the right as you look in the direction of flow through the culvert that is 125 feet from the beginning of Barbara Drive. An L suffix designates ditch that enters the culvert from the left and a U designates a ditch that flows directly into the culvert from over land and not as a road side ditch. A D suffix designates a ditch that leaves the road at the road station or starts from a culvert discharge.

Two ditch depths are shown for each culvert location in the column Recommended 2 Year Ditch Depth and Recommended 10 Year Ditch Depth. The Recommended 2 Year ditch depth is the depth of a ditch that should not be over topped more than once every 2 years and is the depth that should be lined with any recommended lining. The column Recommended 10 Year Ditch Depth is the depth of ditch that should not be over topped more than once every 10 years. The ditch depths are for the downstream end of the ditch. Long ditches that add drainage area along their length should be evaluated to determine if the end depth is necessary for the entire length. The sizes shown depend on the existence of upstream culverts and ditches. If the upstream culverts and ditches are not in place to divert runoff, the ditch may not be adequate. SD in the columns means the ditch requires a special design to accommodate a large discharge or steep slope.

The column Ditch Lining lists the type of lining that should be used for the ditch. The lining should cover the 2 year ditch depth plus 0.5 feet. The requirements for different types of lining use is described in the VDOT Drainage Manual Chapter 7.

See http://www.virginiadot.org/business/locdes/hydra-drainage-manual.asp. Lining installation instructions are in the VDOT Road and Bridge Standards Manual chapter 100. The VDOT lining and installation details follow the ditch tables. The material that can be used for EC3 lining may change in time. To find the VDOT approved A or B lining material go to the VDOT web site. http://www.extranet.vdot.state.va.us/LocDes/Electronic%20Pubs/2008Standards/TOC100.pdf

The column 2-year flow velocity (FPS) lists the calculated water velocity for the peak of the 2 year storm in feet per second.

## X. RECOMMENDATIONS

1. For safety reasons, guardrail may be considered on several roadways. When improvements are constructed for any of the roadways a determination regarding the need for guardrail can be made by the County. Other safety concerns expressed by the residents in the Roadway Questionnaire should be reviewed and addressed if required. (See Section VIII).

2. Due to the fact that the roadway surfaces are primarily 21A or 21B aggregate and the roadways are located primarily within wooded areas the drainage ditches and culvert pipes are more likely to become blocked as a result of loose gravel and vegetative debris. To prevent damage to the roadway surface and subgrade and reduce potential safety issues resulting from “wash out” gullies it is recommended that the culvert pipes and drainage ditches be reviewed and inspected frequently to make certain they are functioning properly. Inspection of the pipes and ditches should be performed after any significant rain event to make certain they are functioning properly and steps taken to remediate any problems. Properly maintaining the ditches and pipes should reduce roadway repairs and maintenance which can often be more costly to address. While the culvert tables reflect 15” roadway cross pipes, minimum 18” pipes or their equivalent are recommended for use where adequate cover can be provided and conditions allow. Since most roadways are stone aggregate and pipes fill with the aggregate following heavy rains or over time the 18” culvert will allow easier cleaning.

3. Continue to maintain the roadway surfaces and roadside ditches to allow drainage to enter the ditches and not pool on or under the road surface. In areas where roadside ditches appear to be failing, the ditch should be reworked to meet the typical ditch section provided with 2:1 slopes if possible. Regrade shoulders where the elevation of the soil, grasses, and other vegetation is higher than the road surface. This tends to prevent water from draining from roadway surfaces and subgrade soils, which can cause subgrade deterioration.

4. Prior to any surfacing activity, all culverts within the area to be improved should be inspected and replaced if necessary. Periodic inspections should be conducted to determine if the culvert is functioning properly and cleaned of debris as necessary. This inspection should occur at a minimum on an annual basis. Private driveway culverts should also be kept clear of debris.

5. Herbicide Use. Vegetation growing through the aggregate surface should be controlled using a systemic herbicide. If allowed to grow, the roots of the vegetation will weaken the subgrade soils, ultimately causing subgrade deterioration. This will allow water to further penetrate the subgrade soils causing further deterioration. We recommend the use of Round-up, Ground Clear, or other herbicides that are permitted for general use by homeowners for vegetation control. Care must be taken when using herbicides and all directions followed as indicated by the manufacturer.

6. It is recommended that, at minimum, an annual inspection of the roadway system be performed to determine maintenance needs. Included, but not limited to, during this inspection are the following items:

    A. Inspect all roadway surfaces, paying particular attention to any areas of possible subgrade failure. Areas that appear to have subgrade failure should be addressed and scheduled based upon severity. This inspection should be conducted in the spring to observe any problems which may be the result of moisture, freezing and thawing experienced during the previous winter months.

    B. Inspect roadside ditches and culvert pipes paying particular attention to any siltation problems where silt and debris build up hinders the ditch or culvert from functioning properly. In areas where ditches are totally silted and there is no defined ditch or where roadside shoulder elevations are above the road surface elevation, ditches should be “pulled” to remove the material and/or plant growth to allow drainage from the roadway surface to enter the ditch line.

    C. Inspect the roadway intersection sight distances to ensure that there are no obstructions from tree or shrubbery growth which could hinder visibility. The speed limit in the Shenandoah Farms Sanitary District, as posted by the POSF Board, is 15 mph and as a general rule, sight distance should be 5’ for each mile per hour speed limit so site distance should be at least 125’ both directions from the intersection. The timber and foliage within the road right of way which blocks sunlight should also be trimmed to allow the areas to dry following a rain or snowfall. In addition, tree limbs that obscure roadway identification signage and traffic signage should also be trimmed or removed. Inspections for site distance issues should be conducted in late spring or early summer when foliage is in full growth.

7. When planning roadway improvements reference the roadway inspection reports, roadway functional classification and culvert tables to be certain proposed improvements are in accordance with the Road and Drainage Study. In addition, survey should be provided to make certain the roadway improvements are within the existing right-of-way.

## XI. CONCLUSION

The proposed maintenance and improvement program included with this report is intended to provide a foundation for sound decision making relative to future improvements and maintenance for the Shenandoah Farms Sanitary District private roadway network. A budget should be prepared which allows funds from which to be directed towards improving existing roadways while also accommodating routine maintenance and repairs of the road network, in its entirety.

The proposed three tier hierarchy of road classifications ensures that the ultimate cross section for each roadway segment will accommodate the traffic volume for that particular segment. We believe this three class system will help ensure that the ultimate roadways are adequate for years to come while making effective use of the available funds. Decisions regarding maintenance, operations and capital improvement projects will consider the needs of all users of the transportation system.

# APPENDICES

# APPENDIX A

## Roadway Inspection Reports & Map Panels

## (Included in Separate Binder)

# APPENDIX B

## Roadway Inventory & Functional Classifications

**TRAFFIC VOL! ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| SECTION 1<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 1A | Hovellsville Rd (VDOT Road) | 39 | 9 | 27 | 288 | 216 |
| 1B | Mosby's Meadow Ln cul de sac | 34 | 10.5 | 20 | 244 | 160 |
| 1C | Old Oak Lane from Vesey Dr to Manor Rd | 16 | 6.75 | 7 | 110 | 56 |
| 1D | Valley Farms Rd | 21 | 12 | 5 | 136 | 40 |
| 1E | Unnamed cul de sac outletting to Yarnell Ct | 10 | 7.5 | 0 | 60 | 0 |
| 1F | Yarnell Ct cul de sac | 12 | 4.5 | 6 | 84 | 48 |
| 1G | Yarnell Ct | 15 | 6 | 7 | 104 | 56 |
| 1H | Nancy Ct cul de sac | 13 | 6 | 5 | 88 | 40 |
| 1I | Farm Ridge Rd (Outlets directly to Manor Rd) | 15 | 5.25 | 8 | 106 | 64 |
| 1J | Vesey Dr | 38 | 15.75 | 17 | 262 | 136 |
| 1K | Unnamed cul de sac outletting to Old Oak Ln | 7 | 3 | 3 | 48 | 24 |
| 1L | Spring Hollow Rd | 16 | 7.5 | 6 | 108 | 48 |
| 1M | Vesey Dr | 49 | 35.25 | 2 | 298 | 16 |
| 1N | Eagle Crag Rd | 7 | 1.5 | 5 | 52 | 40 |
| 1O | Old Oak Rd near Park | 4 | 2.25 | 1 | 26 | 8 |
| 1P | Thompson Mill Rd cul de sac | 27 | 12 | 11 | 184 | 88 |
| 1Q | Treasure Island Ln cul de sac | 6 | 1.5 | 4 | 44 | 32 |
| 1R | Patty Tract Ln | 13 | 4.5 | 7 | 92 | 56 |
| 1S | Unnamed cul de sac outletting to Vesey Dr | 5 | 3.75 | 0 | 30 | 0 |

| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 1B | Mosbys Meadow Ln: cul de sac outletting to Old Oak Ln | 244 | 160 |
| 1C | Old Oak Ln: North | 2221 | 744 |
| 1D | Valley Farms Rd: outletting to Old Oak Dr | 136 | 40 |
| 1E | Unnamed cul de sac outletting to Yarnell Ct | 60 | 0 |
| 1F | Yarnell Ct: cul de sac on eastern end | 84 | 48 |
| 1G | Yarnell Ct: to intersection with Old Oak Dr, collecting Unnamed cul de sac and Yarnell Ct cul de sac | 248 | 104 |
| 1H | Nancy Ct: cul de sac outletting onto Vesey Dr | 88 | 40 |
| 1I | Farm Ridge Rd: Culdesac outletting to the north onto Mano Rd | 106 | 64 |
| 1J | Vesey Dr: collects Unnamed, Nancy Ct and Vesey Dr cul de sacs and outlets to Old Oak Ln | 678 | 192 |
| 1K | Old Oak Ln: Near intersection with Mosby Meadows Ln | 2540 | 924 |
| 1L | Spring Hollow Rd: cul de sac ouletting to Old Oak Ln | 108 | 48 |
| 1M | Vesey Dr: (cul de sac - doesn't yet outlet to Venus Branch Rd) | 298 | 16 |
| 1N | Eagle Crag Rd: cul de sac outletting onto Venus Branch Rd | 52 | 40 |
| 1O | Old Oak Ln: near park | 2339 | 768 |
| 1P | Thompson Mill Rd: cul de sac outletting ontoOld Oak Ln | 184 | 88 |
| 1S | Unnamed cul de sac outletting to Vesey Dr | 30 | 0 |

**TRAFFIC VOLU ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 2**<br>Subsection | Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Total Lots x 8) | Estimated Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 2A | Timberline Rd cul de sac | 11 | 5.25 | 4 | 74 | 32 |
| 2B | Heavens Tree Tr cul de sac | 10 | 5.25 | 3 | 66 | 24 |
| 2C | River Overlook Rd | 29 | 18 | 5 | 184 | 40 |
| 2D | Old Oregon Rd cul de sac | 27 | 14.25 | 8 | 178 | 64 |
| 2E | Pine Ridge Dr | 32 | 9.75 | 19 | 230 | 152 |
| 2F | Unnamed cul de sac outletting to Old Oak Ln | 4 | 2.25 | 1 | 26 | 8 |
| 2G | Western Ln cul de sac | 8 | 3.75 | 3 | 54 | 24 |
| 2H | Old Oak Ln | 17 | 12 | 1 | 104 | 8 |
| 2I | Hopkins Bluff Rd | 11 | 4.5 | 5 | 76 | 40 |
| 2J | Western Ln | 17 | 9 | 5 | 112 | 40 |
| 2K | Pine Ridge Dr | 9 | 3 | 5 | 64 | 40 |
| 2L | Goode Dr | 37 | 21 | 9 | 240 | 72 |
| 2M | Honey farm Ln cul de sac North | 20 | 6 | 12 | 144 | 96 |
| 2N | Pine Ridge Dr | 30 | 11.25 | 15 | 210 | 120 |
| 2O | Intesection Western Ln & Old Oak Ln | 12 | 3.75 | 7 | 86 | 56 |
| 2P | Otto Pl cul de sac | 2 | 0 | 2 | 16 | 16 |
| 2Q | Benson Ct | 6 | 2.25 | 3 | 42 | 24 |
| 2R | McLlwee Ct | 27 | 14.25 | 8 | 178 | 64 |
| 2S | Western Ln | 36 | 17.25 | 13 | 242 | 104 |
| 2T | Pine Ridge Dr | 22 | 8.25 | 11 | 154 | 88 |
| 2U | Goode Dr | 23 | 10.5 | 9 | 156 | 72 |
| 2V | Honey farm Ln cul de sac South | 10 | 2.25 | 7 | 74 | 56 |
| 2W | Dogwood Farm Rd. | 43 | 24.75 | 10 | 278 | 80 |
| 2X | Unnamed cul de sac outletting to Dogwood farm Rd | 4 | 1.5 | 2 | 28 | 16 |
| 2Y | Martins Farm Rd cul de sac outletting to Lake Dr | 12 | 6 | 4 | 80 | 32 |
| 2Z | Gary Ln | 27 | 14.25 | 8 | 178 | 64 |
| 2AA | Wendy Hill Rd | 42 | 26.25 | 7 | 266 | 56 |
| 2BB | Lake Dr | 33 | 21 | 5 | 208 | 40 |
| 2CC | Manno Ln cul de sac | 7 | 5.25 | 0 | 42 | 0 |
| 2DD | Howellsville Rd (VDOT Road) | 47 | 22.5 | 17 | 316 | 136 |
| 2EE | Farm Riverview Rd | 28 | 15 | 8 | 184 | 64 |
| 2FF | Drummer Hill Rd | 17 | 12.75 | 0 | 102 | 0 |
| 2GG | Old Oregon Rd | 7 | 3.75 | 2 | 46 | 16 |
| 2HH | Farm Riverview rd | 11 | 5.25 | 4 | 74 | 32 |

**TRAFFIC VOLL ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 2**<br>Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 2A | Timberline Rd: cul de sac to intersection with Heavens Tree | 74 | 32 |
| 2B | Heavens Tree Tr: cul de sac outletting to Timberline Rd | 66 | 24 |
| 2A/B | Timberline Rd: between Heavens Tree Tr and Old Oregon Rd | 140 | 56 |
| 2C | River Overlook Rd | 184 | 40 |
| 2D | Old Oregon Rd: cul de sac to intersection with Timberline Rd | 178 | 64 |
| 2E | Pine Ridge Dr: cul de sac to intersection with Brookview Ln | 230 | 152 |
| 2F | Unnamed cul de sac outletting to Old Oak Ln | 26 | 8 |
| 2G | Western Ln: cul de sac to intersection with Hopkins Bluff Rd | 54 | 24 |
| 2H | Old Oak Ln: Between unnamed cul de sac and McLlwee Ct | 130 | 16 |
| 2H/R | Old Oak Ln: Between McLlwee Ct and Western Ln | 308 | 80 |
| 2I | Hopkins Bluff Rd: collecting Western Ln cul de sac and outletting to Old Oak Ln | 76 | 40 |
| 2J | Western Ln: collecting Western Ln cul de sac and outletting to Copenhover Rd | 204 | 84 |
| 2K | Pine Ridge Dr: collecting cul de sac and 50% of Goode Dr and outletting at intersection with Copenhover Rd | 354 | 210 |
| 2L | Goode Dr | 240 | 72 |
| 2M | Honey farm Ln cul de sac North | 144 | 96 |
| 2N | Pine Ridge Dr | 1042 | 562 |
| 2M/N | Mountain Lake Dr: between Pine Ridge Rd and Honey farm Ln | 1595 | 848 |
| 2O/3AA | Mountain Lake Dr: collect Vaught Dr and outletting onto Blue Mountain Rd | 1781 | 944 |
| 2O | Intesection Western Ln & Old Oak Ln to Copenhover Rd | 478 | 232 |
| 2P | Otto Pl cul de sac | 16 | 16 |
| 2Q | Benson Ct | 42 | 24 |
| 2R | McLlwee Ct: cul de sac | 178 | 64 |
| 2S | Western Ln: including Benson Ct and Otto Pl | 300 | 144 |
| 2T | Pine Ridge Dr | 154 | 88 |
| 2T/4D | Pine Ridge Dr: Near intersection with Western Ln | 299 | 116 |
| 2T/E/U | Pine Ridge Dr: Near intersection with Goode Dr | 405 | 168 |
| 2U | Goode Dr | 156 | 72 |
| 2V | Honey farm Ln cul de sac South | 74 | 56 |
| 2W | Dogwood Farm Rd. | 306 | 96 |
| 2X | Unnamed cul de sac outletting to Dogwood farm Rd | 28 | 16 |
| 2Y | Martins Farm Rd cul de sac outletting to Lake Dr | 80 | 32 |
| 2Z | Gary Ln | 178 | 64 |
| 2AA | Wendy Hill Rd | 450 | 96 |
| 2BB | Lake Dr: West outletting to Howellsville Rd | 1814 | 584 |
| 2W/Y/4B | Lake Dr: East near Gary Ln and Dogwood Farms Rd | 1100 | 488 |
| 2CC | Manno Ln cul de sac | 42 | 0 |
| 2EE/HH | Outlet of both ends of Farm Riverview Rd | 258 | 96 |
| 2EE | Farm Riverview Rd: West | 184 | 64 |
| 2FF | Drummer Hill Rd: Portion due South of Lake of the clouds. Collecting traffic from 3C | 1625 | 464 |
| 2GG | Old Oregon Rd: collecting cul de sac, Timberline Rd cul de sac and Heavens Tree Tr | 364 | 136 |
| 2HH | Farm Riverview Rd: East | 74 | 32 |

**TRAFFIC VOLL :ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 3**<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 3A | Brookview Rd | 34 | 19.5 | 8 | 220 | 64 |
| 3B | Bobbie Ct | 26 | 15 | 6 | 168 | 48 |
| 3C | Drummer Hill Rd | 10 | 3 | 6 | 72 | 48 |
| 3D | Drummer Hill Rd between Parker Ct and Venus Branch Rd | 55 | 30 | 15 | 360 | 120 |
| 3E | Venus Branch Rd Between Drummer Hill Rd and Bobbie Ct | 43 | 24.75 | 10 | 278 | 80 |
| 3F | Susans Ct cul de sac outletting to Drummer Hill Rd | 29 | 19.5 | 3 | 180 | 24 |
| 3G | Riley Ct cul de sac outletting to Drummer Hill Rd | 30 | 18 | 6 | 192 | 48 |
| 3H | Briar Ln cul de sac to intersection of Reid Dr | 40 | 25.5 | 6 | 252 | 48 |
| 3I | Pickford Ct cul de sac outletting to Reid Ct | 16 | 7.5 | 6 | 108 | 48 |
| 3J | Drummer Hill Rd between Peggy Ct and Venus Branch Rd | 14 | 6 | 6 | 96 | 48 |
| 3K | Peggy Ct cul de sac outletting to Drummer Hill Rd | 9 | 3.75 | 4 | 62 | 32 |
| 3L | Reid Dr between Wambach Ct and Briar Ln | 9 | 4.5 | 3 | 60 | 24 |
| 3M | Wambach Ct cul de sac outletting to Reid Rd | 24 | 12.75 | 7 | 158 | 56 |
| 3N | Reid Dr cul de sac east of Wambach Ct | 42 | 24 | 10 | 272 | 80 |
| 3O | Gayles Ln cul de sac outletting to Reid Dr | 27 | 15.75 | 6 | 174 | 48 |
| 3P | Sharon Ln cul de sac outletting to Gayles Ln | 12 | 9 | 0 | 72 | 0 |
| 3Q | Judy Ln cul de sac outletting to Sharon Ln | 36 | 22.5 | 6 | 228 | 48 |
| 3R | Kits Ct cul de sac outletting to Drummer Hill Rd | 17 | 9.75 | 4 | 110 | 32 |
| 3S | Drummer Hill Rd | 10 | 6.75 | 1 | 62 | 8 |
| 3T | Drummer Hill Rd | 11 | 7.5 | 1 | 68 | 8 |
| 3U | Fern Ct cul de sac outletting to Drummer Hill Rd | 10 | 3 | 6 | 72 | 48 |
| 3V | Little Place cul de sac outletting to Drummer Hill Rd | 6 | 2.25 | 3 | 42 | 24 |
| 3W | Mountain Lake Dr (VDOT road) | 9 | 5.25 | 2 | 58 | 16 |
| 3X | Jennings farm Ct cul de sac outletting to Mountain Lake Dr | 13 | 6.75 | 4 | 86 | 32 |
| 3Y | Parker Ct cul de sac outletting to Drummer Hill Rd | 5 | 3 | 1 | 32 | 8 |
| 3Z | Briar Lane | 7 | 4.5 | 1 | 44 | 8 |
| 3AA | Mountain Lake Dr (VDOT road) | 15 | 5.25 | 8 | 106 | 64 |

**TRAFFIC VOLU. ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 3A | Brookview Rd: cul de sac and several lots fronting Venus Branch Rd | 220 | 64 |
| 3A/E | Venus Branch Road: collecting portion heading North from Drummer Hill Rd, Bobbie Ct and Brookview Rd | 1615 | 448 |
| 3B | Bobbie Ct: cul de sac outletting Venus Branch Rd | 168 | 48 |
| 3C | Drummer Hill Rd | 1523 | 464 |
| 3D | Drummer Hill Rd: between Parker Ct and Venus Branch Rd | 1419 | 408 |
| 3E | Venus Branch Rd: Between Drummer Hill Rd and Bobbie Ct | 1227 | 336 |
| 3F | Susans Ct: cul de sac outletting to Drummer Hill Rd | 180 | 24 |
| 3G | Riley Ct: cul de sac outletting to Drummer Hill Rd | 192 | 48 |
| 3H | Briar Ln: cul de sac to intersection of Reid Dr | 252 | 48 |
| 3I | Pickford Ct: cul de sac outletting to Reid Ct | 108 | 48 |
| 3J | Drummer Hill Rd between Peggy Ct and Venus Branch Rd | 1898 | 512 |
| 3K | Peggy Ct: cul de sac outletting to Drummer Hill Rd | 62 | 32 |
| 3L | Reid Dr: Collecting Wambach Ct and Pickford Ct and discharging to Briar Ln | 1072 | 304 |
| 3M | Wambach Ct: cul de sac outletting to Reid Rd | 158 | 56 |
| 3N | Reid Dr: cul de sac collecting Gales Ln and Sharon Ln and discharging onto Wambach Ct | 746 | 176 |
| 3O | Gayles Ln: cul de sac outletting to Reid Dr | 174 | 48 |
| 3P | Sharon Ln: cul de sac collecting Judy Ln and outletting to Gayles Ln | 300 | 48 |
| 3Q | Judy Ln: cul de sac outletting to Sharon Ln | 228 | 48 |
| 3R | Kits Ct: cul de sac outletting to Drummer Hill Rd | 110 | 32 |
| 3S | Drummer Hill Rd: portion of turn west of Spring Lake. | 1755 | 480 |
| 3T | Drummer Hill Rd: collecting traffic from 2FF | 1693 | 472 |
| 3U | Fern Ct cul de sac outletting to Drummer Hill Rd | 72 | 48 |
| 3V | Little Place: cul de sac outletting to Drummer Hill Rd | 42 | 24 |
| 3U/V/W | Drummer Hill Rd: collecting traffic from 3S and Fern Ct and Little Place cul de sacs | 1869 | 568 |
| 3W | Drummer Hill Rd | 58 | 16 |
| 3X | Jennings farm Ct: cul de sac outletting to Mountain Lake Dr | 86 | 32 |
| 3Y | Parker Ct: cul de sac outletting to Drummer Hill Rd | 32 | 8 |
| 3Z | Briar Lane: collecting Briar Ln cul de sac, Reid Dr and Peggy Ct. Outletting to Drummer Hill Rd | 1430 | 392 |

**TRAFFIC VOLU :ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 4**<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 4A | Donna Ct | 33 | 24.75 | 0 | 198 | 0 |
| 4B | Cary Ln cul de sac outletting to Lake Dr | 21 | 10.5 | 7 | 140 | 56 |
| 4C | Western Ln | 34 | 9.75 | 21 | 246 | 168 |
| 4D | Western Ln | 34 | 18.75 | 9 | 222 | 72 |
| 4E | Pne Ridge Dr cul de sac outletting to Goode Dr | 4 | 1.5 | 2 | 28 | 16 |
| 4F | Goode Dr between Pine Ridge Dr and Vaught Vr | 16 | 6 | 8 | 112 | 64 |
| 4G | Vaught Dr | 19 | 6.75 | 10 | 134 | 80 |
| 4H | Blue Mountain Rd (VDOT Road) | 24 | 6 | 16 | 176 | 128 |
| 4I | Blue Mountain Rd (VDOT Road) | 2 | 1.5 | 0 | 12 | 0 |
| 4J | Cindys Way cul de sac to Vaught Dr Intersection | 22 | 7.5 | 12 | 156 | 96 |
| 4K | Hobbs Knob Rd cul de sac outletting to Blue Mountian Rd | 11 | 3 | 7 | 80 | 56 |
| 4L | Hobbs Knob Rd cul de sac outletting to Blue Mountian Rd | 11 | 4.5 | 5 | 76 | 40 |
| 4M | Hobbs Knob Rd cul de sac outletting to Blue Mountian Rd | 19 | 9 | 7 | 128 | 56 |
| 4N | Vaught Dr | 12 | 3.75 | 7 | 86 | 56 |
| 4O | Vaught Dr | 27 | 11.25 | 12 | 186 | 96 |

| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 4A | Donna Ct: cul de sac outletting onto Lake Dr | 198 | 0 |
| 4B | Cary Ln: cul de sac outletting to Lake Dr | 140 | 56 |
| 4C | Western Ln: West | 246 | 168 |
| 4D | Western Ln: east | 222 | 72 |
| 4E | Pne Ridge Dr: cul de sac outletting to Goode Dr | 28 | 16 |
| 4F | Goode Dr between Pine Ridge Dr and Vaught Vr | 517 | 232 |
| 4G | Vaught Dr | 134 | 80 |
| 4J | Cindys Way: cul de sac to Vaught Dr Intersection | 156 | 96 |
| 4L | Hobbs Knob Rd: Northern portion of cul de sac | 76 | 40 |
| 4M | Hobbs Knob Rd cul de sac outletting to Blue Mountian Rd | 162 | 96 |
| 4N | Vaught Dr: South collecting Cindy's Way and connected to Blue Mountain Rd | 893 | 464 |
| 4O | Vaught Dr: North connecting to Mountain Lake Dr | 186 | 96 |

**TRAFFIC VOLL :ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 5**<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 5A | Wells Dr | 16 | 9 | 4 | 104 | 32 |
| 5B | Ehlers Dr cul de sac outletting to Wells Dr | 16 | 6.75 | 7 | 110 | 56 |
| 5C | Reynolds Dr | 6 | 3.75 | 1 | 38 | 8 |
| 5D | Bragg Dr | 32 | 12 | 16 | 224 | 128 |
| 5E | Reynolds Dr | 17 | 12.75 | 0 | 102 | 0 |
| 5F | Unnamed Rd | 31 | 23.25 | 0 | 186 | 0 |
| 5G | Huck Finn Dr | 30 | 12 | 14 | 208 | 112 |
| 5H | Joans Quadrangle Ln | 45 | 21 | 17 | 304 | 136 |
| 5I | Barbara Dr | 9 | 4.5 | 3 | 60 | 24 |
| 5J | Blue Mountain Dr (VDOT Road) | 28 | 15 | 8 | 184 | 64 |
| 5K | Ellinore Ln cul de sac | 15 | 8.25 | 4 | 98 | 32 |
| 5L | Spring Rd cul de sac outletting to Blue Mountain Rd | 13 | 6 | 5 | 88 | 40 |

| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 5A | Wells Dr: Northern cul de sac outletting to Ehlers Dr | 104 | 32 |
| 5B | Ehlers Dr: cul de sac collecting cul de sac to North and outletting to Wells Dr | 214 | 88 |
| 5C | Reynolds Dr: collecting unnamed rd, Bragg Dr and Reynolds Dr South | 860 | 200 |
| 5D | Bragg Dr | 224 | 128 |
| 5E | Reynolds Dr: Southern portion plus traffic head north from 6M | 412 | 64 |
| 5F | Unnamed Road | 186 | 0 |
| 5B/C | Reynolds Dr: collector to Blue Mountain Rd | 1074 | 288 |
| 5G | Huck Finn Dr | 208 | 112 |
| 5H | Joans Quadrangle Ln | 304 | 136 |
| 5H/K | Sum of Elinore Ln cul de sacs and Joans Quadrangle Ln | 402 | 168 |
| 5I | Barbara Dr: Between Elinore Ln and Blue Mountain Dr (+10% of traffic from Elinore cul de sacs and Joans Q) | 100 | 41 |
| 5G/I | Huck Finn Dr: Outlet to Blue Mountain Dr (traffic from 5G +90% of traffic from Elinore cul de sacs and Joans Q) | 570 | 263 |
| 5K | Ellinore Ln: Southern and Western cul de sacs to intersection with Joans Quadrangle Ln | 98 | 32 |
| 5L | Spring Rd cul de sac outletting to Blue Mountain Rd | 88 | 40 |

**TRAFFIC VOLU ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| **SECTION 6**<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 6A | Lookout Point Way cul de sac outletting to Cliffside Rd | 14 | 0.75 | 13 | 110 | 104 |
| 6B | Cliffside Rd cul de sac | 3 | 0 | 3 | 24 | 24 |
| 6C | Cliffside Rd | 9 | 0 | 9 | 72 | 72 |
| 6D | McDonalds Farm Road | 27 | 1.5 | 25 | 212 | 200 |
| 6E | McDonalds Farm Road | 9 | 3 | 5 | 64 | 40 |
| 6F | Tulip Poplar Dr | 17 | 3.75 | 12 | 126 | 96 |
| 6G | Tulip Poplar Dr | 15 | 1.5 | 13 | 116 | 104 |
| 6H | Old Linden Rd | 20 | 9.75 | 7 | 134 | 56 |
| 6I | Tulip Poplar Dr | 10 | 4.5 | 4 | 68 | 32 |
| 6J | Old Linden Rd | 5 | 1.5 | 3 | 36 | 24 |
| 6K | McDonalds Farm Road | 12 | 9 | 0 | 72 | 0 |
| 6L | Heim-Jones Rd | 28 | 18.75 | 3 | 174 | 24 |
| 6M | Reynolds Dr | 12 | 9 | 0 | 72 | 0 |
| 6N | Old Linden Rd | 6 | 3 | 2 | 40 | 16 |

| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 6A | Lookout Point Rd: cul de sac outletting to Cliffside Rd. | 110 | 104 |
| 6B | Cliffside Rd: cul de sac outletting at intersection with Lookout Point Way | 24 | 24 |
| 6C | Cliffside Rd: Western portion of road collecting two cul de sacs and discharging to McDonalds Farm Rd | 206 | 200 |
| 6D | McDonalds Farm Rd: South | 418 | 400 |
| 6E | McDonalds Farm Rd: North | 64 | 40 |
| 6F | Tulip Poplar Dr: South | 126 | 96 |
| 6G | Tulip Poplar Dr: North | 116 | 104 |
| 6H | Old Linden Rd: South | 362 | 176 |
| 6I | Tulip Poplar Dr: Southern Intersection with Old Linden Rd | 612 | 528 |
| 6J | Old Linden Rd: South of Tomahawk Way | 36 | 24 |
| 6K | McDonalds Farm Rd: Outletting to Old Linden Rd | 72 | 0 |
| 6L | Heim-Jones Rd: Between McDonalds farm Rd and Reynolds Dr | 238 | 64 |
| 6M | Reynolds Dr | 310 | 64 |
| 6N | Old Linden Rd: North | 228 | 120 |

**TRAFFIC VOLU ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

| SECTION 7<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 7A | Farms River Rd cul de sac | 13 | 5.25 | 6 | 90 | 48 |
| 7B | Flynn Dr cul de sac outletting to Fellows Dr | 15 | 4.5 | 9 | 108 | 72 |
| 7C | Dillard Ct cul de sac Outletting to Fellows Dr | 22 | 1.5 | 20 | 172 | 160 |
| 7D | Fellows Dr Between Flynn Dr and Dillard Ct | 17 | 6 | 9 | 120 | 72 |
| 7E | Farms River Rd cul de sac | 18 | 9.75 | 5 | 118 | 40 |
| 7F | Flynn Dr between Fellows Dr and Young | 26 | 4.5 | 20 | 196 | 160 |
| 7G | Young Dr between Fellows Dr and Farm View Rd | 13 | 3.75 | 8 | 94 | 64 |
| 7H | Farms River Rd | 38 | 19.5 | 12 | 252 | 96 |
| 7I | Youngs Dr cul de sac | 31 | 4.5 | 25 | 236 | 200 |
| 7J | Farm View Rd cul de sac | 19 | 3 | 15 | 144 | 120 |
| 7K | Howellsville Rd | 3 | 0.75 | 2 | 22 | 16 |
| 7L | Howellsville Rd | 15 | 6 | 7 | 104 | 56 |
| 7M | Howellsville Rd (VDOT Road) | 25 | 9 | 13 | 176 | 104 |
| 7N | Dry Run Ct cul de sac outletting to Howellsville Rd | 30 | 10.5 | 16 | 212 | 128 |
| 7O | Farm View Rd outletting to Howellsville Rd | 5 | 0.75 | 4 | 38 | 32 |
| 7P | Fellows Dr West of Flynn Dr | 5 | 1.5 | 3 | 36 | 24 |
| 7Q | Youngs Drive outletting to Fellows Dr | 6 | 2.25 | 3 | 42 | 24 |
| 7R | Fellows Dr | 4 | 0.75 | 3 | 30 | 24 |

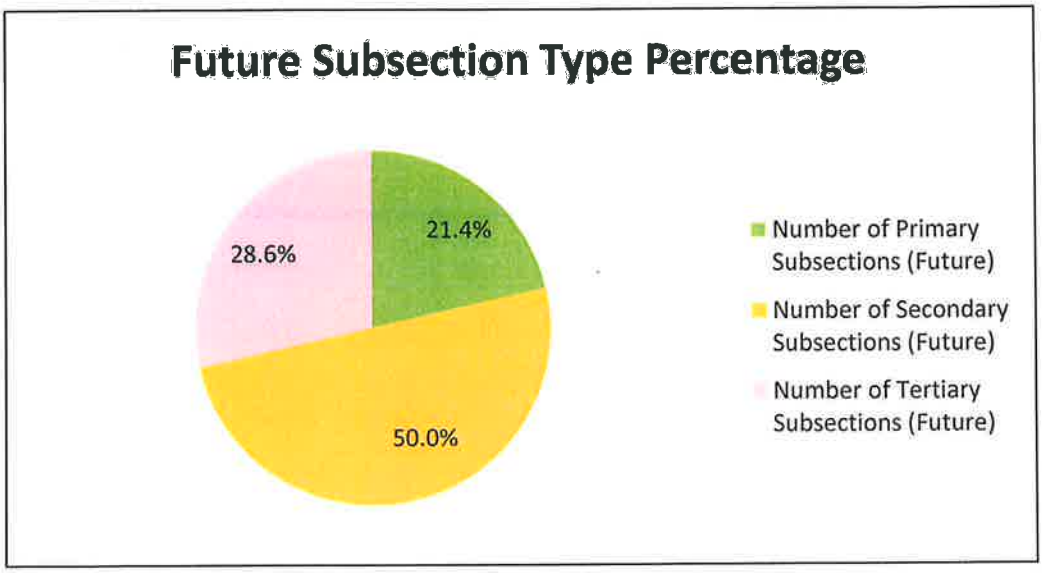
| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 7A | Farms River Rd: cul de sac outletting tp Fellows Dr | 90 | 48 |
| 7B | Flynn Dr: cul de sac outletting to Fellows Drive | 108 | 72 |
| 7C | Dillard Ct: Northern end of cul de sac | 172 | 160 |
| 7D | Fellows Dr: Eastern end outletting to Howellsville Rd | 387 | 206 |
| 7E | Farms River Rd: Northern portion near intersection of Fellows Dr | 285 | 140 |
| 7F | Flynn Dr: section between Fellows Dr and Youngs Dr | 196 | 160 |
| 7G | Youngs Drive: between Fellows Dr and Farm View Rd | 241 | 184 |
| 7H | Farms River Rd: Southern end | 252 | 96 |
| 7I | Youngs Dr: cul de sac outletting to intersection of Youngs Dr and Farm View Rd | 236 | 200 |
| 7J | Farn View Rd: cul de sac outletting to intersection of Youngs Dr and Farm View Rd | 144 | 120 |
| 7N | Dry Run Ct cul de sac | 212 | 128 |
| 7O | Farm View Rd: outlet to Howesville Rd | 512 | 416 |
| 7P | Fellows Dr: Western end near intersection with Farms River Rd | 294 | 156 |
| 7Q | Dillard Ct: outlet to Fellows Dr | 214 | 184 |
| 7R | Fellows Dr: outlet to Howellsville Rd. | 667 | 452 |

**TRAFFIC VOLU ALCULATION**
**SHENANDOAH FARMS**
PHR+A #12972-2-0

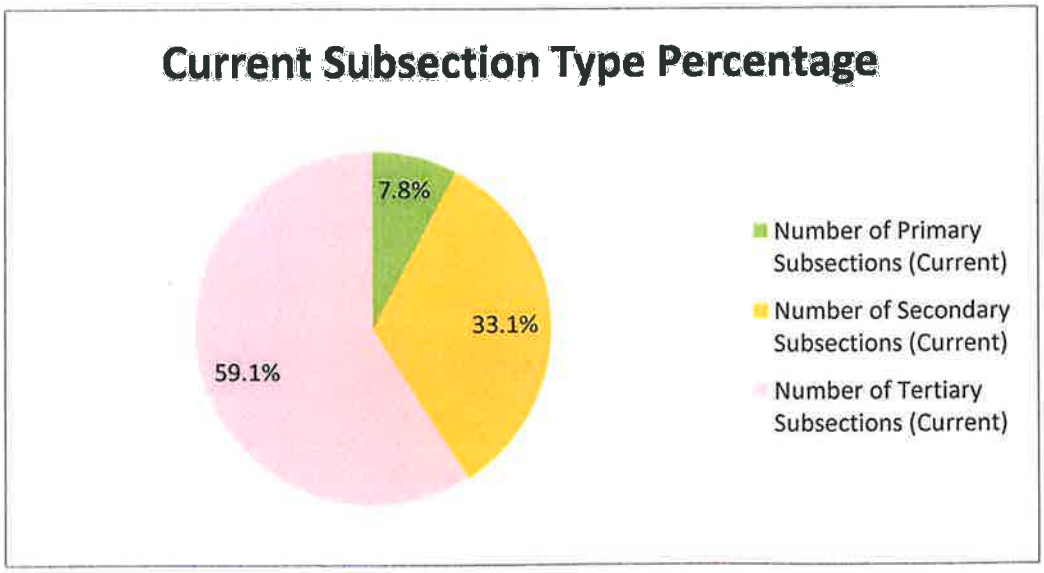
| **SECTION 8**<br>Area Subsection | Area Sub Sec. Description | Total No. of Lots | Adjusted Total No. of Remaining Lots (75%) | No. of Occupied Lots | Projected Trips per Day (Adjusted Total Lots + Occupied Lots x 8) | Estimated Current Trips per Day (Occupied Lots x 8) |
|---|---|---|---|---|---|---|
| 8A | Cappy Rd cul de sac outletting to Hill Top Rd | 9 | 4.5 | 3 | 60 | 24 |
| 8B | High Top Rd between Cappy Rd and Crossway Ln | 28 | 12 | 12 | 192 | 96 |
| 8C | High Top Rd between Cappy Rd and Crossway Ln | 36 | 15.75 | 15 | 246 | 120 |
| 8D | High Top Rd | 59 | 32.25 | 16 | 386 | 128 |
| 8E | Freeze Rd cul de sac outletting to Crossway Ln | 39 | 15.75 | 18 | 270 | 144 |
| 8F | High Top Rd | 29 | 18.75 | 4 | 182 | 32 |
| 8G | High Top Rd | 73 | 33 | 29 | 496 | 232 |
| 8H | Switchback Rd | 20 | 15 | 0 | 120 | 0 |
| 8I | Unoccupied | 63 | 47.25 | 0 | 378 | 0 |

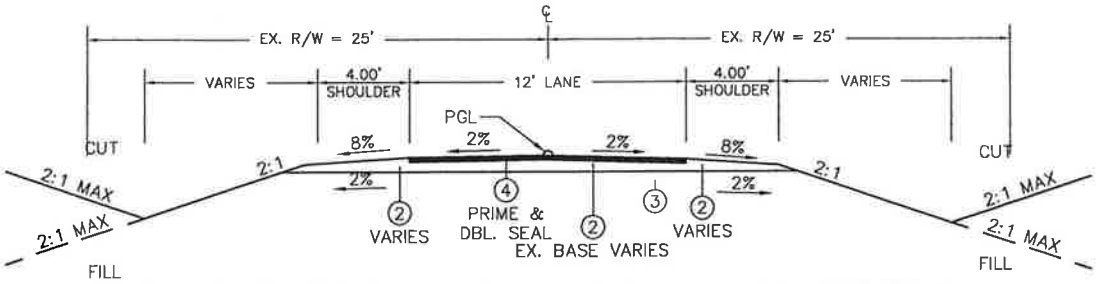
| Road Subsection | Road Sub Sec. Description | Total Projected Future TPD | Estimated Current TPD |
|---|---|---|---|
| 8A | Cappy Rd: cul de sac outletting to Hill Top Rd | 60 | 24 |
| 8B | High Top Rd: SW between Cappy Rd and Crossway Ln | 222 | 108 |
| 8C | High Top Rd: SC between Cappy Rd and Crossway Ln | 276 | 132 |
| 8D | High Top Rd: NW | 386 | 128 |
| 8B/D | Crossway Ln: West | 608 | 236 |
| 8E | Freeze Rd: cul de sac outletting to Crossway Ln | 270 | 144 |
| 8C/E | Crossway Ln: East | 1154 | 512 |
| 8F | High Top Rd: SE | 2330 | 776 |
| 8G | High Top Rd: NE | 994 | 232 |
| 8H | Switchback Rd | 120 | 0 |
| 8I | Unoccupied | 378 | 0 |

| Number of Subsections | Number of Primary Subsections (Future) | Number of Secondary Subsections (Future) | Number of Tertiary Subsections (Future) |
|---|---|---|---|
| 154 | 33 | 77 | 44 |
| | 21.4% | 50.0% | 28.6% |




| Number of Primary Subsections (Current) | Number of Secondary Subsections (Current) | Number of Tertiary Subsections (Current) |
|---|---|---|
| 12 | 51 | 91 |
| 7.8% | 33.1% | 59.1% |

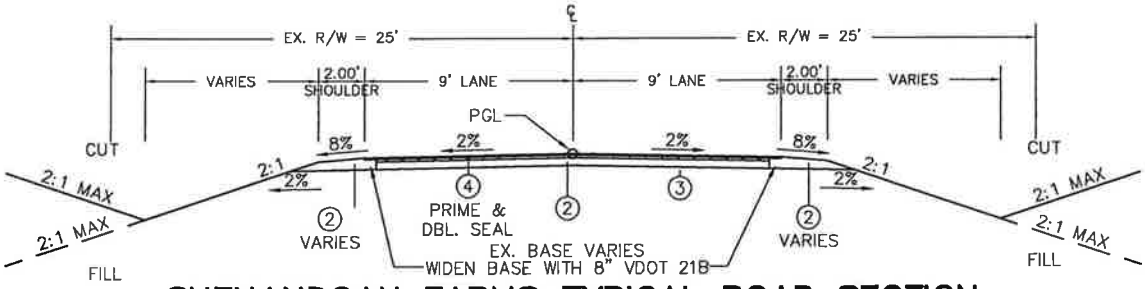





## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION A (110 TRIPS OR LESS)**

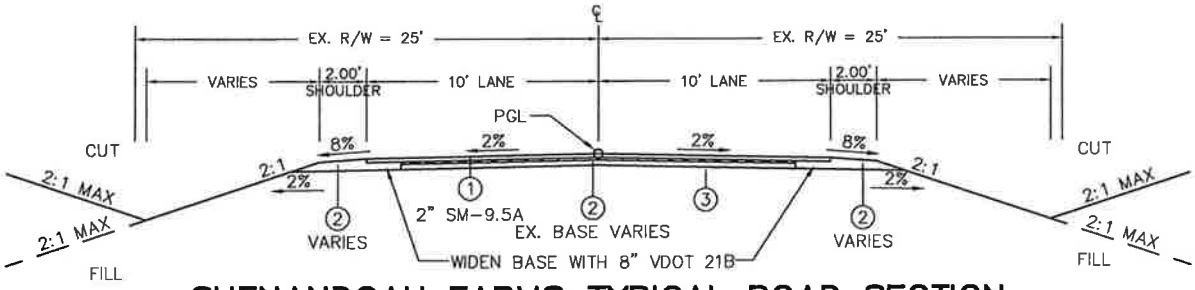
**N.T.S.**




## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION B (111 TO 500 TRIPS)**

**N.T.S.**




## SHENANDOAH FARMS TYPICAL ROAD SECTION

**FUNCTIONAL CLASSIFICATION C (GREATER THAN 500 TRIPS)**

**N.T.S.**

LEGEND:

1. SM-9.5A SURFACE ASPHALT, 2"
2. VDOT-21B AGGREGATE, 8" MIN.
3. WELL COMPACTED SUBGRADE
4. PRIME & DBL. SEAL

NOTES:

1. DRAINAGE DITCHES SHALL BE A MINIMUM OF 12" DEEP.
2. PAVEMENT DESIGN BASED UPON A MINIMUM CBR VALUE OF 6.

REVISED 05-14-12

| FIGURE 9 | SHENANDOAH FARMS ROAD SECTIONS | DATE: AUG., 2011<br>PHR+A # 12972-2-0<br>SCALE: AS SHOWN | Patton Harris Rust & Associates<br>Engineers. Surveyors. Planners. Landscape Architects.<br>PHR+A A Pennoni Company<br>58 Kenmore Street<br>Harrisonburg, VA 22801<br>T 540.434.0202<br>F 540.434.0221 |
|---|---|---|---|

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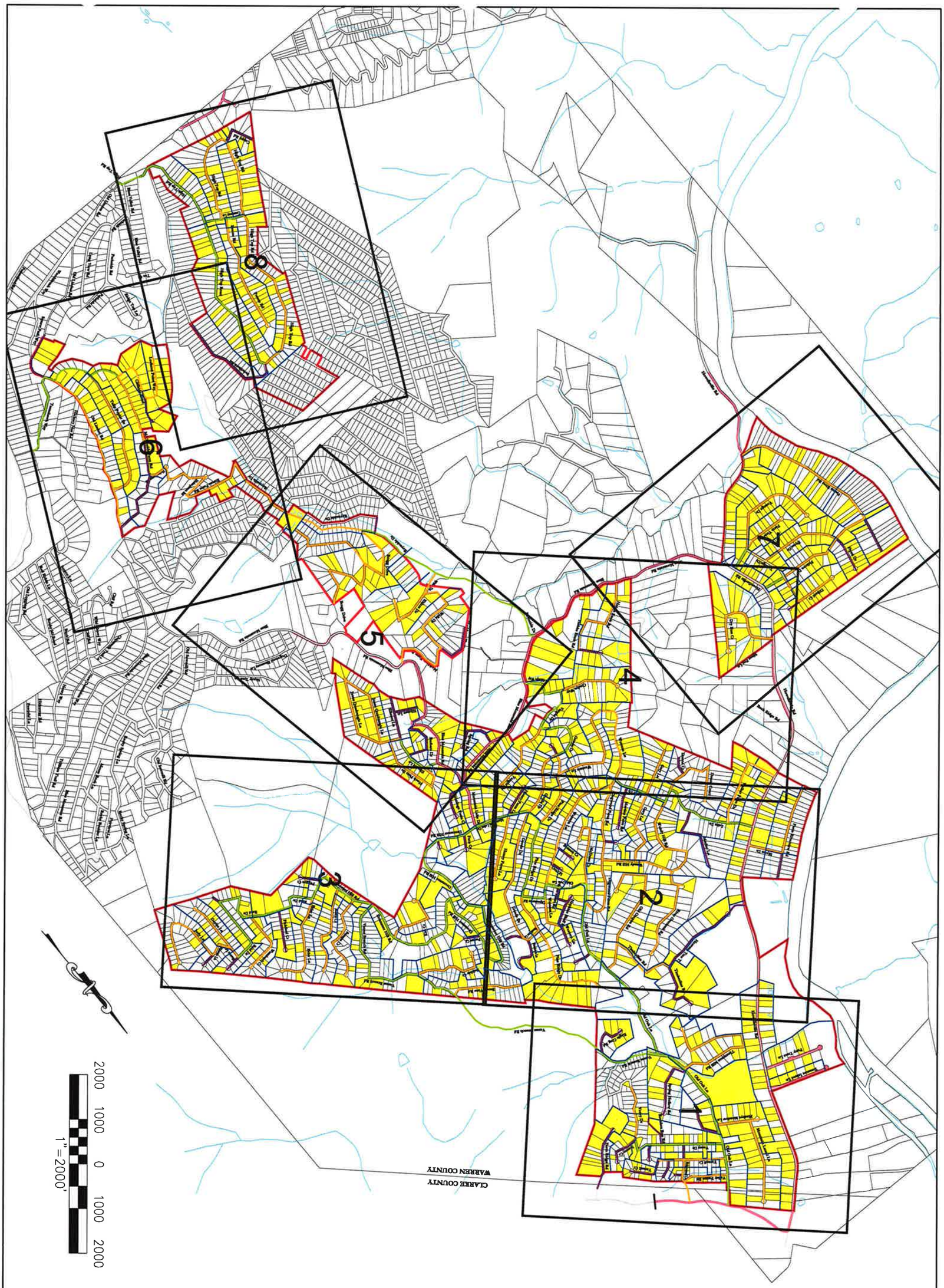


FIGURE

IND

SHENANDOAH FARMS

INDEX

DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN


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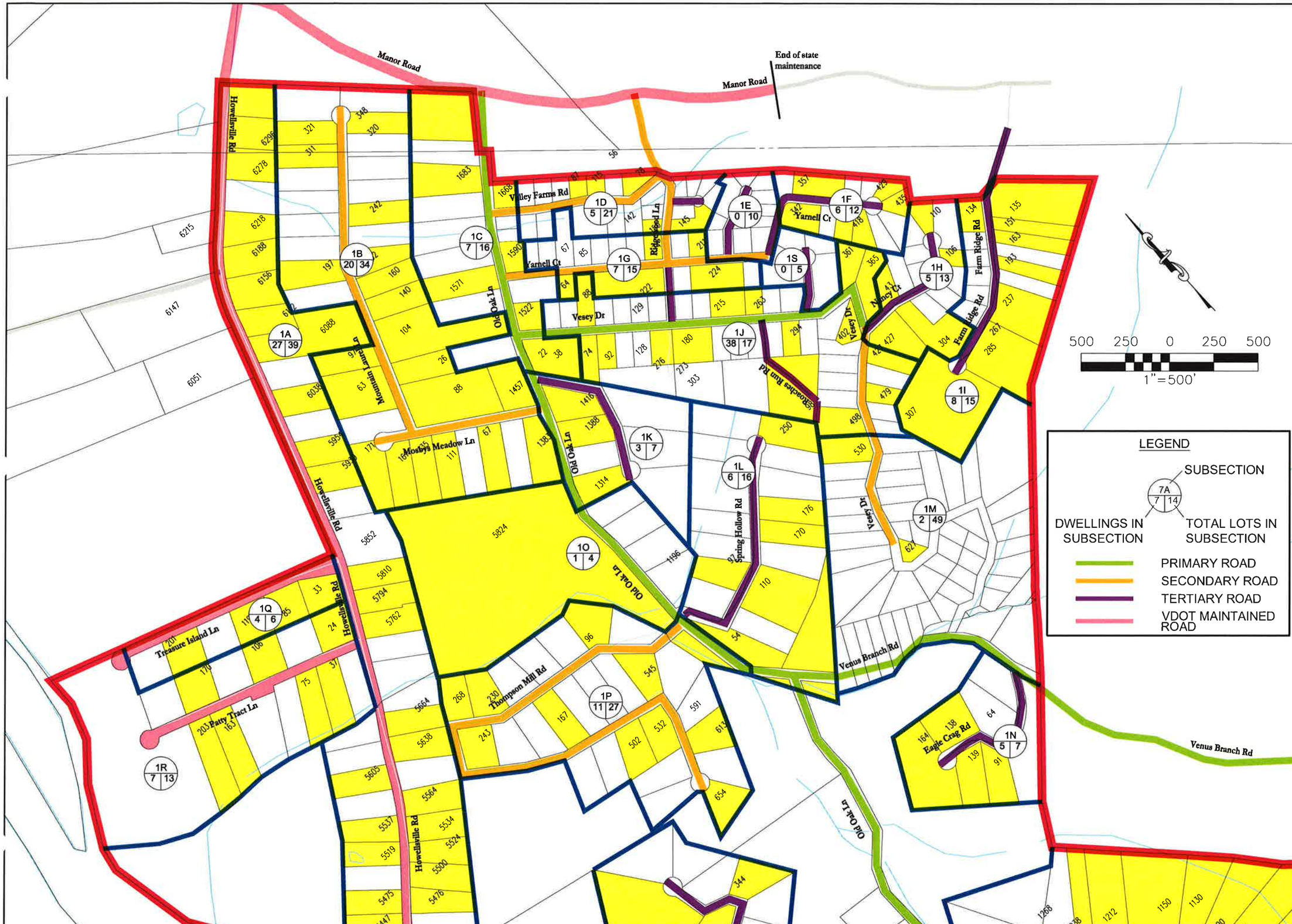


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DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN

SHENANDOAH FARMS

FIGURE 1

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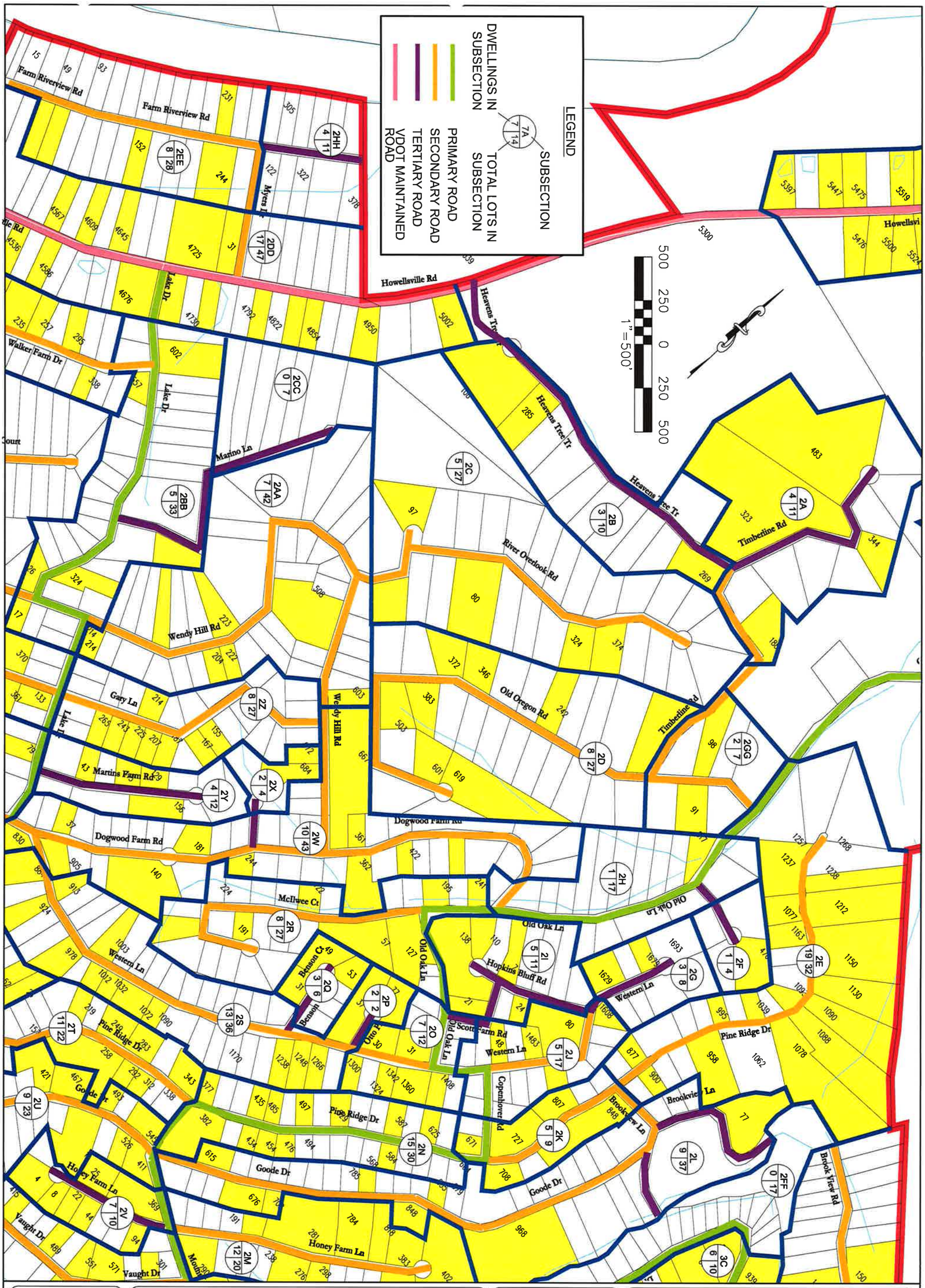


FIGURE 2

SHENANDOAH FARMS

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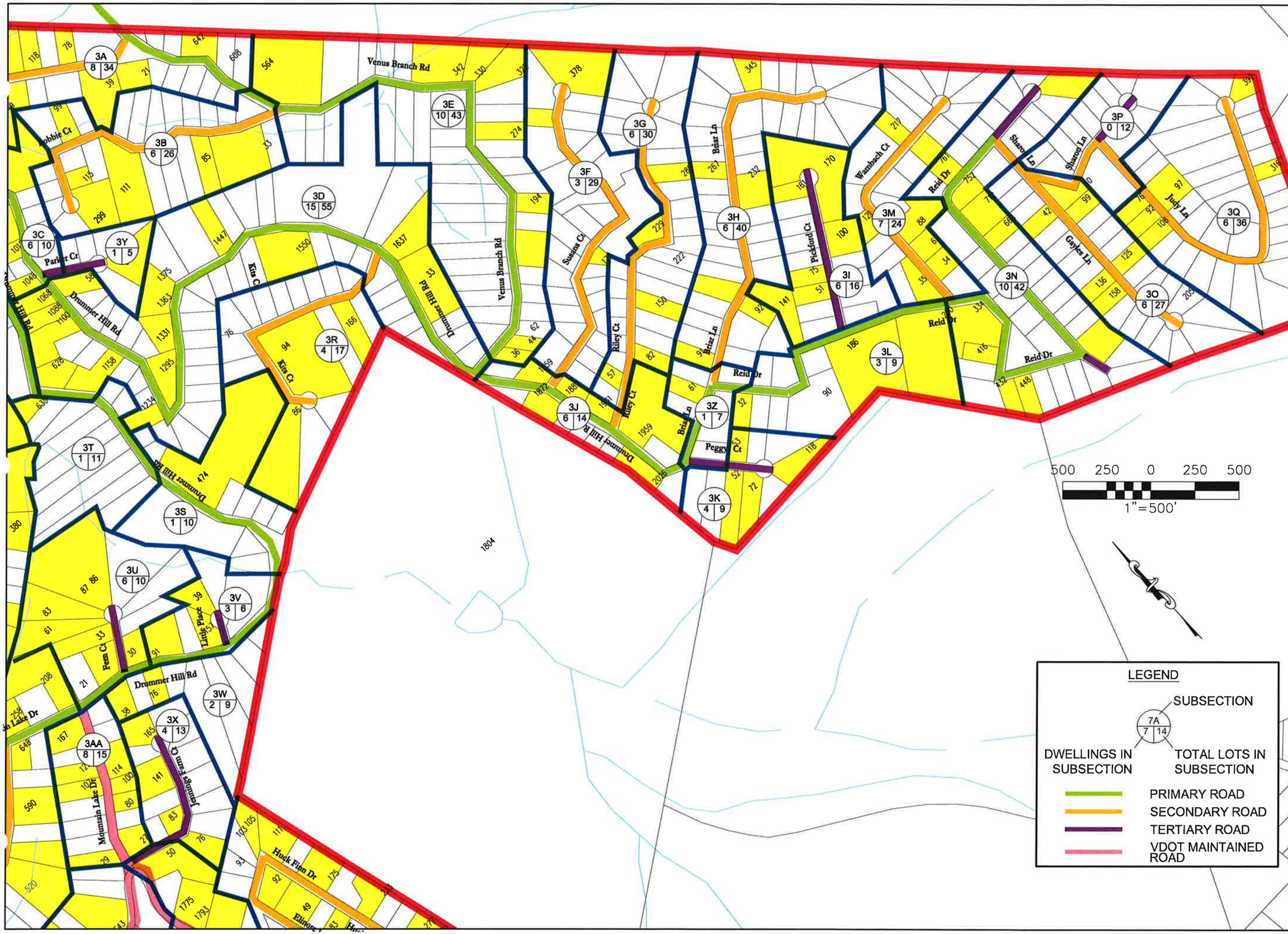


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DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN

SHENANDOAH FARMS

FIGURE 3

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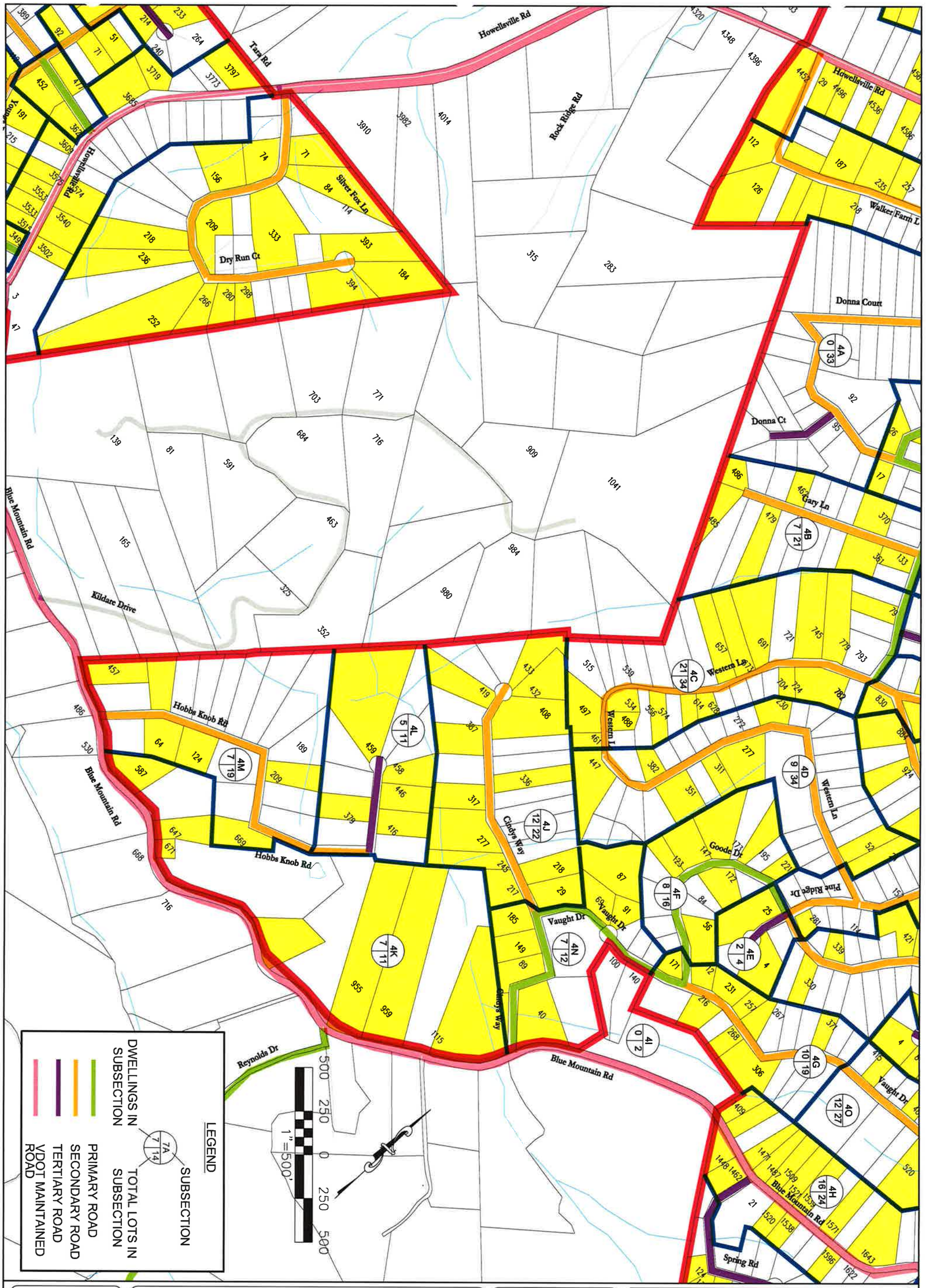


FIGURE 4

SHENANDOAH FARMS

DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN


Patton Harris Rust & Associates
Engineers. Surveyors. Planners. Landscape Architects.

PHR+A A Pennoni Company

58 Kenmore Street
Harrisonburg, VA 22801
T 540.434.0202
F 540.434.0221

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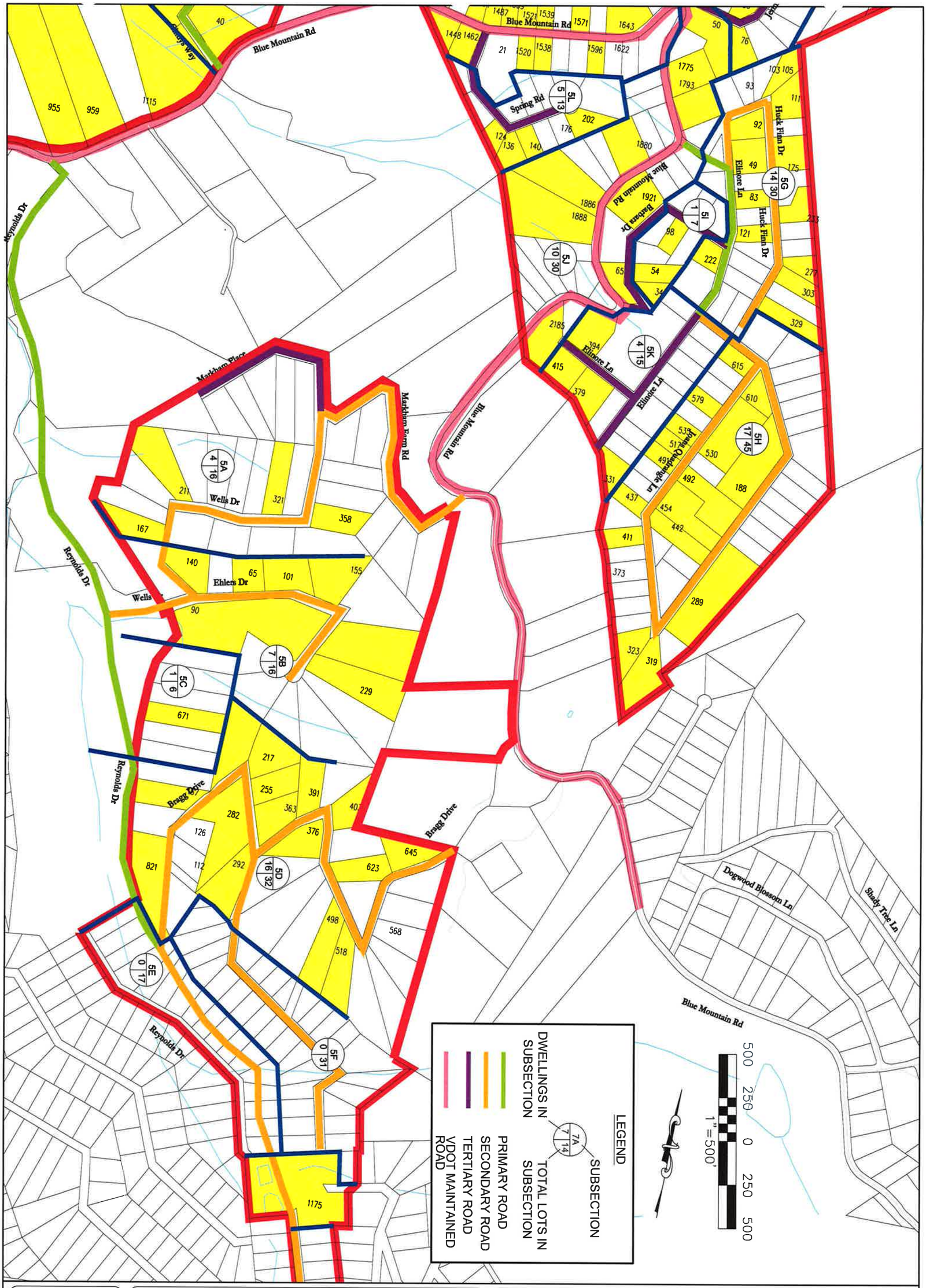


FIGURE 5

SHENANDOAH FARMS

DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN


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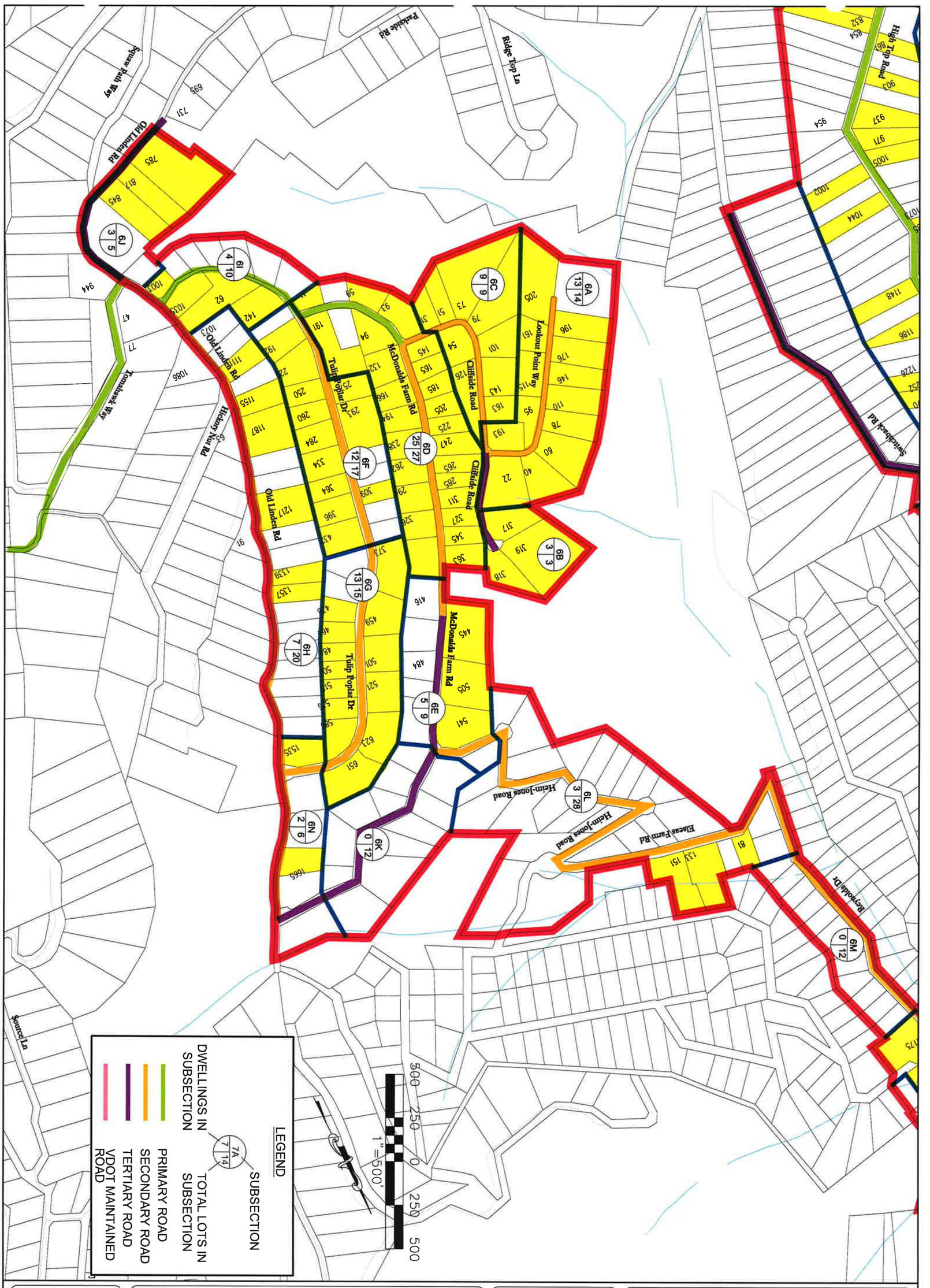


# FIGURE 6

SHENANDOAH FARMS

DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN


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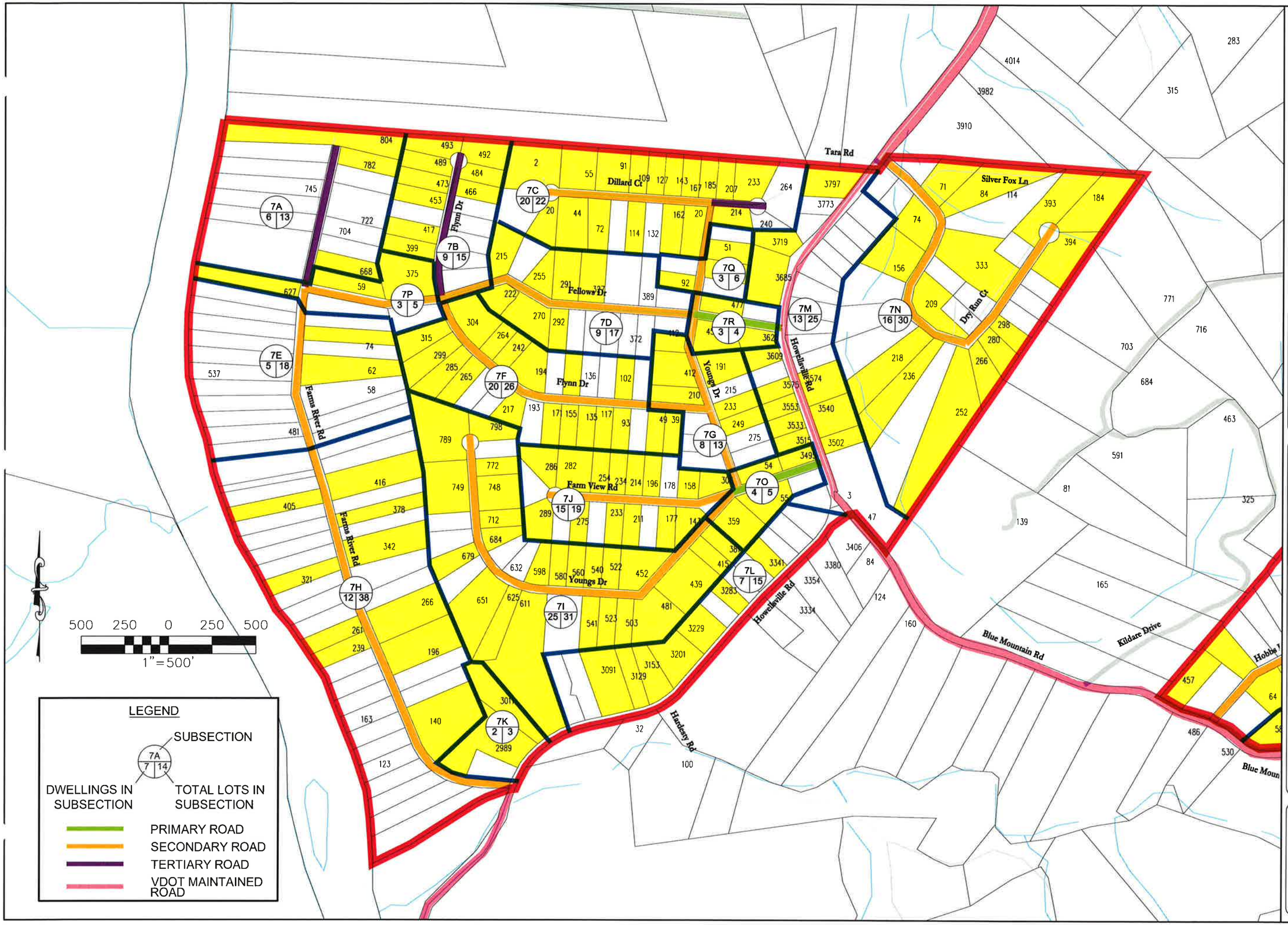
58 Kenmore Street
Harrisonburg, VA 22801
T 540.434.0202
F 540.434.0221




**Patton Harris Rust & Associates**
Engineers. Surveyors. Planners. Landscape Architects.

PHR+A
A Pennoni Company

58 Kenmore Street
Harrisonburg, VA 22801
T 540.434.0202
F 540.434.0221

DATE: AUG., 2011
REVISED SEPT. 5, 2012

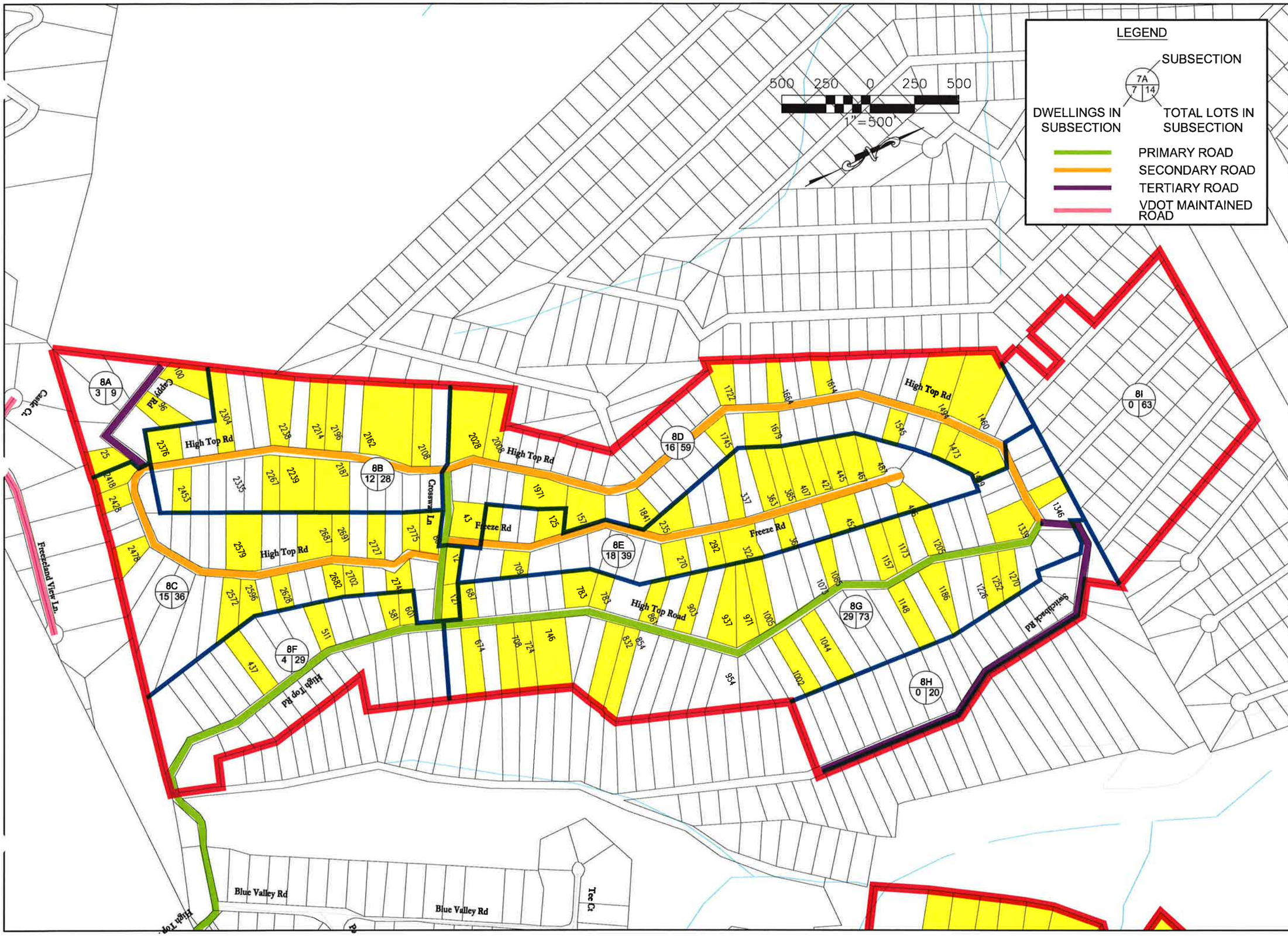
PHR+A # 12972-2-0

SCALE: AS SHOWN

SHENANDOAH FARMS

FIGURE 7

P:\Project\12972 shenandoah farms\2-0\Engr\Plans\C100SUR-2007-Road sections.dwg, 7, 9/5/2012 9:44:55 AM, WNC Canon Copier-Color.pc3

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Engineers. Surveyors. Planners. Landscape Architects.

PHR+A A Pennoni Company
58 Kenmore Street
Harrisonburg, VA 22801
T 540.434.0202
F 540.434.0221

DATE: AUG., 2011
REVISED SEPT. 5, 2012

PHR+A # 12972-2-0

SCALE: AS SHOWN

SHENANDOAH FARMS

FIGURE 8

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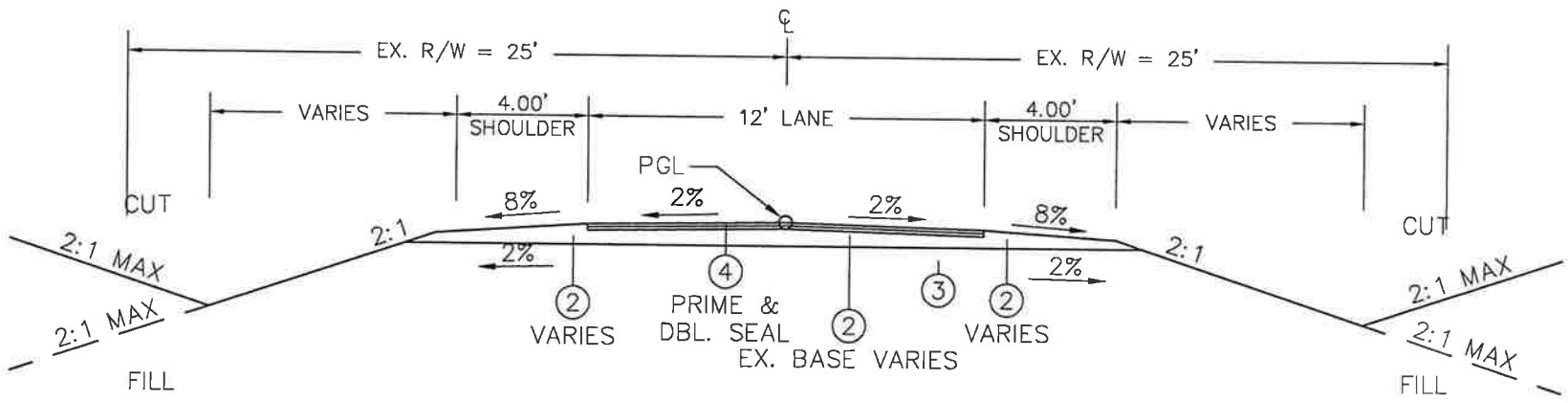
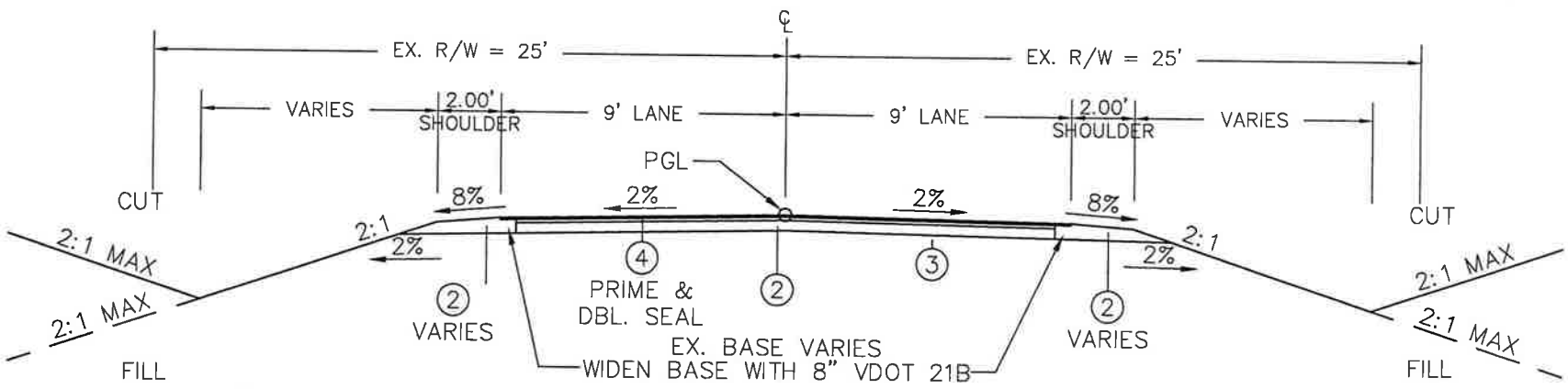



## SHENANDOAH FARMS TYPICAL ROAD SECTION

### FUNCTIONAL CLASSIFICATION A (110 TRIPS OR LESS)

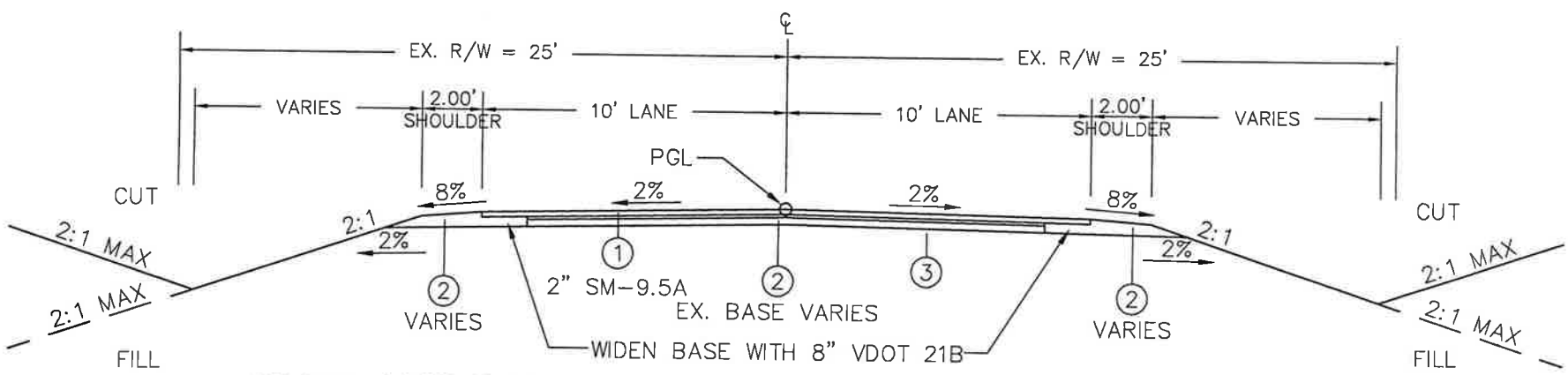
N.T.S.




## SHENANDOAH FARMS TYPICAL ROAD SECTION

### FUNCTIONAL CLASSIFICATION B (111 TO 500 TRIPS)

N.T.S.




## SHENANDOAH FARMS TYPICAL ROAD SECTION

### FUNCTIONAL CLASSIFICATION C (GREATER THAN 500 TRIPS)

N.T.S.

LEGEND:

1. SM-9.5A SURFACE ASPHALT, 2"
2. VDOT-21B AGGREGATE, 8" MIN.
3. WELL COMPACTED SUBGRADE
4. PRIME & DBL. SEAL

NOTES:

1. DRAINAGE DITCHES SHALL BE A MINIMUM OF 12" DEEP.
2. PAVEMENT DESIGN BASED UPON A MINIMUM CBR VALUE OF 6.

REVISED 05-14-12

| FIGURE 9 | SHENANDOAH FARMS ROAD SECTIONS | DATE: AUG., 2011<br>PHR+A # 12972-2-0<br>SCALE: AS SHOWN | Patton Harris Rust & Associates<br>Engineers. Surveyors. Planners. Landscape Architects.<br>PHR+A A Pennoni Company<br>58 Kenmore Street<br>Harrisonburg, VA 22801<br>T 540.434.0202<br>F 540.434.0221 |
|---|---|---|---|

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# APPENDIX C

## Resident Roadway Survey and Evaluation Questionnaire

# COUNTY OF WARREN

**Shenandoah Farms Sanitary District Office**
**126 East Second Street**
**Front Royal, Virginia 22630**
**Phone: (540) 636-3783**
**FAX: (540) 636-3517**
**Email: cfisher@warrencountyva.net**

***Christopher G. Fisher***
**Sanitary District Manager**

**BOARD OF SUPERVISORS**

*****

CHAIRMAN
Archie A. Fox
Fork District

VICE-CHAIRMAN
Glenn L. White
North River District

Tony F. Carter
Happy Creek District

Linda P. Glavis
South River District

Richard H. Traczyk
Shenandoah District

*****

Douglas P. Stanley
County Administrator

August 15, 2011

Dear Shenandoah Farms Property Owner,

Warren County has contracted with Patton Harris Rust and Associates (PHRA) to perform a road and drainage study in the Shenandoah Farms Sanitary District in Warren County. The end result of this study will be a defined plan for road improvements such as upgrades to the drainage system (pipes and ditches), road widening and reconstruction, and ultimately pavement of roads with high traffic volumes. The study will encompass all 43 miles of roads in the system. Once the study is completed, there will be a blueprint in place for future projects.

The initial phase was inspection of the existing road system. All of the roads were measured for lengths and widths, existing roadway and driveway pipes were measured and logged as to their size and location, and their condition was noted. Locations where pipes are needed were noted, and general notes were taken about issues that need to be addressed.

The design of the improved drainage system will address issues by determining the proper size and location of pipes and ditches to handle not only the water on the roads but the areas upstream or uphill that flow to those locations while taking into consideration the downstream effects. The designs of the roads will be based on traffic volume; the number of homes each road serves, and traffic patterns. PHRA will also consider potential new development and determine the number of undeveloped lots to account for potential future traffic volumes.

Since you own property or live in the Sanitary District and drive the roads regularly, PHRA would like your input. Please take time to read over and complete the enclosed questionnaire. It will be helpful in determining the roads you typically use in relation to where you live. Also it is an opportunity for you to provide information about road and drainage deficiencies or issues that affect you in your area of Shenandoah Farms. Please return the questionnaires by Tuesday September 6th, by mail to 126 East Second Street in Front Royal, VA 22630, by fax to (540) 636-3517 or by email at cfisher@warrencountyva.net. In addition a public meeting will be held at the Warren County Government Center on Wednesday, September 7th at 7:00 PM to discuss the study; you can bring your questionnaires with you if you chose to attend.

Sincerely,

Christopher G. Fisher
Shenandoah Farms Sanitary District Manger

***Front Royal-Warren County***
***Rivers of Opportunity-Mountains of Success***

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name _____
Address _____
_____
E-Mail _____

What is the name of the roadway your property is located on? _____

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition | | | | |
|---|---|---|---|---|---|---|
| | | Poor | | Fair | | Good |
| (1) | _____ | 1 | 2 | 3 | 4 | 5 |
| (2) | _____ | 1 | 2 | 3 | 4 | 5 |
| (3) | _____ | 1 | 2 | 3 | 4 | 5 |
| (4) | _____ | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

_____
_____

What, in your opinion, are the most needed improvements to the roadway that serves your property?

_____
_____

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

_____
_____

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

_____
_____
_____
_____

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Shenandoah Farms
Sanitary District

# Frequently Asked Questions in Shenandoah Farms

***By Sanitary District Manager Chris Fisher***

1. **How do I get in touch with the Sanitary District Manager?**
   The Sanitary District Office is located in a house on 126 East 2nd Street in Front Royal, behind Warren County Government Center and Sherwin Williams. The phone number to the office is (540) 636-3783. The email address is cfisher@warrencountyva.net . Voicemail and email are monitored even when I am out of the office. In the case of an emergency call the Warren County Sheriff's Department at (540) 635-4128.

2. **What is the Sanitary District Manager responsible for?**
   Warren County has a contract with the POSF to manage the maintenance and construction on the Sanitary District Road and Drainage system and related rights of way in the Warren County portion of Shenandoah Farms. In addition to the roads the County will maintain the dams at the lake of the Clouds and Spring Lake.

   My responsibilities include but are not limited to:
   - Developing and setting up contracts for work that needs to be performed on the road system such as road maintenance, snow removal, survey contracts etc. Also developing bid packets and meeting with potential bidders to answer questions and concerns.
   - Determining the maintenance needs by developing maps and lists of roads that need attention so contractors have a clearly mapped out plan of action when they arrive. Due to the fact contracts are based on hourly rates it is critical to keep things moving and cut down on wasted time.
   - Inspecting and monitoring the work of contractors for efficiency and quality of work.
   - Developing annual budgets based on need, paying bills and developing and maintaining spreadsheets to track expenditures by type of expense and by road.
   - Respond to resident requests and concerns by email, phone or personal visit. Keeping residents and county officials informed of operations through notifications on the website, emails, and reports to the Warren County Board of Supervisors and the POSF.
   - Monitor the dams at Lake of the Clouds and Spring Lake; perform periodic inspections per the requirements of the Virginia Department of Conservation and Recreation (DCR).
   - Research products, develop accounts with suppliers and schedule deliveries of needed materials.
   - Performing minor road maintenance operations in the field and working with contractors when help is needed.
   - Performing snow removal operations with county equipment while working with and monitoring the work of contract snow removal. Spreading abrasive stone on icy portions of the roadway.
   - Maintaining of county tools and equipment.
   - Driving roads, monitoring damage and scheduling needed repairs during and after inclement weather events such as flooding, or snow and Ice.

3. **Where can I find out what is going on with the roads?**
   There are several ways you can stay informed. On the Warren County Website www.warrencountyva.net there is a page for the Sanitary District located under the "departments" tab. There will be information posted on this page as well as under notices/comments section. Emails updating will also be sent to those who have shared their email address with me.

4. **What can be done about the dust?**
   With the drier weather that comes in the summer and fall, dust on the roads in the farms is an issue for many of the residents. I have researched options for dust control. The only practical method is through the application of liquid or flake calcium chloride. This is a chemical that absorbs moisture from the air and bonds it to the road. This is what VDOT uses in some locations on their roads. The cost however is more than the Sanitary District budget will allow; also it works hold moisture through the winter too, causing soft muddy roads. I have also heard concerns from residents about the use of chemicals on the roads due to the density and proximity of well to the roads and possible groundwater contamination.

5. **What causes the washboard roads?**
   The following two reasons are the most common **lack of moisture** -- Washboard roads are particularly prevalent when weather conditions are dry. Frequent rainfall reduces the chances of wash boarding. **Traffic/Speed** -- Hard acceleration or braking can accelerate wash boarding, and that helps explain why you'll see it frequently at intersections, before and after sharp curves, and on hills.

6. **What can I expect when it snows?**
   I have split Shenandoah Farms up into 5 snow removal routes. A combination of County equipment and contract equipment will be utilized to remove snow and treat icy spots with abrasive materials. Salt cannot be used on gravel/dirt roads due to the fact it retains moisture and causes the roads to get soft and muddy.

7. **Can speed limits be posted?**
   15 MPH advisory speed limit signs have been placed throughout the Sanitary District by the POSF. This is not an enforceable speed limit. The only way to legally post enforceable speed limits is to conduct individual traffic engineering studies of each section of roadway. At this point, is much better spent addressing the infrastructure needs of the road system. If reckless driving is observed it is advisable to contact the Warren County Sheriff's Department at (540) 635-4128.

8. **Can more signs be put up in Shenandoah Farms?**
   Road signs that mark the road names at intersections are the responsibility of Warren County not only in Shenandoah Farms but throughout the county. If you notice road signs down or missing please contact the County Administrator's Office at (540) 636-4600 or the Sanitary District Manager and it can be passed along. Part of the road and drainage study will be to determine the need and location of regulatory road signs such as stop and yield signs.

9. **When will my road be tar and chipped or paved?**
   The Road and Drainage study will determine the ultimate design of all of the roads in the Sanitary District. For many roads that design will be for a paved road. There will have to be a good bit of preparation to the roads prior to paving; proper drainage (pipes and ditches), excavation and widening, and the construction of a proper road base will have to be in place first. To just tar and chip over an existing road will create future maintenance problems and costs when they deteriorate because they don't have good drainage or a good base. Drummer Hill Road and Mountain Lake Drive will both need costly repairs this year due to deteriorated tar and chip. With the high cost of oil, asphalt (tar) also goes up, that makes it more critical to get it right the first time. It will take time and money to get to the point where roads are ready for pavement but the road and drainage study will provide a blueprint for this work. You can expect drainage improvements (new pipes, ditches etc.) to be some of the first improvements you will see.

**SHENANDOAH FARMS**

**ROADWAY SURVEY RESULTS**

**(Based upon 152 of 1,000 Survey Questionnaires Returned or ± 15 % of Total Sent)**

| | Live On | Condition | | | | | Most Needed Improvements | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poor ← | | | | → Good | Dust Control | Road Surface/ Potholes, | Site Distance Brush & Tree Canopy | Signage | Culvert Pipes Lack of and Existing Non |
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Barbara Drive | | | | | | | | | | | |
| Benson Court | | | | | | | | | | | |
| Blue Mountain Road | 3 | | | | 1 | 2 | | 1 | 2 | | 1 |
| Bobbie Court | | | | | | | | | | | |
| Bragg Drive | 2 | 1 | | 1 | | | | 2 | | 1 | |
| P[illegible]r Lane | | | | | | | | | | | |
| Brook View Road | 1 | | | 1 | | | 1 | | | | |
| Brookview Lane | | | | | | | | | | | |
| Cappy Road | | | | | | | | | | | |
| Cindy's Way | 1 | 1 | | | | | | 1 | | | 1 |
| Cliffside Road | 2 | 1 | | | 1 | | | 2 | 1 | | |
| Copenhaver Road | | | | | | | | | | | |
| Crossway Lane | 2 | | 1 | 1 | | | | 1 | | | 1 |
| Dillard Court | 3 | 1 | 2 | | | | 1 | 3 | | | 2 |
| Dogwood Farm Road | 1 | | 1 | | | | | | | 1 | 1 |
| Donna Court | | | | | | | | | | | |
| D[illegible]mmer Hill Road | 3 | 1 | 1 | 1 | | | 1 | 3 | 2 | | 1 |
| Dry Run Court | 2 | | | 1 | 1 | | | 2 | | | 2 |

| | Live On | Condition: Poor ← 1 | 2 | 3 | 4 | → Good 5 | Most Needed Improvements: Dust 1 | Road Surface/ Potholes 2 | Site Distance 3 | Signage 4 | Culvert Pipe 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Eagles Crag Road | | | | | | | | | | | |
| Ehlers Drive | | | | | | | | | | | |
| Elinore Lane | | | | | | | | | | | |
| Elseas Farm Road | | | | | | | | | | | |
| Farm View Road | 1 | | | 1 | | | | 1 | | | 1 |
| Farms Ridge Road | 2 | 1 | | 1 | | | | 3 | | | 1 |
| Farms River Road | 3 | 1 | | 2 | | | 1 | 3 | | | 2 |
| Farms Riverview Road | | | | | | | | | | | |
| ws Drive | 2 | 1 | | | 1 | | | 2 | | | 2 |
| Fern Court | 2 | 1 | | 1 | | | | 1 | | | 1 |
| Flynn Drive | 1 | | 1 | | | | | 1 | | | |
| Freeze Road | 2 | | 1 | | 1 | | | 2 | | | 2 |
| Gary Lane | 1 | | | 1 | | | | 1 | | | |
| Gary Lane (western section) | | | | | | | | | | | |
| Gayles Lane | | | | | | | | | | | |
| Goode Drive | 3 | | | 1 | 1 | 1 | | 1 | | | 2 |
| Heavens Tree Trail | | | | | | | | | | | |
| Heim Jones Road | | | | | | | | | | | |
| High Top Road | 13 | 5 | 2 | 6 | | | | 10 | | 2 | 8 |
| bs Knobb Road | 2 | | | 1 | 1 | | | 2 | | | 2 |
| Honey Farm Lane | | | | | | | | | | | |

| | Live On | Condition: Poor ← | | | | → Good | Most Needed Improvements: Dust | Road Surface/ Potholes | Site Distance | Signage | Culvert Pipe |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Honey Farm Road | | | | | | | | | | | |
| Hopkins Bluff Road | | | | | | | | | | | |
| Huck Finn Drive | 1 | | | | | | | 1 | | | |
| Jennings Farm Court | | | | | | | | | | | |
| Joans Quadrangle Road | 3 | 2 | 1 | | | | | 1 | | | 2 |
| Judy Lane | | | | | | | | | | | |
| Kits Court | | | | | | | | | | | |
| Lake Drive | | | | | | | | | | | |
| [illegible] Place | | | | | | | | | | | |
| Lookout Point Way | 2 | | 1 | 1 | | | 1 | 3 | | | 1 |
| Manor Road | 2 | | | | 2 | | 1 | | | | 1 |
| Marino Lane | 1 | | | | | | | 2 | | 2 | |
| Markham Farm Road | | | | | | | | | | | |
| Markham Place | | | | | | | | | | | |
| Martin Farms Road | 2 | | | 1 | 1 | | | 3 | | 1 | |
| McDonalds Farm Road | 5 | 1 | 1 | 2 | 1 | | | 4 | | | 4 |
| McIlee Court | 1 | | | 1 | | | 2 | 1 | | | |
| Mosby Meadow Lane | 2 | 1 | 1 | | | | | 2 | | | 1 |
| Mountain Lake Drive | 5 | 1 | 1 | | 2 | 1 | | | | | |
| [illegible]ntain Laurel Lane | 2 | | 1 | 1 | | | | 3 | | | 2 |
| Myers Drive | | | | | | | | | | | |

| | Live On | Condition | | | | | Most Needed Improvements | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Poor ← | | | | → Good | Dust | Road Surface/ Potholes | Site Distance | Signage | Culvert Pipe |
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Nancy Court | 1 | | | | | 1 | | 1 | | | |
| Old Oregon Road | 1 | | | 1 | | | 1 | 1 | | | |
| Old Oak Road | 3 | | 1 | 2 | | | 1 | 3 | | | 1 |
| Old Linden Road | 2 | | 1 | 1 | | | | 3 | 1 | | 1 |
| Otto Place | | | | | | | | | | | |
| Parker Circle | 1 | | 1 | | | | | 1 | | | |
| Peggys Court | 1 | | | 1 | | | | 1 | | | 1 |
| Pickford Court | 1 | | | 1 | | | | 1 | | | 1 |
| Pine Ridge Drive | 6 | | 2 | 4 | | | | 4 | 1 | | 1 |
| Reid Drive | 2 | | 1 | 1 | | | | 2 | | | 2 |
| Reynolds Drive | | | | | | | | | | | |
| Ridgewood Lane | | | | | | | | | | | |
| Riley Court | 1 | | | 1 | | | | 1 | | | |
| River Overlook Road | 6 | 2 | | 2 | 1 | 1 | | 3 | 3 | 1 | 1 |
| Roaches Run Road | | | | | | | | | | | |
| Scott Farm Road | | | | | | | | | | | |
| Spring Road | 1 | 1 | | | | | | 1 | | | |
| Susans Court | | | | | | | | | | | |
| Thompson Mill Road | 3 | | | 2 | | 1 | 1 | 1 | 3 | | 1 |
| Tomahawk Way | | | | | | | | | | | |

| | Live On | Condition: Poor ← | | | → Good | | Dust | Road Surface/ Potholes | Site Distance | Signage | Culvert Pipe |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 |
| Timber Ridge Road | 1 | | | 1 | | | | | | | 1 |
| Tulip Poplar Drive | 8 | 3 | 2 | 3 | | | 2 | 7 | 3 | 1 | 1 |
| Valley Farms Road | 1 | 1 | | | | | | 1 | | 1 | |
| Vaught Drive | 3 | 1 | 1 | 1 | | | | 3 | 1 | | 2 |
| Venus Branch Road | 1 | | | | 1 | | | 1 | 1 | | |
| Vesey Drive | | | | | | | | | | | |
| Walker Farm Drive | 2 | 1 | | 1 | | | | 1 | | | 2 |
| Wambach Court | 2 | | 1 | | 1 | | | 2 | | 1 | 1 |
| Wells Drive | | | | | | | | | | | |
| .dy Hill Road | 7 | 1 | 2 | 2 | 2 | | | 6 | | 1 | 1 |
| Western Lane | 7 | 3 | | 3 | 1 | | 1 | 7 | 1 | | 1 |
| Yarnell Court | 3 | 1 | | 2 | | | | 2 | 1 | | 1 |
| Young Drive | 7 | | | 6 | | 1 | | 6 | 2 | | 5 |
| | | | | | Total: | | 14 | 121 | 22 | 12 | 65 |

1

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**


Name Michael and Marci Pinion
Address 497 Western Lane
Front Royal VA 22630
E-Mail m1pinion@comcast.net


What is the name of the roadway your property is located on? WESTERN LANE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western Lane | 1 | 2 | 3 | 4 | 5 |
| (2) | Pine Ridge Road | 1 | 2 | 3 | 4 | 5 |
| (3) | Mountain Lake Dr | 1 | 2 | 3 | 4 | 5 |
| (4) | Lake Drive | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Cleaning ditches and cleaning brush away from intersections -

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No X

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Culvert at the end of the driverway at 497 Western has been buried from all the previous grading

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

2

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Dee Schools
Address 467 Freeze Rd
Linden 22642
E-Mail deeschools@comcast.net

What is the name of the roadway your property is located on? Freeze Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Freeze Rd | 1 | 2 | 3 | 4 | 5 |
| (2) | Crossway | 1 | 2 | 3 | 4 | 5 |
| (3) | High Top | 1 | 2 | 3 | 4 | 5 |
| (4) | McDonalds Farm | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

Tulip Poplar 4 Reynolds 4
Elsie's Farm 3

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Proper culverts, ditch lines, drainage, Culverts @ new houses. Not required or not of proper size or placement

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Wash out on the back side of High Top. Pickford Ct.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Corner of High Top & Crossway 1st intersection. Corner of Crossway & Freeze (1 non working culvert & one that clogs) 1/2 way down Freeze (culvert clogs - drains down driveway) 447 & 467 Freeze - (culvert pipe too small - put in by builder - not adaquate size & placement)

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

3

837 2926

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name: Dave Fairchild
Address: 110 Nancy Ct
Front Royal VA 22630
E-Mail: mtnhideout@hotmail.com

What is the name of the roadway your property is located on? Nancy Ct

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Manor Rd. | 1 | 2 | 3 | (4) | 5 |
| (2) | Ridge wood | 1 | 2 | (3) | 4 | 5 |
| (3) | Vesey | (1) | 2 | 3 | 4 | 5 |
| (4) | Nancy Ct | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
[VESEY!] It needs proper pipes and ditches. It also needs to be angled properly so wash boards & washouts do not occur. You could save a lot of money long term by paving it or tar/chip!

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Corner of Nancy Ct and Vesey
Corner of Ridgewood and Vesey ← this one is very bad

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

4

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**


Name Matt Disler
Address 109 Yarnell Ct.
Front Royal VA 22630
E-Mail MRDisler38@yahoo.com


What is the name of the roadway your property is located on? Yarnell Ct.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak | 1 | 2 | 3 | (4) | 5 |
| (2) | Manor | 1 | 2 | 3 | 4 | (5) |
| (3) | Yarnell | 1 | 2 | (3) | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
The entrance from Old Oak is a steep hill, The hill needs to be paved.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Drainage is a huge problem. We definitely need updated and functioning drainage culverts, paving of Old Oak, Venus Branch, + paving of any steep hills.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
I diligently keep the drainage ditch in front of my neighbors house clean, + down to the house under construction, despite this in a heavy thunderstorm the hill on Yarnell washes out. It was great for 2 days last month after the grading, + new gravel was put down, however the first thunderstorm caused significant wash out

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

5

# Shenandoah Farms Sanitary District
## Resident Roadway Survey and Evaluation Questionnaire
August 4, 2011

Name Chris Kaczmarek
Address 654 Thompson Mill Rd.
Front Royal, VA 22630
E-Mail ckaczmarek@gmail.com

What is the name of the roadway your property is located on? Thompson Mill Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak Ln. | 1 | 2 | (3) | 4 | 5 |
| (2) | Manor Rd. | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable:

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Cut back brush + trees, drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Old Oak Ln pot holes

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Most of the drainage issues occurred as or while the Shanandoah River was cresting. Other than these extreme conditions no.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

6

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name DONALD + KATHIE HARDY
Address 6296 HOWELLSVILLE RD.
F. R, VA.
E-Mail

What is the name of the roadway your property is located on? SAA

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Howellsville Rd. | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
None, we live on 638 and have no need to use the roads in S.F. We think those of us who live on the hardsurface road should not have to pay as much is any of the San. Dist. fee.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

7

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Michael Pinion
Address 382 Pine Ridge Rd
Front Royal, VA 22630
E-Mail mitchellamber@gmail.com

What is the name of the roadway your property is located on? Pine Ridge Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Pine Ridge Dr. | 1 | 2 | (3) | 4 | 5 |
| (2) | Mountain Lake Dr. | 1 | (2) | 3 | 4 | 5 |
| (3) | Western Lane | 1 | 2 | (3) | 4 | 5 |
| (4) | Lake Drive | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
The problem with the tar and chip on Mountain Lake needs to be fixed.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Drainage issue at bottom of Western Lane run (100-200 block) Vessey Drive has

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

(8)

Name: Eric J Suess
Address: 517 Joans Quadrangle Rd.
Front Royal VA 22630
E-Mail: ericsuess@hotmail.com

What is the name of the roadway your property is located on? Joans Quadrangle RD.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Blue Mtn. | 1 | 2 | 3 | 4 | (5) |
| (2) | Huck Finn | 1 | (2) | 3 | 4 | 5 |
| (3) | Joans Quadrangle | 1 | (2) | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Huck Finn gets alot of traffic and due to its steep inclines, washes out frequently. Joans Quadrangle is effected by washouts also. A drainage system is needed to prevent deep gulleys from forming at the edge of driveways. It's a constant issue.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

None Noted.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

See above.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

9

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Chris Kaczmarek
Address 654 Thompson Mill Rd.
Front Royal, VA 22630
E-Mail ckaczmarek@gmail.com

What is the name of the roadway your property is located on? Thompson Mill Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak Ln. | 1 | 2 | (3) | 4 | 5 |
| (2) | Manor Rd. | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Cut back brush + trees, drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Old Oak Ln pot holes

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Most of the drainage issues occurred as or while the Shenandoah River was cresting. Other than these extreme conditions no.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

August 4, 2011

(10)

Name MATT PEARSON
Address 1550 DRUMMER HILL RD
F-R, VA 22630
E-Mail matt_p207@yahoo.com

What is the name of the roadway your property is located on? DRUMMER HILL RD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | DRUMMER HILL RD | 1 | 2 | (3) | 4 | 5 |
| (2) | VENUS BRANCH RD | 1 | 2 | (3) | 4 | 5 |
| (3) | OLD OAK RD | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
PINE RIDGE; GOODE TO LAKE OF THE CLOUDS
MT LAKE

What, in your opinion, are the most needed improvements to the roadway that serves your property?
TAR & CHIP WOULD BE FIRST; IF NOT STONE DUST ON HILLS WOULD BE NICE; CUT BACK BRUSH / TREES

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
NARROW ROADS - VENUS BRANCH BETWEEN DRUMMER HILL & SPRING LAKE; VENUS BRANCH BY LOGGING OPERATION

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐ MAYBE ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
DRIVEWAY PIPES - NEED TO ENFORCE IN SAME WAY THAT PROP OWNER'S KEEP PIPES OPEN

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

(11)

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Michael Huff
Address 116 Lookout Point Way
Linden, VA 22642
E-Mail mikeyhuff@gmail.com

What is the name of the roadway your property is located on? Lookout Point way

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Tulip Poplar | (1) | 2 | 3 | 4 | 5 |
| (2) | Meadowlands Farm | 1 | (2) | 3 | 4 | 5 |
| (3) | Cliffside | 1 | 2 | (3) | 4 | 5 |
| (4) | Lookout Point way | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.
Tomahawk is always bad as you enter Green land.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Tulip Poplar needs to be widened. ~~If~~ TP is also very rough. It never stays in good shape long but has improved.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Tomahawk as you enter Green land (potholes)
Tulip poplar & old Linden - TP too narrow

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
~~Yes~~ All the water from the subdivision drains between my house & my neighbors. It continues to erode every time. I also end up with a driveway full of gravel every time it rains

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

(12)

Name Maria G Covarrubias
Address 244 Meilwee Ct Front Royal VA
22630
E-Mail Lilyfa1@msn.com

What is the name of the roadway your property is located on? Meilwee Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Meilwee Ct | 1 | 2 | (3) | 4 | 5 |
| (2) | Old Oak Lane | 1 | (2) | 3 | 4 | 5 |
| (3) | Manor | 1 | 2 | 3 | (4) | 5 |
| (4) | Howellsville Rd | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
lots of pot holes + too much dust

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Continue ~~pay~~ pavement to old Oak, especially improve where pavement meets dirt road

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

13

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name: Alexander Brown
Address: 36 River Overlook Rd.
Front Royal, VA. 22630
E-Mail: abrown042@gmail.com

What is the name of the roadway your property is located on? River Overlook

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | River Overlook | 1 | 2 | 3 | 4 | 5 |
| (2) | Wendy Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | Lake Dr. | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Pavement, Drainage, Potholes (Pavement again for good measure)

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
There needs to be a stop sign at the intersection of Wendy Hill & Lake Dr.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
- Stormwater creates washout conditions in road and yard.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

CHRIS FISHER

(SENT 9-12-2011)

(14)

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name SHARLETTE A. GRUNEWALD
Address C/O MICHAEL SCREETON
3106 GENESSEE AVE FT WAYNE, IN 46809-1730
E-Mail WAYNEDALE@FRONTIER.COM

What is the name of the roadway your property is located on? DRY RUN COURT #9 + #10 LOTS

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | DRY RUN COURT | 1 | 2 | (3) | 4 | 5 |
| (2) | HOWELLSVILLE RD. | 1 | 2 | 3 | (4) | 5 |
| (3) | HAPPY CREEK | 1 | 2 | 3 | (4) | 5 |
| (4) | 6TH STREET FRONT ROYAL | 1 | 2 | 3 | (4) | 5 |

Others, if applicable.

CORRECTIONS

What, in your opinion, are the most needed improvements to the roadway that serves your property?
REMOVAL OF UNDER-ROADWAY CULVERT DRAINING RUN-OFF WATER ACROSS OUR PROPERTY (EROSION)

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
THE HOWELLSVILLE RD NEEDS TO HAVE ITS MANY TIGHT CURVES SLOWLY WIDENED & STRAIGHTENED OUT

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
DURING THE SUMMER OF 2007 BETWEEN MEMORIAL DAY & LABOR DAY, A COMMERCIAL ROAD CREW INSTALLED (ILLEGALLY - WITHOUT A BUILDING PERMIT) A NEW DRAINAGE CULVERT UNDER DRY RUN COURT. THEY THEN EXCAVATED SOME 25-30' OF ROADWAY SHOULDER ROCK (SOLID) & DUMPED THEIR PROPERTY RUNOFF WATER ONTO MY PROPERTY. THE NEW WATER ERODED OUR ENTIRE DRIVEWAY DOWN TO THE CREEKBED.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Michael Screeton
FOR/ SHARLETTE GRUNEWALD

CHRIS, I BOUGHT THIS LAND BACK IN THE 1970'S WHEN THE SIGNS ON THE GATE WERE COME OUT, & I WORE ABOUT HOW OLD THEY?

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

15

Name Jesse Waltman
Address 521 Tulip Poplar Dr
Linden, Va 22642
E-Mail

What is the name of the roadway your property is located on? Tulip Poplar

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (2) | Old Linden | 1 | 2 | 3 | 4 | 5 |
| (3) | Tomahawk way | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

- graded more often, the hill is especially bad
- Stop Sign or mirror needed at intersection of Tulip Poplar + MacDonald farm

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

- large holes by mailboxes on Tomahawk way.
- drainage issues on all the roads

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

- storm water washes our driveway out everytime it rains.
- drainage problem on Tomahawk right before May Apple.
- pot holes on second half of Tomahawk

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

16

Name JON STILLMAN
Address 394 DRY RUN CT
FRONT ROYAL VA 22630
E-Mail LILBIBER@AOL.COM

What is the name of the roadway your property is located on? DRY RUN CT

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | DRY RUN CT | 1 | 2 | 3 | (4) | 5 |
| (2) | HOWELLSVILLE RD | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
DRAINAGE & GRADING

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
RAINWATER RUNOFF FROM HOWELLSVILLE RD RUNS DOWN DRY RUN CT. TO DRY RUN WASHES OUT OUR CREEK CROSSING

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

(17)

Shenandoah Farms Sanitary District
Resident Roadway Survey and Evaluation Questionnaire
August 4, 2011

Name Wayne House
Address 571 Vaught Dr.

E-Mail whouse@hbsgc.com

What is the name of the roadway your property is located on? Vaught Dr.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Vaught Dr. | 1 | 2 | (3) | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Asphalt.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
gravel keeps filling my ditch and drive way pipe once pipe is stopped up, road washes out.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

(18)

Name Danita Graham
Address 2666 Manor Rd.
F. Royal, VA 22630
E-Mail danita.graham@pfizer.com

What is the name of the roadway your property is located on? Manor Rd / Old Oak Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Manor Road | 1 | 2 | 3 | (4) | 5 |
| (2) | Howellsville Rd. | 1 | 2 | 3 | (4) | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Howellsville & Manor are paved, making it easier to maintain. The flooding on Howellsville is my only concern

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
pot holes on back roads, and bushes around turns makes it dangerous to see oncoming cars. Speeding is a major issue in our neighborhood.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Howellsville & Old Oak

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Thanks! :)

19

Mountain Valley Water
System Feedback Survey and Signature Questionnaire
August 1, 2017

Name: Kathleen Kassel
Address: 93 McDonalds Farm Rd
Linden, VA 22642
Email: kathleen.kassel@1-sc.com

McDonalds Farm Rd

McDonalds Farm Rd
Tulip Poplar Rd
Old Linden Rd
Tomahawk Rd

More regular grading and filling in potholes

Old Linden Rd between Tomahawk + High Top Rd looks like a scene out of Baghdad there are so many pot holes its getting almost impassable

I have lived here for 6 years and never had an issue with washout in my yard but after last winter whoever came in to fix the roads messed up the culverts and now I have huge piles of gravel in my yard from the road and several lines of stormwater coming accross my driveway leaving ruts in it.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

20

Name Heather Pitsenbarger
Address 2028 HighTop Rd
Linden, VA 22642
E-Mail heatherleigh7@yahoo.com

What is the name of the roadway your property is located on? HighTop Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HighTop Rd | 1 | 2 | 3 | 4 | 5 |
| (2) | Crossway | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage, Paving, Guard rails on HighTop 1st hill

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
not proper drainage down crossway to HighTop Rd on near 2028 HighTop Rd

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

(21)

Name TIMOTHY P. MARTIN
Address 831 BRAGG DR / POB 574
FRONT ROYAL VA 22630
E-Mail TIMOTHYPMARTIN2@AOL.COM

What is the name of the roadway your property is located on? BRAGG DRIVE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | BRAGG DR | (1) | 2 | 3 | 4 | 5 |
| (2) | BLUE MOUNTAIN (WEST) | 1 | 2 | 3 | 4 | (5) |
| (3) | BLUE MOUNTAIN (EAST) | (1) | 2 | 3 | 4 | 5 |
| (4) | REYNOLDS | (1) | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
PAVING

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
THE DRAINAGE ON BLUE MOUNTAIN AT THE SWITCHBACKS NEEDS TO BE IMPROVED. DEBRIS WASHES OVER THE ROADWAY.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
AT MOST OF THE SWITCHBACKS. ACTUAL STORM DRAINS ARE REQUIRED IN SOME PLACES, I THINK.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

22

Name SANDRA JAMES BREESE
Address 15376 Greenlawn Way
King George, VA 22485
E-Mail SANDYB44889@gmail.com

What is the name of the roadway your property is located on? ~~BROOK~~ BROOK VIEW RD & GOODE DR. w LAKE VIEW

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

WE HAVE NOT VISITED PROPERTY IN SEVERAL YEARS, BUT PLAN TO VISIT SOON

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

23

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Jamie Wright
Address 162 Dillard ct
Front Royal Va 22630
E-Mail

What is the name of the roadway your property is located on? Dillard ct

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Dillard | 1 | (2) | 3 | 4 | 5 |
| (2) | youngs | 1 | (2) | 3 | 4 | 5 |
| (3) | fellows | 1 | 2 | 3 | 4 | (5) |
| (4) | Howes. | 1 | 2 | 3 | (4) | 5 |

Others. if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
dust, Pot holes, water drainage. every Road in the community Should be paved. we paid fees to cut our drive way in which should have went towards paving our roads.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
fellows turns into a one lane Road and is dangerous when walking or driving on.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
as you make the Right onto youngs the open lot at the Second house drains into My Neighbors & then My yard Causing flash Rivers during heavy rain fall

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

24

* Sorry this is late, we were away – hope it will still be useful

Name Kenneth Rolling
Address 191 Tulip Poplar Dr

E-Mail kennethjfr@yahoo.com

What is the name of the roadway your property is located on? Tulip Poplar Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Macdonald Farm | 1 | 2 | (3) | 4 | 5 |
| (2) | Tulip Poplar | 1 | (2) | 3 | 4 | 5 |
| (3) | Old Linden | 1 | (2) | 3 | 4 | 5 |
| (4) | Tomahawk | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
dust and rain erosion issues, severe potholes – intersection of Tulip Poplar & Macdonald Farm especially

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
~~Need~~ Bumps & potholes on descent of Tulip Poplar from Old Linden to Macdonald Farm

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ] ☆ Biggest issue for our property

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
- 1 culvert runs under Tulip Poplar & into the middle of property at 191 Tulip Poplar causes severe ruts, washout and accumulation of rock & debris
- No culvert at intersection of Tulip Poplar & Macdonald Farm causes road washout which dumps into front yard of 191 Tulip Poplar almost flooded house last year

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

25

Name MR & MRS DONALD L. PARKES
Address 143 FARM VIEW RD
FRONT ROYAL, VA 22630
E-Mail DONELLEN1212@AOL.COM

What is the name of the roadway your property is located on? (1) FARM VIEW RD (2) YOUNGS DRIVE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | FARM VIEW RD | 1 | 2 | (3) | 4 | 5 |
| (2) | YOUNGS DRIVE | 1 | 2 | (3) | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
BETTER DRAINAGE – ESPECIALLY YOUNGS DRIVE –
PAVEMENT WOULD BE NICE ON VERY BUSY YOUNGS DRIVE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
DRAINAGE AT 452 YOUNGS DRIVE FLOODS SEVERAL PROPERTIES.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

26

Name ROSELLE ABREGU
Address 339 GOODE DRIVE
FRONT ROYAL, VA 22630
E-Mail Roselle.ABREGU@gmail.com

What is the name of the roadway your property is located on? _____

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | GOODE DRIVE | 1 | 2 | 3 | 4 | 5 |
| (2) | CINDY'S WAY | 1 | 2 | 3 | 4 | 5 |
| (3) | VAUGHT DRIVE | 1 | 2 | 3 | 4 | 5 |
| (4) | MOUNTAIN LAKE DR | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

N/A

What, in your opinion, are the most needed improvements to the roadway that serves your property?

GOODE DR.: THE CULVERT IN FRONT OF OUR HOUSE IS BENT, CAUSING H2O to FLOOD THE ROAD. OUR HOUSE IS THE LOW POINT + THERE IS RUN-OFF FROM BOTH SIDES. THIS PIPE RUNS FROM OUR yard, PERPINDICULAR + EMPTIES ON THE OTHER SIDE OF THE ROAD. IT IS RUSTY, BENT + CANNOT BE FIXED BY US.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

ALL OF GOODE DRIVE; THERE ARE LARGE CULVERTS @ THE TOP, FEEDING INTO THE SMALLER ONES @ THE BOTTOM OF THE ROAD. DRAINS NEED TO BE DUG ON THE SIDES OF THE ROAD TO EASE THE FLOW OF H2O. DUMPING NEW GRAVEL ON THE ROADS + GRADING STORM AFTER STORM IS A WASTE OF $. THE CAUSE: LAC OF DRAINAGE THIS NEEDS TO BE FIXED.

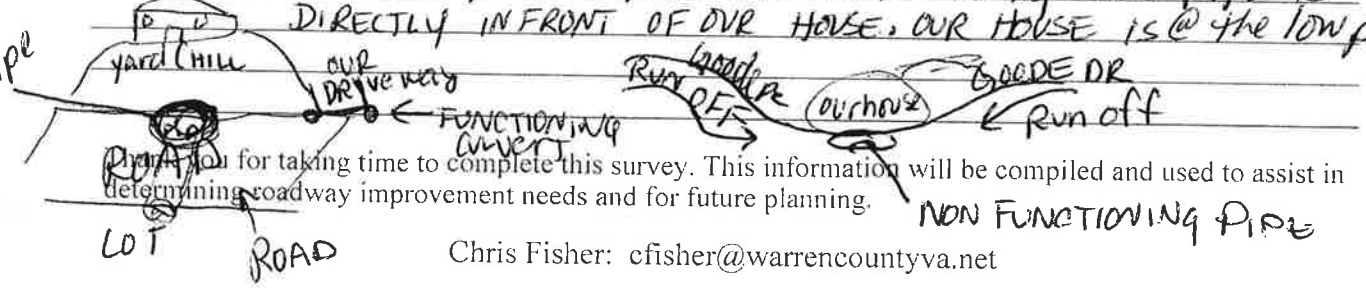
Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

339 GOODE DRIVE

SEE ILLUSTRATION (SORRY SO CRUDE): IT (THE NON FUNCTIONING STORM PIPE IS DIRECTLY IN FRONT OF OUR HOUSE. OUR HOUSE IS @ the low point




Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

27

Name Mel & Cathie Johnson
Address 458 Hobbs Nob Rd
Front Royal VA 22630
E-Mail april20@comcast.net

What is the name of the roadway your property is located on? Hobbs Nob Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Hobbs Nob | 1 | 2 | 3 | (4) | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
runoffs / ditches – stormwater washes gullies in road
drain at pond? narrow road – can not pass safely

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
road hillside – 379 Hobbs Nob washout
roadway 209? " " washout no ditches/culvert

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

28

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name MARY DEPPA
Address 180 YOUNGS DR
FRONT ROYAL
E-Mail mdeppa@hotmail.com

What is the name of the roadway your property is located on?

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | YOUNGS DR ~~HOWELLSVILLE RD~~ | 1 | 2 | 3 | 4 | (5) |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | FELLOWS DR | 1 | 2 | 3 | 4 | (5) |
| (4) | HOWELLSVILLE RD. | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
I'M ONLY 2/10 MILE OFF HOWELLSVILLE & LESS THAT OFF FELLOWS - VERY SHORT GRAVEL PIECE - ALL REASONABLY GOOD

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
REALLY STEEP DROPS - NO SHOULDER ON HOWELLSVILLE ON WEST SIDE OF ROAD JUST NORTH OF FELLOWS

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
AT JIM'S STORE & SOME ON HOWELLSVILLE BUT THEY SEEM TO BE IMMEDIATELY & CONSTANTLY ADDRESSED

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net
540.636.3517

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

29

Name JAMIE NEWTON
Address 405 FARMS RIVER RD
E-Mail jamiekatie.newton@gmail.com

What is the name of the roadway your property is located on? FARMS RIVER RD.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | FARMS RIVER RD | 1 | 2 | 3 | 4 | 5 |
| (2) | FELLOWS | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
drainage + washout. drainage: in front of my property + 2 neighboring lots toward Howellsville. Washout @ intersection of Fellows Rd.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Intersection of Fellows + Flynn has no clear right-of-way, stop or yeild signs. On Fellows between Flynn + Farms River washes out very badly

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
inadequate ditches / lack of piping causes significant pooling

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

30

Name Bobbi Carson
Address 58 Parker Circle
Front Royal VA 22630
E-Mail mex fem gyrl@yahoo.com

What is the name of the roadway your property is located on? Parker Circle / Drummer Hill Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Parker Cir | 1 | (2) | 3 | 4 | 5 |
| (2) | Drummer Hill | (1) | 2 | 3 | 4 | 5 |
| (3) | Mountain Lake | 1 | 2 | (3) | 4 | 5 |
| (4) | Venus Branch | (1) | 2 | 3 | 4 | 5 |

Others, if applicable.
Old Oak is poor as well

What, in your opinion, are the most needed improvements to the roadway that serves your property?
They need to be paved.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
All of Drummer Hill Rd is in bad shape

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
my driveway keep washing out and a section of culvert pipe is missing in Parker Circle

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

31

Name Eka Kapiotis + Kevin Connor
Address 324 River Overlook

E-Mail you have it :)

What is the name of the roadway your property is located on? River Overlook

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition

| | Roadway | Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | River Overlook | 1 | 2 | 3 | 4 | 5 * |
| (2) | Wendy | 1 | 2 | 3 | 4 | 5 |
| (3) | Dogwood Farms | 1 | 2 | 3 | 4 | 5 |
| (4) | Lake Dr | 1 | 2 | 3 | 4 | |

Others, if applicable

* River Overlook - blind curve between 80 + 97

What, in your opinion, are the most needed improvements to the roadway that serves your property?

3 seasons - none. gets muddy w/ rain between our two driveways
winter - better plowing!

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Lake - better upkeep and drainage. Widen @ hill + between Walker Farms + 638. Top of Lake + Donna really needs opening. Blind curve

Have you observed any drainage issues on the roadways that serve your property?

Yes [x] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc

LAKE DR
LAKE Dr
Lake Dr
Lake Dr + Howellsville flood + ice below Lake + Walker Farm

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

32

Name Nicholas & Jennifer Knapek
Address 94 McDonalds Farm Rd
Linden, VA 22642
E-Mail jknapek@yahoo.com

What is the name of the roadway your property is located on? McDonalds Farm Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | McDonalds Farm | 1 | 2 | 3 | 4 | 5 |
| (2) | Tulip poplar | 1 | 2 | 3 | 4 | 5 |
| (3) | Tomahawk | 1 | 2 | 3 | 4 | 5 |
| (4) | Old Linden | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
our culvert is constantly being filled with mud & rocks after even a small storm. Despite digging it out over & over it always fills again & this washes out our driveway entrance

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
widening of tomahawk & addressing large ditch & pothole on tomahawk as well as widening tulip poplar in the winter it is impossible to stop on it & you are unable to see incoming traffic

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
the culverts on tomahawk & mcdonalds farm do not seem work properly

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

33

Name: Don M Perry II
Address: 52 Peggys Ct. Front Royal, Va 22630
E-Mail: dmperry1974@gmail.com

What is the name of the roadway your property is located on? Peggys Ct. and Drummer Hill

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Peggys Ct. | 1 | 2 | (3) | 4 | 5 |
| (2) | Drummer Hill | (1) | 2 | 3 | 4 | 5 |
| (3) | Venus Branch | (1) | 2 | 3 | 4 | 5 |
| (4) | old oak | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Improve road drainage and improve/regrade access to Peggy's Ct from Drummer hill which is currently rough and graded poorly.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Improve road drainage, pave main roads, control amount of pot-holes/washboards, improve safteyof roads during inclement ~~wea~~ weather.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Our small road has no ditches. Water during heavy rain washes out our driveway, floods our neighbors yard, and washes out the access to Peggy's Ct from Drummer hill and makes it vey rough to drive on.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

34

Name Stephanie Shaefer
Address 3420 Gaston Road
Alexandria VA 22302
E-Mail sshaefer2@earthlink.net

What is the name of the roadway your property is located on? _____

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|
| (1) driveway to River View Common Property | 1 | 2 | 3 | 4 | 5 |
| (2) Farms River Rd | 1 | 2 | 3 | 4 | 5 |
| (3) Howellsville Road | 1 | 2 | 3 | 4 | 5 |
| (4) Dismall Hallow Road | 1 | 2 | 3 | 4 | 5 |

At this moment recently new gravel

Others, if applicable.

_____

_____

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Farms River Rd. gravel - Alot of traffic - Some cars speed driveway to River View - some drive large trucks with Big Wheels that damage gravel & grass area

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
~~Between~~ Farms River road gravel potholes especially after rain & snow. Upkeep is ongoing & difficult

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
When River rises on homeowners property River View removes gravel. Last time River ~~[illegible]~~ flood alot of debris & large loss were left on Homeowners property but removed Debris - pushed to side for traffic access However large loss & debris & trash were pushed onto my property & I had to pay for removal - How can I prevent this in future & how can I be reimbursed?

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

35

Name H. Lynn Koch cell 303 801 9555
Address 5580 W. Hinsdale Ave. (H) 303 979 6525
Littleton, CO. 80128
E-Mail lynnkoch5580@yahoo.com

What is the name of the roadway your property is located on? Lot 378 Shen Farms MT Lake sec Part 4

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | not passable | (1) | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
The road that fronts my property was impossible to get up - not paved or maintained, when I was last there. The property can not even be used or sold as there is NO ACCESS.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Please take time to look at this property and advise me about what can and will be done.
Thank you.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

36

Name VALERIE HIGGINSON
Address 2775 HIGH TOP ROAD
LINDEN, VA 22642
E-Mail vhhigg9927@gmail.com

What is the name of the roadway your property is located on? _____

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HIGH TOP ROAD/CROSSWAY LANE | (1) | 2 | 3 | 4 | 5 |
| (2) | CROSSWAY LANE | 1 | (2) | 3 | 4 | 5 |
| (3) | HIGH TOP ROAD/FREEZELAND RD. | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
WIDENING + IMPROVED DRAINAGE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
CROSSWAY LANE = IMPROVED DRAINAGE
HIGH TOP ROAD/FREEZELAND ROAD = NOT MUCH IMPROVEMENT NEEDED

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
HIGH TOP RD FROM INTERSECTION AT CROSSWAY LANE — STORMWATER OR HEAVY RAINS CROSSING THE ROADWAY + CREATING A WASHOUT CONDITION.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

37

Name CARROLL FORR
Address 63 MT. Laurel La.
Front Royal, Va. 22630
E-Mail

What is the name of the roadway your property is located on? MT. Laurel La.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | MT. Laurel La. | 1 | 2 | 3 | 4 | 5 |
| (2) | Mosby Meadow | 1 | 2 | 3 | 4 | 5 |
| (3) | Old OAK | 1 | 2 | 3 | 4 | 5 |
| (4) | Manor La. | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Proper Drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Intersection Mosby Meadow & MT. Laurel La
Storm Water Crossing Rdwy. creating Washout Condition
Ditches graded wrong & non functional Storm pipe

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

chemicals on road because of wells + gardens.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

38

Name: Melissa Fritts
Address: 958 Pine Ridge Dr
Front Royal, VA 22630

E-Mail

What is the name of the roadway your property is located on? Pine Ridge Dr

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak | 1 | 2 | 3 | 4 | 5 |
| (2) | Pine Ridge | 1 | 2 | 3 | 4 | 5 |
| (3) | Copenhaver | 1 | 2 | 3 | 4 | 5 |
| (4) | Western | 1 | 2 | 3 | 4 | 5 |
| Others, if applicable. | Brookview | | | | | 5 |

What, in your opinion, are the most needed improvements to the roadway that serves your property?
I do not feel the need for ANY improvements as I prefer the hard to pass roads as it makes people drive slower and keeps out those just wanting to ride around or who have no real reason to be traveling these roads. I have no problem w/ a 4WD being necessary. In fact, I prefer it. I'd like to see tax $ go elsewhere.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒ nothing too serious

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

washouts serve as effective speed bumps ☺

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

I do appreciate snow removal when done ☺

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

39

Name [illegible]
Address [illegible]
[illegible]

E-Mail

What is the name of the roadway your property is located on? Farm Ridge Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farm Ridge Rd | 1 | 2 | 3 | 4 | 5 |
| (2) | Miner Rd | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Increase that Ditching [illegible] to drain [illegible] [illegible] [illegible] [illegible] [illegible] needs to be widened

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

At the Cul-de-sac, the curved part on Farm Ridge Rd Stormwater creates a washout. Also the beginning of Farm Ridge Rd washes out. The road has [illegible] spots [illegible]

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

40

Name Dean F. Tuthill
Address 713 Maiden Choice Ln, #1324
Catonsville, MD 21228
E-Mail

What is the name of the roadway your property is located on? L719 Mt. Lake

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | My wife died last year, and | 1 | 2 | 3 | 4 | 5 |
| (2) | I have not been on our property | 1 | 2 | 3 | 4 | 5 |
| (3) | in about 3 years, so I cannot | 1 | 2 | 3 | 4 | 5 |
| (4) | ~~accurate~~ condition of roads. | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

41

Name Ray Morin
Address 2162 High Top Rd
Linden
E-Mail raymorin@embarqmail.com

Mailing Address
14 Cameroon Dr.
Beaufort, SC.
29907

What is the name of the roadway your property is located on? High Top Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | High Top Rd/Crossway Lane | 1 | 2 | (3) | 4 | 5 |
| (2) | Crossway Lane | (1) | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage to avoid culverts in road and pot holes

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
High Top at Freezeland - Big hole to turn Right onto Freezeland from High Top

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Washouts at corner of High Top and Crossway - Also driveways near Crossway washing out High Top. Pot holes on High Top.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

42

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Russell McBroom
Address 2861 W. Mulberry St.
Baltimore, MD 21223
E-Mail russell.mcbroom@verizon.net

What is the name of the roadway your property is located on? Huck Finn Drive.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Blue Mountain Road | 1 | 2 | 3 | 4 | 5 |
| (2) | Huck Finn Drive | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
More durable surface

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
pot holes and ruts on curves

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

43

Name John/Janet Crowell
Address 7627 Hayfield Rd.
Kingstowne, Va. 22315
E-Mail Eaglescout1@cox.net

What is the name of the roadway your property is located on? 115 → Valley Farms Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Valley Farms Rd | 1 | 2 | 3 | 4 | 5 |
| (2) | Ridge wood Lane | 1 | 2 | 3 | 4 | 5 |
| (3) | Old Oak (Part) | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Paving / Better water drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
① Posted speed limit ② Speed enforcement ③ Eliminate/Contro huge trucks speeding and downshifting=messes up paved and unpaved roads.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.?
Ditches are not kept open/cleaned out for proper drainage.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

44

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Send mail to:
417 Hudson Street
Milton DE 19968

Name: Bill Brooks
Address: 135 Farm Ridge Road
Front Royal, VA 22630
E-Mail: N/A

What is the name of the roadway your property is located on? Farm Ridge Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farm Ridge Road | 1 | 2 | (3) | 4 | 5 |
| (2) | Manor Dr | 1 | 2 | 3 Dirt | (4) | (5) parcel portion only |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
better drainage, smooth out washboard, road erosion, widen the road for 2 cars

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Old Oak and Venus Branch Road to Spring Lake should be paved and widened for safety reasons.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Just below our property stormwater crosses over road & washes out

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

45

Name Crystal Jenkins
Address 43 Crossway Lane
Linden Va. 22642
E-Mail tcdrjenks@centurylink.net

What is the name of the roadway your property is located on? Crossway Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Crossway Lane | 1 | 2 | (3) | 4 | 5 |
| (2) | High Top Rd. | 1 | 2 | (3) | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Road needs to be re-crowned so water can drain properly

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Since the turn around spot at the intersection of Old Linden, → Blue Valley, + High top Rd. has been put in there is no Stop signs →

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐ not lately -

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

46

Name Joe & Laurie SALAMA
Address 4700 MONTGOMERY ST.
ANNANDALE, VA 22003
E-Mail Joseph.Salama@Verizon.net

What is the name of the roadway your property is located on? 262 Wendy Hill Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Wendy Hill Rd. | (1) | 2 | 3 | 4 | 5 |
| (2) | Lake Dr | (1) | 2 | 3 | 4 | 5 |
| (3) | Howellsville Rd. | 1 | 2 | 3 | 4 | (5) |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Widening of Wendy Hill Rd.
paving Lake Dr. widening of Lake Dr.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
blind spot at the intersection of Wendy Hill Rd. and Lake Dr.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

47

Name Chris Fairbanks
Address 503 Old Oregon Rd
Front Royal Va 22630
E-Mail

What is the name of the roadway your property is located on? Old Oregon

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Heavens Tree | 1 | 2 | 3 | 4 | 5 |
| (2) | Timberline | 1 | 2 | 3 | 4 | 5 |
| (3) | Old Oregon | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. 1 Old Oak to 2 Old Oregon. September Have a tree graded very - Nice Job. Hope it sticks

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Ditches lower than the road, Blue Stone and dust Not limestone Grading

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
most driveways on uphill side are not being taken care of by home owner causing alot of road damage.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Just beyond my drive way and before next drive way Mrs. Deckers house there's solid rock in ditch. this keeps the water from flowing I have worked on this it works but is weak

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

48

Name GREGORY ZAFROS
Address 230 S. COURT ST.
LEWISBURG, WV 24901
E-Mail GREG@GREGZAFROS.COM

What is the name of the roadway your property is located on? FARMS RIVER Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | FARMS RIVER Rd | 1 | 2 | (3) | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

N/A

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Because road runs along the river it needs more frequent maintenance.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☑

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

49

Name Anita Vivian Decker
Address 667 Wendy Hill Rd.
Front Royal, Va. 22630
E-Mail DBLDKR@yahoo.com

What is the name of the roadway your property is located on? Wendy Hill Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Wendy Hill Rd | 1 | 2 | 3 | (4) | 5 |
| (2) | Gary Lane | 1 | 2 | 3 | (4) | 5 |
| (3) | Lake Dr. | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
I also use Old Oregon Rd. to Timberline Ridge to Hevens Tree Rd.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
The drop off from my driveway to Wendy Hill Rd.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Potholes that develope on many of the roads.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☑

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

50

Name Robert A Stewart
Address 3710 Daisy Rd
Woodbine, Md 21797
E-Mail TRACTOR3333@verizonnet

What is the name of the roadway your property is located on? Lot 531 Shen Farms Mtn Lake Sect. PT5

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Manor Rd | 1 | 2 | 3 | 4 | (5) |
| (2) | Old Oak Lane | 1 | 2 | 3 | (4) | 5 |
| (3) | Venus Branch Rd | 1 | 2 | (3) | 4 | 5 |
| (4) | Drummer Hill Rd | 1 | (2) | 3 | 4 | 5 |

Others. if applicable
Brier Lane, Reid Dr

What, in your opinion, are the most needed improvements to the roadway that serves your property?
grading, drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
drainage - Drummer Hill rd, Reid Dr

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
There are no houses close to property
stormwater goes down Rd & across Rd washing it out.
Thank You Very Much!

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

51

Name Carole McCann / 1196 old OAK LANE,
Address 3710 DAISY ROAD
WOODBINE, MD 21797
E-Mail carolemccann@hotmail.com

What is the name of the roadway your property is located on? OLD OAK LANE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | OLD OAK LANE | 1 | 2 | (3) | 4 | 5 |
| (2) | MANOR ROAD | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
- NEEDS SMOOTH SURFACE that resists potholes
- CULVERTS and drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
1. DRAINAGE
2. POTHOLES

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
the unpaved part of old oak is more susceptible to washout + drainissues - would like to pave OLD oak at least as far as VENUS BRANCH. I visit my property once a month or more -

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Thank you.

Chris Fisher: cfisher@warrencountyva.net
126 E. Second ST
FRONT ROYAL VA 22630

52

Just for more info

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Karolyn / Terry Weaver
Address 712 Youngs Dr
Front Royal VA 22630
E-Mail Tweaver@RADotCom.com

What is the name of the roadway your property is located on? Youngs Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farm View | 1 | (2) | 3 | 4 | 5 |
| (2) | Young Dr. | 1 | 2 | (3) | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage, more gravel

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Trees Cut Back, need passage for 2 car to pass.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Farm View coming down to Young Dr
Young Dr top of hill and standing water around last curve. near houses #635, 651 -
more culverts or replacements,
the problem area is house # 632 area

Top of hill #439

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

House #415 up hill - road washing out + Farm View #55
Young Dr

RECEIVED 09/09/2011 08:19 01 WARREN COUNTY SFSDM

53

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Robert D. Gibson Sr.
Address 284 Youngs Dr.
Front Royal, Va. 22630
E-Mail Pendd Gib@yahoo.com

What is the name of the roadway your property is located on? Youngs Dr.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | Fair | | | Good |
|---|---|---|---|---|---|---|
| (1) | Farmview Rd - @ Begining | 1 | 2 | 3 | 4 | 5 |
| (2) | Youngs Dr. | 1 | 2 | 3 | 4 | 5 |
| (3) | To House | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

My property + many other neighbor homes had no problem at all until the "grader" comes down and rips into + gouges the property

What, in your opinion, are the most needed improvements to the roadway that serves your property?

To stop trying to make water ways where the road at one time had no problem w/ waterways and is now destroying peoples' property.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

To put back the land + stone, "not Bigger Dr. gravel" + surface Drainage than destroying + creating problems that we never had in the 12 years I've lived here.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☑

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

The begining of Farmview Rd + Youngs Dr. Shenandoah Farms Road Service has destroyed our road into a total disaster. Stop Trying To Re-God + Destroying Property That is the Problem. You Cannot Control Water!!

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

over

Chris Fisher: cfisher@warrencountyva.net

Stop Creating Problems with trying to make a Waterway!!

Name Christian A. Lichvar
Address 143 Dillard Ct.
Front Royal, VA 22630
E-Mail calichvar@comcast.net

54

What is the name of the roadway your property is located on? Dillard Ct.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Dillard Ct. | 1 | 2 | 3 | 4 | 5 |
| (2) | Youngs Dr. | 1 | 2 | 3 | 4 | 5 |
| (3) | Fellows Rd. | 1 | 2 | 3 | 4 | 5 |
| (4) | Howellsville Rd. | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage, my driveway gets damaged to the lack there of.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Grading, gravel, stabilization

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
No drainage ditches, roadway washout due to lack of drain ditches. Roadway washes out creating a "mud pit". Gravel is washed away to include the end of my driveway.

55

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Joe Yasek
309 Tulip Poplar Drive
Linden, VA 22642
540-622-3048
yasek@hotmail.com

What is the name of the roadway your property is located on? TULIP POPLAR DRIVE

Condition of roads used to access your property?

| | Condition |
|---|---|
| (1) Tulip Poplar Drive | 2 |
| (2) Old Linden | 3 |
| (3) Tomahawk (outside the Farms I think) | 3 |

What are the most needed improvements to the roadway that serves your property (Tulip Poplar Drive)?
The hill coming off Old Linden is extremely dangerous when there's a snowpack. It should be paved so it can be treated in the winter. It also needs better drainage. The ditch is becoming exceedingly deep.

What are the most needed improvements to the roads other than the one that serves your property?
The ditch on Tomahawk before it connects with Old Linden is exceedingly deep. I don't think the road is part of the Farms but it is a major access point.

Have you observed any drainage issues on the roadway that serves your property? YES!
MAJOR DAMAGE BEING DONE TO MY PROPERTY!
(1) The storm pipe for my neighbors' driveway, across the road from my driveway, is not large enough to handle big storms and (2) the road is graded incorrectly in front of my house. During heavy storms the ditch across the road will lose containment. Then the water runs across the road and blows out my driveway (which is a steep drop from the road). I have had extensive repairs done in the past couple of years. This spring, my driveway washed out twice. The second time the water dug a gully down the driveway, under my porch, then tore up the yard on the other side of my house. In time my basement will start getting water if this isn't fixed.
(3) Culvert running under the road just up from my driveway is completely filled. It was completely clogged before I moved in. It's probably only an 8" pipe when it should by about 32."
(4) Drainage from another neighbors' driveway sends water across the road and into my yard, rather than into a ditch. This is tearing up my backyard and the road. This problem did not exist before that house was built.

I do not consider the issues with the storm pipes to be my neighbor's problem, but rather Shenandoah Farms and whoever built these houses/driveways. It's lack of planning and foresight. There should have been a drainage study before either of those driveways were put in.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

56

Name CLINT SPITZER
Address 952 HIGH TOP ROAD
LINDEN VA 22642
E-Mail CLINTSPITZER@YAHOO.COM

What is the name of the roadway your property is located on? HIGH TOP ROAD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HIGH TOP ROAD | 1 | 2 | (3) | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
WHEN TRAVELING ON HIGH TOP JUST PAST CROSSWAY LANE THE ROAD DROPS WATER FLOWS DOWN THIS SECTION AND WASHES OUT THE ROAD AT TIMES EVEN WASHING AWAY ALL THE GRAVELS.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
OLD LINDEN ROAD AND TRUP POPLAR ROAD HAVE SECTIONS WHERE THE PUMPS ARE [illegible] WHEN [illegible]

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
SEE ABOVE ALSO IN OTHER SECTIONS PRIOR TO CROSSWAY. RAINWATER FROM THE DRIVEWAYS WASH OUT THE ROAD IN THE PATCHES BENEATH THE DRIVEWAYS

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

57

Name: CURT & BONNIE WRIGHT
Address: 1880 BLUE MOUNTAIN RD.
FRONT ROYAL, VA 22630
E-Mail: bwright56@gmail.com

What is the name of the roadway your property is located on? BLUE MTN. RD.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | BLUE MTN. RD. | 1 | 2 | 3 | 4 | (5) |
| (2) | HOWELLSVILLE RD. | 1 | 2 | 3 | (4) | 5 |
| (3) | MORGAN FORD RD. | 1 | 2 | 3 | (4) | 5 |
| (4) | DISMAL HOLLOW RD | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.
FAIRGROUND RD. – #4
ROCKLAND RD. – #3

What, in your opinion, are the most needed improvements to the roadway that serves your property?
WIDENING, DEFINITELY REFLECTORS WHEN THE WEATHER IS LESS THAN FAVORABLE, DEFINITELY DRAINAGE, REMOVAL OF BRUSH ON SIDES
* SNOW REMOVAL !* SALTING THE ROAD

BLUE MTN. RD

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
BRUSH REMOVAL ON ALL ROADS MENTIONED AS WELL AS REFLECTORS & WIDENING & ~~DRAIN~~ DRAINAGE

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
WE HAVE A MAJOR PROBLEM WITH A LOT OF DEBRIS WASHING DOWN ONTO & INTO ~~OUR~~ PROPERTY/YARD EVERY TIME THERE IS A HEAVY RAIN OR A LOT OF SNOW. WE HAVE ACCUMULATED QUITE A BIT OF GRAVEL INTO OUR YARD AND DRIVEWAY IN THE 4 YEARS WE HAVE BEEN HERE. WASHING

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

THERE IS ALSO A PROBLEM WITH THE GRAVEL ACCUMULATING AND REMAINING ON BLUE MTN. RD. DIRECTLY IN FRONT OF & SEVERAL FEET PAST TO OUR DRIVEWAY WHICH IS ANNOYING

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

58

Name Kelly Langguth + Juan Vogel
Address 1360 Western Lane
Front Royal, VA 22630
E-Mail kmlangguth@gmail.com

What is the name of the roadway your property is located on? Western Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak Lane | 1 | (2) | 3 | 4 | 5 |
| (2) | Western Lane | 1 | 2 | 3 | (4) | 5 |
| (3) | Copenhaven | 1 | 2 | (3) | 4 | 5 |
| (4) | Pine Ridge Drive | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.
Drummer Hill

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Old Oak gets ridges in the road making it hard to go uphill by Western Ln. Also, after you get on from Manor Dr. it gets ridges and is just a mess.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

59

Name LARRY POPPEK
Address 642 VENUS BR RD
FRONT ROYAL VA 22630
E-Mail —

What is the name of the roadway your property is located on? VENUS BRANCH

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | OLD OAK TO | 1 | 2 | 3 | 4 | (5) |
| (2) | VENUS BR. RD | 1 | 2 | 3 | (4) | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. —

What, in your opinion, are the most needed improvements to the roadway that serves your property?
MORE STONE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
VENUS BRANCH, KEEP GRADING & STONE OR TAR & CHIP!

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
NONE

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

60

Name Darryl Meakes
Address 454 Joans Quadrangle Rd
E-Mail darrylmeakes@hotmail.com

What is the name of the roadway your property is located on? Joans Quadrangle

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Huckfinn | 1 | (2) | 3 | 4 | 5 |
| (2) | Shute | 1 | (2) | 3 | 4 | 5 |
| (3) | Lorna | 1 | (2) | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage and driveway culverts. The intersection at the top of Huckfinn has poor drainage, especially at house where Tom Hickey meets the road.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Stormwater crosses road @ 454 Joans Quad Driveway, also crosses at 415 Huckfinn

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

61

Name Michael A Waggle
Address 2607 Jefferson Dr
Alex Va 22303
E-Mail michaelawaggle@yahoo.com

What is the name of the roadway your property is located on? Joans Quadrangle Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Joans Quadrangle Rd | (1) | 2 | 3 | 4 | 5 |
| (2) | Huck Finn Dr | 1 | (2) | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
pavement

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

My property is the only one on Joans Quadrangle that is lower than the roadway therefore the driveway is constantly washing away because the calverts & ditches have been non existant since the 1980's

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

62

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name DAVID WELCH
Address 94 MARINO LANE
FRONT ROYAL, VA. 22630
E-Mail WCHOMES@AOL.COM

What is the name of the roadway your property is located on? MARINO LANE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | LAKE | 1 | 2 | (3) | 4 | 5 |
| (2) | WESTERN | 1 | 2 | (3) | 4 | 5 |
| (3) | PINE | 1 | 2 | 3 | (4) | 5 |
| (4) | WENDY HILL | 1 | 2 | (3) | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
PAVEMENT, RIP-RAP IN DITCHES

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
ZONING TO CRACK DOWN ON JUNK IN YARDS AND ABANDONED CARS

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
CULVERTS GET STOPPED UP AFTER MOST HEAVY RAINS ON LAKE DR.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

63

Name GARY S. ILKO
Address 1072 Western Lane
Front Royal, Va.
E-Mail highoctanestuff@yahoo.com

What is the name of the roadway your property is located on? Western Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western Lane | 1 | 2 | 3 | 4 | 5 |
| (2) | LAKE DRIVE | 1 | 2 | 3 | 4 | 5 |
| (3) | OLD OAK | 1 | 2 | 3 | 4 | 5 |
| (4) | PINE RIDGE | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
(5) MOUNTAIN LAKE 3

What, in your opinion, are the most needed improvements to the roadway that serves your property?
1 DUST CONTROL, GRADING, DRAINAGE, NEEDS PAVEMENT.
2 WHEN DRY, I FEEL DUST IS HEALTH HAZARD - HAPPENS YEAR ROUND

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
1 A-FRAME NEXT TO ME ON HILL NEEDS STORM PIPE, MUD FLOWS ONTO WESTERN AND PUDDLES AT BOTTOM OF MY ASPHALT DRIVE.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
1 WESTERN HAS A DIP BETWEEN MY HOUSE AND OLD OAK LANE THAT KEEPS WASHING OUT, STREAMS RUT ROAD FOR MANY FEET, HAPPENS EVERY HEAVY RAIN.
2 WHY ARE NEW HOUSES PERMITTED TO START WITHOUT STORM PIPE??
3 ROADS ARE NOT SUITABLE FOR SAFE MOTORCYCLE TRAFFIC.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

4 I FEEL THERE IS NEED FOR AN AIR QUALITY TEST TO BE PERFORMED FOR SHORT TERM AND LONG TERM RESPIRATORY HEALTH. HOUSES OFF MAIN ROADS WITHIN 200' [illegible]

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

64

Name Mary K. Flagg
Address 112 Kingsley Rd SE
Vienna Va 22180-6501
E-Mail

What is the name of the roadway your property is located on? Wendy Hill Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Wendy Hill Rd | 1 | 2 | (3) | 4 | 5 |
| (2) | Old Oak Road | 1 | 2 | 3 | (4) | 5 |
| (3) | Dogwood Farms | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Widen all three

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Storm water out of ditch line: Does the contractor have a legal right to block a ditch on Wendy Hill Rd. ~~and force water~~ make cut through part of road right of way and force water onto private property.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

65

Name [illegible]
Address [illegible]
E-Mail [illegible]

What is the name of the roadway your property is located on? [illegible]

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (2) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (3) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (4) | [illegible] | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. [illegible]

What, in your opinion, are the most needed improvements to the roadway that serves your property? [illegible]

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues. [illegible]

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

66

Name David Hower
Address 38 Drummer Hill Rd
Front Royal VA 22630
E-Mail dghower@comcast.net

What is the name of the roadway your property is located on? _____

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Own property on both Mt Lake & Drummer Hill | 1 | 2 | 3 | 4 | (5) |
| (2) | Mt Lake | 1 | 2 | 3 | (4) | 5 |
| (3) | Drummer Hill | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
proper size pipe under Drummer Hill close to intersection with Mt Lake Drive and proper size pipe that is buried on property on other side of road

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
water backs up and crosses Drummer hill rd do to undersized pipe that was put in when built house at intersection. I believe it is only 4" flexable drain pipe that is buried under yard. The pipe under Drummer Hill Rd is larger. It is located about 15 yds from intersection of Mt. Lake Drive

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

67

Name Steve Martin
Address 104 Mountain Laurel Lane
Front Royal, Va. 22630
E-Mail

What is the name of the roadway your property is located on?

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Mountain Laurel | 1 | 2 | 3 | 4 | 5 |
| (2) | Moseby Meadow | 1 | 2 | 3 | 4 | 5 |
| (3) | Old Oak | 1 | 2 | 3 | 4 | 5 |
| (4) | Manor Lane | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Intersection of Mountain Laurel and Moseby Meadow is always washed out

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

68

Name Keith & Nikki Wheeler
Address 1306 Western Lane
Front Royal VA 22630
E-Mail

What is the name of the roadway your property is located on? Western Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western | 1 | 2 | 3 | 4 | 5 |
| (2) | Old Oak | 1 | 2 | 3 | 4 | 5 |
| (3) | Copenhaver | 1 | 2 | 3 | 4 | 5 |
| (4) | Lake | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

Corner (hill) Before Western (1)
Need to cut Road and Do not Put gravel Down this Cause Vehicles to Spin and Dig Ruts.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Western is in good shape need speed Bumps / humps or ditch across Roads except during storms lots of pooling & the ditches don't flow they pool

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

It would be great if all roads were paved & wider you can barely pass two vehicles on Copenhaver

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Between Otto and Old Oak Pooling and racing water cutting ruts in roads

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

69

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name William E. Keys
Address 534 WESTERN LANE
FRONT ROYAL, VA 22630
E-Mail William534@Comcast.net

What is the name of the roadway your property is located on? WESTERN LANE (EAST)

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western | (1) | 2 | 3 | 4 | 5 |
| (2) | Pine Ridge | 1 | 2 | (3) | 4 | 5 |
| (3) | MOUNTAIN LAKE | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
identify lot boundaries + widen roads (leave trees sawed in 2' lengths
Rip up current "BASE" + install compacted (wet) gravel + Roll over
Neighbors will use for heat)

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Pot hole repair + WASH BOARDS, Road BASE on above mentioned Roads

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
2 close by neighbors culverts Are Buried
1 Next door is ditched Before culvert leaving a Ditch in his drive way

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

70

Name Raymond + ELIZABETH ACHEY
Address 110 SPRING HOLLOW Rd
FRONT ROYAL VA 22630
E-Mail LIZZYgayle 711@AOL.COM

What is the name of the roadway your property is located on? SPRING HOLLOW Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | OLD OAK LN | 1 | 2 | 3 | 4 | 5 |
| (2) | OLD OAK LN | 1 | 2 | 3 | 4 | 5 |
| (3) | OLD OAK LN | 1 | 2 | 3 | 4 | 5 |
| (4) | + SPRING HOLLOW Rd | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Paving desperately NEEDED!!

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
All gravel roads NEED PAVING, ASPHALT or BLACKTOP!!!

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
1. SPRING HOLLOW GETS WASHOUT EVERY TIME THERE IS A HEAVY STORM. FROM 110 + LOWER ON THIS STREET. BIG ROCKS END UP ON THE ROAD.
2. OLD OAK GETS WASHOUT AS WELL

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

71

Name David and Elsie Kirk
Address 342 Yarnell Ct
Front Royal, Va 22630
E-Mail none

What is the name of the roadway your property is located on? Yarnell Ct.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Yarnell Ct | 1 | 2 | 3 | 4 | 5 |
| (2) | ridge wood | 1 | 2 | 3 | 4 | 5 |
| (3) | manor | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
drains - clean bush, ditches
widen road

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
widen roads, clean ditches and bush so you can see better Yarnell Ct ridge wood

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
ridgewood water crosses road & drain closed, road washes out around ridgewood

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

72

Name JOHN NEVIN
Address 14009 CASTAWAY DRIVE
ROCKVILLE, MD 20853
E-Mail

What is the name of the roadway your property is located on? RIVER OVERLOOK DR

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | River Overlook | 1 | 2 | 3 | 4 | 5 |
| (2) | Wendy Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | LAKE DRIVE | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
LAKE DRIVE IS WAY TOO STEEP to be PROPERLY MAINTAINED. IT NEEDS MAJOR REENGINEERING

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
LAKE DRIVE

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

73

Name SHARI STARR
Address 1590 OLD OAK lane

E-Mail SStarr@projecthope.org

What is the name of the roadway your property is located on? OLD OAK

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | OLD OAK | 1 | 2 | 3 | 4 | 5 |
| (2) | Yarnell | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Speedbumps OLD OAK - when paved, they Residents will Drive even faster

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Yarnell - pave

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
They ditch & throw gravel on corner of property & when it rains it fills the culvert w/ gravel & mud

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

74

Name Jim & JoAnn Evans
Address 574 Western Lane
Front Royal VA 22630
E-Mail Jim-Evans-etc@Comcast.com

What is the name of the roadway your property is located on? Western Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western Lane | 1 | 2 | (3) | 4 | 5 |
| (2) | Old Oak | (1) | 2 | 3 | 4 | 5 |
| (3) | Lake | (1) | 2 | 3 | 4 | 5 |
| (4) | Manor | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
More gravel frequency or pave
widen

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
widen Old oak to include incline to
western Lane

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

75

Name KARL ANDREW FISCHER
Address 143 CLIFFSIDE ROAD
LINDEN, VIRGINIA 22642
E-Mail minas_morgulus@yahoo.com

What is the name of the roadway your property is located on? CLIFFSIDE ROAD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | CLIFFSIDE ROAD | 1 | 2 | 3 | 4 | 5 |
| (2) | McDONALDS FARM ROAD | 1 | 2 | 3 | 4 | 5 |
| (3) | TULIP POPLAR DRIVE | 1 | 2 | 3 | 4 | 5 |
| (4) | OLD LINDEN ROAD | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
TOMAHAWK WAY 2

What, in your opinion, are the most needed improvements to the roadway that serves your property?
DUE TO TRAFFIC AND NUMBER OF RESIDENTS, ROADS NEED TO BE PAVED.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
PROPER DRAINAGE, PAVING, AND LINE OF SITE CLEARING.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
THE HILLS AT TULIP POPLAR ROAD AND McDONALDS FARM ROAD

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

FARMS ADDRESS -- 270 FELLOWS DRIVE

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

76

Name: Charles & Connie Wibb
Address: 11603 Tyre Street
Upper Marlboro Md 20772
E-Mail: zuckirbemp@AOL.com

What is the name of the roadway your property is located on? Fellows Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Fellows Drive | 1 | 2 | 3 | (4) | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | Farms River Road | 1 | 2 | (3) | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
PAVING

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
DRAINAGE Ditch washed out BETWEEN FLYNN DRIVE AND FARMS RIVER Road. WHERE Road GOES DOWN HILL TO RIVER BOTTOM

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

270 Fellows

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
WASHOUTS ON LOWER END OF MY PROPERTY AND NEIGHBOR ACROSS THE STREET WHEN WE HAVE HEAVY RAINS LIKE THIS Spring.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

77

Name Nancy Viands
Address 3095 Tobacco Rd
Chesapeak Bch Md 20732
E-Mail

What is the name of the roadway your property is located on? L 605 Shen Farms Mt Lake Sec PT 5

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition. Map # 15 E 5 5 605

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

I have not seen my land in 20 yrs. I tryed to get to it 15 yr ago but roads were to bad.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

78

Name Dan & Beverly Johnson
Address 370 Gary Lane
Front Royal, VA 22630
E-Mail hilobwedge@comcast.net

What is the name of the roadway your property is located on? Gary Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Gary Lane | 1 | 2 | (3) | 4 | 5 |
| (2) | Lake Drive | (1) | 2 | 3 | 4 | 5 |
| (3) | Old OAK | (1) | 2 | 3 | 4 | 5 |
| (4) | WESTERN | (1) | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
PAVING

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
LAKE DRIVE desperately needs PAVING + drainage improvements. Old OAK & WESTERN need PAVING.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
STORMWATER OUT OF ditch line, CROSSING ROADWAY CREATING WASHOUTS.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

79

Name SANDRA Maiorana
Address 1130 Pine Ridge Dr. East
Front Royal, Va 22630
E-Mail

What is the name of the roadway your property is located on? Pine Ridge Dr.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | Fair | | Good |
|---|---|---|---|---|---|
| (1) | Pine Ridge to Mtn. lake to Blue Mtn | 1 | (2) | 3 | 4 | 5 |
| (2) | Pine Ridge to Coppenhaver to Oakman Rd to Main | (1) | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

OUT AND OVER Blue Mtn.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Ditchs OR trenchs ON SIDES of ROADS, ROAD Washs out quickly WATER RUNS DOWN DRIVEWAYS ON R Side of RD. AND SOME KIND OF HUMP SO THAT it DOESN'T RUN AWAY FROM DITCHS, SNOW REMOVAL IS SLOW

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Stop SIGNS AT Pine & Coppenhaver Stop AT Mtn. lake & Pine Ridge
But MOST IMPORTANT is Ditchs AND Snow REMOVAL

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

WATER RUN DOWN ACROSS ROAD (NO ditch line at all)

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

80

# Shenandoah Farms Sanitary District
## Resident Roadway Survey and Evaluation Questionnaire
## August 4, 2011

Name [illegible]

Address [illegible]

E-Mail [illegible]

What is the name of the roadway your property is located on? [illegible]

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (2) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (3) | [illegible] | 1 | 2 | 3 | 4 | 5 |
| (4) | [illegible] | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. [illegible]

What, in your opinion, are the most needed improvements to the roadway that serves your property?

[illegible]

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

[illegible]

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

[illegible]

Thank you for taking time to complete this survey. This information will be compiled and used to assist in [illegible] determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Tulip please

(81)

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name VIOLET & HARRY MAUGHAN
Address 284 TULIP POPLAR DR.
LINDEN, VA 22642-
E-Mail LLnedri@yahoo.com

What is the name of the roadway your property is located on? TULIP POPLAR DR.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | TULIP POPLAR DR. | (1) | 2 | 3 | 4 | 5 |
| (2) | OLD LINDEN. Rd. | 1 | (2) | 3 | 4 | 5 |
| (3) | TAMAHAWK DR | (1) | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
TULIP POLAR DR & OLD LINDEN Rd. Both Hills on Road: End of Tulip Poplar & old linden and The Top of, Tulip Poplar Dr.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
TULIP POPLAR DR. HILLS. (2) HILLS

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Top of TULIP POPLAR DR. & OLD LINDEN Rd Both hills on TULIP POPLAR DR. HAVE running water over The Roads (crossing) and some of The home owner DR. WAYS. & Storm Pipes & flooding

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

82

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name DORA M HEYMAN
Address 20 DILLARD CT
FRONT ROYAL VA 22630
E-Mail dmheyman@comcast.net

What is the name of the roadway your property is located on? Dillard Ct

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Dillard Ct | 1 | (2) | 3 | 4 | 5 |
| (2) | Youngs DR | 1 | 2 | (3) | 4 | 5 |
| (3) | Fellows Dr | 1 | 2 | (3) | 4 | 5 |
| (4) | Howellsville | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage - Have lowest lot on road and all water from top of Dillard Ct RUNS Down and into my yard/driveway

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Fellows + Young intersection Drainage at that corner causes major flooding of my property. Have had 3 insurance claims for major flooding

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Non exsistant drain/storm pipe along fellows drive causes all water to flow through several properties before going through my yard to creek bed to River. If there were drainage ditches + pipe on fellows this would eliviate flooding issues.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

I have photos of the April 16th Flood that would provide proof of the major flooding.

83

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Donald + Stacy Mayle
Address 1158 Drummer Hill Rd
Front Royal, VA 22630
E-Mail SMayle1683@centurylink.net

What is the name of the roadway your property is located on? Drummer Hill Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Drummer Hill Rd | 1 | (2) | 3 | 4 | 5 |
| (2) | Mountain Lake | 1 | 2 | 3 | 4 | (5) |
| (3) | Venus Branch | 1 | 2 | (3) | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
grading + gravel, repair potholes on paved road section upgraded drainage culverts. continue paving to Venus Branch

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Stop sign or better visibility at Blue Mountain + Mountain Lake Rds. This is a dangerous intersection

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Heavy rains cause the culverts to be blocked with rocks

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

84

Name Greg Furr
Address 243 Thompson Mill Rd
Front Royal Va 22630
E-Mail inspectorgf@hotmail.com

What is the name of the roadway your property is located on? Thompson Mill

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Thompson Mill | 1 | 2 | 3 | 4 | 5 |
| (2) | Old Oak | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

at the moment but it was just repaired & repairs usually don't last long on the first section of old oak after you come off Chip & tar

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Thompson Mill is in good shape, only improvement would be to keep trees cut back (right now I cut trees myself) Old Oak needs some kind of permanente fix. Repairs made to usually last less than a month before road becomes hazardous to your vehicle

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Can't really comment because I don't really drive any other roads

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Shenandoah Farms Sanitary District
Resident Roadway Survey and Evaluation Questionnaire
August 4, 2011

85

Name: MELISSA CHAPPELL-WHITE
Address: 140 DOGWOOD FARM RD
FRONT ROYAL, VA 22630
e-Mail: mcwh@hotmail.com

What is the name of the roadway your property is located on? Dogwood Farm Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Dogwood Farm | 1 | (2) | 3 | 4 | 5 |
| (2) | Western | 1 | 2 | (3) | 4 | 5 |
| (3) | Lake Drive | (1) | 2 | 3 | 4 | 5 |
| (4) | Old Oak | 1 | 2 | 3 | (4) | 5 |
| | Mtn Lake | | | | | (5) |

Others, if applicable

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Lake Drive would be my highest priority; then next the drainage problems on Dogwood Farm at the bottoms of the two hills where creeks overflow.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues. SPEED IS A GENERAL PROBLEM!
Lake Drive must be made safe for use year-round; needs drainage, resurfacing and some widening of narrowest spots. As it now stands, the road is too dangerous to use in inclement weather (one person was permanently injured because emergency personnel could not get up Lake Drive one winter).

Have you observed any drainage issues on the roadways that serve your property? Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Dogwood Farm Rd. has 2 culverts (or 3) in need of replacement at the two lowest points, where creeks overflow and wash out the road, and it's dangerous at times.
But Lake Drive is worse!

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Great job. Thanks Chris!

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

86

Name Dale Orlowski
Address 146 Lookout Point Way
Linden, VA
E-Mail Mad.Moose.hunter@Hotmail.com

What is the name of the roadway your property is located on? Lookout Point Way

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| #3 (1) | McDonald Farm | 1 | 2 | 3 | 4 | 5 |
| #2 (2) | Tuplip Poplar | 1 | 2 | 3 | 4 | 5 |
| #1 (3) | Tomahawk | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
Tomahawk need the Rocks Removed by the Carpenters that are Placed in the Road not on their Property.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
1st Fix Drainage into my property.
2nd Roads on hills - w/ Drainage #1 - McDonald Farm
#2 Tuplip Poplar

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
On Tuplip Popler. The Grangers have "aquired" more Land by extending their Side Entry - Causing an issue

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Well are property - along w/ the Hills - have a Ditch that was Installed by Builder - the Ditch has eroded & was not built well - & need to be addressed

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

87

Name Zona + Curman Eversole
Address 416 Farms River Rd.
Front Royal VA. 22630
E-Mail

What is the name of the roadway your property is located on? Farms River Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farms River Rd. | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drive way Pipes, Ditch Lines, To prevent Standing water on Drive way And enteran And Road way.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Ditches And gravel.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Water Stands in road in winter Time builds up Ice. You Can't get in And out of your drive way.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

88

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Bruce & Nyra White
Address 86/87 Fern Court
Front Royal, VA 22630
E-Mail bruce.nyra.white@comcast.net

What is the name of the roadway your property is located on? Fern Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Fern Court | 1 | 2 | (3) | 4 | 5 |
| (2) | Drummer Hill Rd | 1 | 2 | 3 | (4) | 5 |
| (3) | Mountain Lake Rd | 1 | 2 | 3 | 4 | (5) |
| (4) | Blue Mountain Rd | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Poor drainage (too much water) from Drummer Hill down to end of Fern Court washes gravel off Fern Court. Culverts needed to prevent washouts of driveways.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Repair pot holes in asphalt on Drummer Hill Rd. from intersection with Mountain Lake Dr. down to Venus Branch

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
See above. Fern Court needs better ditching and culverts at driveways. Chip and tar or asphalt surface on Fern Court would be nice, but may be a lower priority, since there are only five houses on Fern Court

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

89

Name: Mike + EV Demmitt
Address: 765 Timberland Manor Dr
Bentonville, VA 22610
E-Mail: wdc-dba@hotmail.com

What is the name of the roadway your property is located on? Western Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Western Lane | (1) | 2 | 3 | 4 | 5 |
| (2) | Blue Mountain | 1 | 2 | 3 | 4 | (5) |
| (3) | Vaught | 1 | 2 | 3 | 4 | (5) |
| (4) | Pine Ridge | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.
Goode (4)

What, in your opinion, are the most needed improvements to the roadway that serves your property?
trying to go up Western Ln. to Pine Ridge Dr. in winter storms is impossible, people shouldn't be snowed in for 5 days without heat or the ability to leave.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Pretty good except Western - at least the main roads are

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Stormwater washout - it's obvious

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

90

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name James McCullough
Address 293 Tulip Poplar Dr
Linden Va 22642
E-Mail chainsaw81@hotmail.com

What is the name of the roadway your property is located on? Tulip Poplar Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Tulip Poplar Drive | (1) | 2 | 3 | 4 | 5 |
| (2) | Old Linden Road | 1 | (2) | 3 | 4 | 5 |
| (3) | Tomahawk Way | 1 | (2) | 3 | 4 | 5 |
| (4) | Freezeland Road | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
More frequent maintance to road especially hill to Old Linden

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Reflective inserts returned to Freezeland Road

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
In heavy rains the water coming downhill from the road has caused erosion of our yard - landslide in one section.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

91

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name: Nick Lenthe
Address: 62 Tulip Poplar Dr.
Linden, VA. 22642
E-Mail: vancej82@aim.com, nicholas.lenthe@gd-ais.com

What is the name of the roadway your property is located on? Tulip Poplar

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (2) | Tomahawk | 1 | 2 | 3 | 4 | 5 |
| (3) | Old Linden | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

not sure if this is POSF owned

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
I would love for the road to be paved in some way. This is more so for the road dust. It is horrible and I never open my windows. Plus the dust makes everything look dingy + faded including the forest.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
widening at the top of tulip polar between my house and where it meets Old Linden, cut brush back along all roads for visibility

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
- Very deep ditches along Tulip Poplar
- My driveway washes away often due to culvert becoming filled with gravel and rocks and dirt
- washboard effect on all roads is bad most of the time

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

92

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name CARRIE L. STEPHENS
Address 485 PINE RIDGE DRIVE
FRONT ROYAL, VA 22630
E-Mail NA

What is the name of the roadway your property is located on? PINE RIDGE DRIVE

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | BLUE MOUNTAIN | 1 | 2 | 3 | (4) | 5 |
| (2) | MT. LAKE | 1 | 2 | (3) | 4 | 5 |
| (3) | PINE RIDGE | 1 | 2 | (3) | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
PINE RIDGE DR, HEAVLY TRAVELED ROAD, MAJOR COMPLAINT SPEEDING & DUST
SOME RESIDENTS THINK PINE RIDGE IS A MAJOR HIGHWAY, NEEDS PAVED MAIN ROAD TO RESIDENCE OF FARMS

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
MT. LAKE & PINE RIDGE FOR SAFETY ISSUES WITH CHILDREN, & TRYING TO PULL OUT OF RESIDENCE, 15 MILES HR SPEED LIMIT NEEDS TO BE INFORCED.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

93

Name Irvin R. Crabbe, SR
Address 429 Yarnell Court
Front Royal VA 22630
E-Mail

What is the name of the roadway your property is located on? Yarnell Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Yarnell ~~Court~~ Road | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Needs gravel all the way on Yarnell, completely upon the circle & ditch beside Kirk's needs to be filled in or graded down evenly like the other ditches & trees trimmed back.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Ditches & needed gravel & graded & stone like a couple of other roads.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Ditches coming up from the crossroads to our house on Yarnell Ct. & cleaning out drainage ditches & culverts.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

(94)

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name NANCY G. MILLER
Address 235 WALKER FARM RD
Front Royal
~~E-Mail~~

What is the name of the roadway your property is located on? WALKER

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|
| (1) WALKER STEEP HILL | 1 | 2 | 3 | 4 | 5 LEVEL |
| (2) LAKE DR | 1 | 2 | 3 | 4 | 5 |
| (3) | 1 | 2 | 3 | 4 | 5 |
| (4) | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. 16 Vehicles use Walker daily. Nine new houses since 2007!

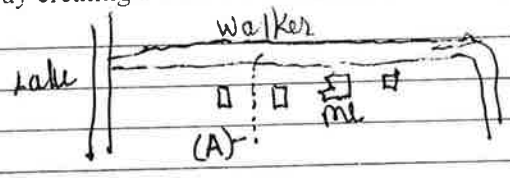
What, in your opinion, are the most needed improvements to the roadway that serves your property?
WIDEN STEEP HILL (WALKER) - but keep dirt as stones give traction. Culvert good but bad run-off onto center, cause ditch in center.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
On level area, culvert used to run under rd. but blocked by builders' trucks in 2007 - Water floods road, needs to go between 2 new houses (A) into gully. Pot holes form on road.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
blocked
Yes Yes




Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

95

Name Mike & Kathy Budnie
Address 1388 Old Oak Lane
Front Royal, VA 22630
E-Mail

What is the name of the roadway your property is located on? Old Oak Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Oak Lane | 1 | 2 | (3) | 4 | 5 |
| (2) | Manor | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Tar & chip or asphalt

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
My culvert is half full of sediment but still drains in moderate rains.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

96

Name Arthur Patton Jr.
Address 1539 Blue Mt Rd.
Front Royal, Va. 22630
E-Mail

What is the name of the roadway your property is located on? Blue Mt. Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Blue Mt (where we Live | 1 | 2 | 3 | 4 | 5 |
| (2) | Howellsville | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Ditches to carry Water Away Not over the Rd

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

97

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Nancy D. Ewing (husband Paul M. Sheehan)
Address 39 Brook View Road
Front Royal, VA 22630
E-Mail pmsheehan@hughes.net

What is the name of the roadway your property is located on? Brook View Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Brook View Road | 1 | 2 | (3) | 4 | 5 |
| (2) | Venus Branch | 1 | 2 | (3) | 4 | 5 |
| (3) | Old Oak Lane | 1 | 2 | (3) | 4 | 5 |
| (4) | Manor Road | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
paving because of dust and car wear

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Paving on Venus Branch and Old Oak Lane ... police presence to catch reckless drivers

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☑

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

98

Name Jerry Labarde
Address 188 Timberline Ridge Road
Front Royal, Va 22630
E-Mail jerrylagarde@yahoo.com

What is the name of the roadway your property is located on? Timberline Ridge Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Heavens Tree Trail | 1 | 2 | 3 | 4 | 5 |
| (2) | Timberline Ridge Road | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Heavens Tree Trail needs to be paved at it's steepest point (near Howesville Road). Also add culvert along Howesville at intersection with Heavens Tree. Water Ponds there.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

1) Culvert underneath Timberline at my driveway continually drains silt into my driveway culvert. My driveway culvert has become almost useless due to this and now floods/erodes my driveway. Ditch needs riprap above culvert and my driveway culvert needs to be washed out.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

2) Previously mentioned culvert @ Howesville needs installation.

99

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Lewis Miller
Address 145 McDonalds Farm Road
Linden, Va 22642
E-Mail LCBRFARM@ntelos.com

What is the name of the roadway your property is located on? McDonalds Farm Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Sun Hawk Way | 1 | 2 | 3 | 4 | 5 |
| (2) | Old Linden | 1 | 2 | 3 | 4 | 5 |
| (3) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (4) | McDonalds Farm Road | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Paved

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Ditches, Pipes

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

All The above
All Roads From Freezeland To my house + Beyond

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

100

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Tiffany Sharp
Address 836 Drummer Hill Rd
Front Royal Va 22630
E-Mail tiffsharp@hotmail.com

What is the name of the roadway your property is located on?

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Mt Lake | 1 | 2 | 3 | 4 | 5 |
| (2) | Drummer Hill Rd | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

Drummer Hill Road is very serious need before someone is seriously injured or killed

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Pot holes, ruts, trees + limbs making it impossible to miss especially on hills have nearly had [redacted]

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Safety issues Mt. Lake during bus times Parking + driving are terrible, Warren Co transportation should be notified + come See Police are needed (4) alot.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Curve Drummer Hill washout where Chipotar meet gravel culvert needs to be covered. worried about vehicle damage also due to poorly maintained road You swerve to miss potholes to encounter trees at hillcrest + are worried about head on collision

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

101

Name JOHN AND CONNIE CERMAK
Address 75 PATTY TRACT LN.
FRONT ROYAL VA. 22630
E-Mail SAILMIRABAR2008@YAHOO.COM

What is the name of the roadway your property is located on? PATTY TRACT LN.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | PATTY TRACT LN | 1 | 2 | 3 | 4 | 5 |
| (2) | HOWELLSVILLE RD. | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
NONE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒ But we've only been here since June 2011

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

102

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name CHRISTOPHER BASHAW
Address 1471 BLUE MOUNTAIN ROAD
FRONT ROYAL, VA 22630
E-Mail PS1BASHAW@HOTMAIL.COM

What is the name of the roadway your property is located on? BLUE MOUNTAIN ROAD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HOWELLSVILLE ROAD | 1 | 2 | 3 | (4) | 5 |
| (2) | BLUE MOUNTAIN ROAD | 1 | 2 | 3 | (4) | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | N/A | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. N/A

What, in your opinion, are the most needed improvements to the roadway that serves your property?
SLOWER SPEED LIMITS, CLEARING THE BRUSH/DEBRIS FROM THE EDGES OF THE ROAD.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
NONE.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
N/A

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

103

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Charles M. Wright Jr.
Primary residence Address 11616 Leehigh Drive
Fairfax VA 22030
E-Mail wriz1@msn.com

What is the name of the roadway your property is located on? Hausellville Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | not sure we are | 1 | 2 | 3 | 4 | 5 |
| (2) | never up there. | 1 | 2 | 3 | 4 | 5 |
| (3) | lot only | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

We just own an undeveloped lot.
Property L144 Shen Farms Riverview Sec. Pt 5
Property ID 15-D-2-5-144

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

104

Name DANIEL & MARGARET FRITTS
Address 131 HOBBS KNOB RD
FRONT ROYAL 22630
E-Mail dsfritts@centurylink.net

What is the name of the roadway your property is located on? HOBBS KNOB RD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HOBBS KNOB RD | 1 | 2 | (3) | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

GRAVEL

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

ABOUT 200 HUNDRED FEET FROM BLUE MOUNTAIN RD, THE STORM PIPE IN 90% BLOCKED. THIS IS VERY LIKELY TO CAUSE SERIOUS DAMAGE IN THE EVENT OF HARD RAIN & DRAIN. ~~FROM~~ THE PROPERTY DIRECTLY ACCROSS FROM MY PROPERTY DRAIN STOPPED.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

105

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name WAYNE PEARSON
Address 304 NOLANA
McALLEN TX. 78504
E-Mail WAYNE.PEARSON@W3FOODS.COM

What is the name of the roadway your property is located on? PICKFORD CT.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Pickford ct. | 1 | 2 | (3) | 4 | 5 |
| (2) | Reid DRIVE | (1) | 2 | 3 | 4 | 5 |
| (3) | Drummer Mill | (1) | 2 | 3 | 4 | 5 |
| (4) | Venus Branch | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drummer Mill → REID DRIVE should be paved to the top of that side of Mountain.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
#1 should be Blue Mountain RD. (which is a State Highway) should be 100% improved & paved all the way to Freeze line Drive. When River floods & Howelsville RD. is closed, this only way out of Shen. Farms

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
During heavy RAIN, ditch along ROAD is over its banks and flows over the ROAD & down my & my neighbors driveway. DRAIN pipe under ROAD can not handle flow.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

106

Name Mary Martin
Address 515 S. Iowa Ave
Washington, IA 52353
E-Mail marylmartin12@hotmail.com

What is the name of the roadway your property is located on? Tulip Poplar Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|
| (1) Tomahawk Lane | 1 | 2 | 3 | 4 | 5 |
| (2) old Linden | 1 | 2 | 3 | 4 | 5 |
| (3) Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (4) | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

Sometimes I use Tulip Poplar down the big hill but it is so washboarded that I take the 2nd Tulip Poplar intersection with old Linden

What, in your opinion, are the most needed improvements to the roadway that serves your property?

ditches, crowning of road surface, trimming back vegetation

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Tomahawk used to drain down the center of the roadway due to a plugged pipe. It is much better now. I am an absentee land lord so I only get in there once or twice a year.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

107

Name Jesse Haberstich
Address 204 Wendy Hill Rd
Front Royal VA 22630
E-Mail jhaberstich@yahoo.com

What is the name of the roadway your property is located on? Wendy Hill Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Lake Dr (joining Hawthorne) | 1 | 2 | 3 | 4 | 5 |
| (2) | Wendy Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Lake adjoining hawthorne is always horrible even before that was "washed out" does change be wider, paved.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Lake gets washed away, runoff is covering my driveway because of the poor change on Wendy Hill Rd.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

108

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name NAIMASHA, LLC
Address ~~1664 High Top Rd~~ 97 Travis Ct
~~Linden, Va.~~ Gaithersburg, MD 20879
E-Mail debrajosey@aol.com
ralphjosey@aol.com

What is the name of the roadway your property is located on? High Top Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HIGHTOP RD | (1) | 2 | 3 | 4 | 5 |
| (2) | CROSSWAY LANE | (1) | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
Freizeland Rd

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage problems onto our property @ 1664 High Top Rd
The road needs to be paved

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Widen High Top Rd and Crossway Lane

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
HIGHTOP ROAD WASHOUT DOWN INTO 1664 LOCATION EVERY HARD RAIN STORM. THE STORM PIPE IS CLOGGED UNDER HIGHTOP ROAD.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

109

Name MICHAEL LINDSTROM
Address 100 VAUGHT DR.
FRONT ROYAL, VA. 22630
E-Mail michaelsautomotive@Centurylink.net

What is the name of the roadway your property is located on? VAUGHT DR.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Go CINDY'S WAY OUT | 1 | 2 | 3 | 4 | 5 |
| (2) | (Road passes through my | 1 | 2 | 3 | 4 | 5 |
| (3) | Lot HISA to VAUGHT) | 1 | 2 | 3 | 4 | 5 |
| (4) | OR use MT. LAKE DR. | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Very high traffic goes by house. Tar + Chip, or put cul-de-sac back where it was and leave it be. this would put my property at end of Vaught + stop traffic flow past hous

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
All roads must have proper ditches + culverts to let water go where it wants to go. Proper materials for conditions i.e., No Large stones or gravel on hills (they roll) Also will caused wash boarding Immediatly!

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Some residents do not Keep their drive way culvert or ditch "V" open for waterflow. The result is that the water crosses the road and cuts itself an easier way to go down the hill, thus ruining any work done.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

WARREN COUNTY
BOARD OF SUPERVISORS

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WARREN COUNTY
ADMINISTRATOR'S OFFICE

110

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 211**

Name: Andrea & Jim Stuart
Address: 611 Youngs Dr
Front Royal
E-Mail: andbs@comcast.net

What is the name of the roadway your property is located on? Youngs Dr + Farms River

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

today

| | Roadway | Poor | | Condition Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farm View Rd | 1 | 2 | (3) | 4 | 5 |
| (2) | Youngs Dr | 1 | 2 | (3) | 4 | 5 |
| (3) | Farms River Rd | 1 | (2) | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

proper drainage

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Farm View entering Rt 638
across from where the school bus parks just past 625 Youngs

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

standing water just past 625 Youngs around + at the curve

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

111

Name Mike Spangler
Address 114 Mountain Lake Drive
Front Royal VA 22630
E-Mail MWSpangler@netscape.net

What is the name of the roadway your property is located on? Mountain Lake Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Blue Mountain | 1 | 2 | 3 | 4 | (5) |
| (2) | Mountain Lake | 1 | 2 | 3 | 4 | (5) |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
All of my roads are hardened and in good shape.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

112

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name: Bill Washburn
Address: 1841 High Top Rd. Linden, Va. 22642
E-Mail: yukon.1@comcast.net

What is the name of the roadway your property is located on? 1841 High Top Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Freeze Rd | 1 | 2 | 3 | 4 | 5 |
| (2) | Crossway Rd | 1 | 2 | 3 | 4 | 5 |
| (3) | High Top Rd. | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage on Freeze Rd

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
I would like to see tar & chip on most of the hills. Most of these hills get NO Sun on exposure in winter. Black Top would only make them slick.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Culvert located @ the bottom of the hill coming down Freeze Rd. Regardless of trying to maintain the ditches and culvert, clearing a down pipe, the culvert clogs and completely washes out my drive way. Yes, my address is Hgh Top but my driveway goes between High Top and Freeze Rd with Freeze being primary access to my house.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Thank You
Bill Washburn

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

113

Name: Lindsay Davis + Ricky Blankenship
Address: 285 McDonalds Farm Rd
Linden VA. 22642
E-Mail: LD-RB33@comcast.net

What is the name of the roadway your property is located on? McDonals Farm Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | McDonalds Farm | 1 | 2 | 3 | 4 | 5 |
| (2) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (3) | Old linden | 1 | 2 | 3 | 4 | 5 |
| (4) | Tomahawk | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property? Roads should be either tar & Pebbled and/or Paved. major drainage issues.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Entrance to Tomahawk (huge Pot holes).. Tomahawk + Old linde crossing.. Tulip Poplar (fairly large rock comes through road way)

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
most drainage ditches in community are non functional. After a decent rain the culverts will clogg w/ rock + mud Road way + drive ways will wash out. Decent flooding occurs in front yard due to improper drainage

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

114

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Denise Sharb
Address 140 Chevy Chase St #205
Gaithersburg, MD 20878
E-Mail dysharb19606@yahoo.com

What is the name of the roadway your property is located on? High Top Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | High Top Road | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
N/A

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Since I do not live in Shenandoah Farms and frequently my property once every 3-5 yrs, I am unable to provide constructive input. I would defer to other landowners/residents of High Top Road.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

115

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Karen Arnold Fernandez
Address 584 Pine Ridge Drive
Front Royal, VA 22630
E-Mail KFernandez14@yahoo.com

What is the name of the roadway your property is located on? Pine Ridge Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Pine Ridge Drive | 1 | 2 | (3) | 4 | 5 |
| (2) | Mountain Lake | 1 | 2 | 3 | (4) | 5 |
| (3) | Blue Mountain | 1 | 2 | 3 | (4) | 5 |
| (4) | Howellsville | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
paving or hardtop or ditches/grooves for water run off

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
paving/patch Mountain lake Clear trees covering Mountain lake so sun can shine through in winter.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
up until recently when a groove was added to my side of the road, each time it rained all the water from the road ran down my yard & driveway. this washed out both sides of my yard. It still does if it rains really hard.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

116

Name Ashley/Christian Borel
Address 5002 Howellsville Rd.
Front Royal VA 22630
E-Mail aLemarr06@gmail.com
(540) 327-2277

What is the name of the roadway your property is located on? Howellsville Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Howellsville Rd | 1 | 2 | 3 | (4) | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
Heavens Tree Trail - I dont use it, but it floods my property. Condition - (1) Poor

What, in your opinion, are the most needed improvements to the roadway that serves your property?
The intersection of Howellsville & Heavens Tree Trail floods often. Heavens tree also washes out into the road + fills my ditch & culvert

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
My ditch/culvert fills with rocks/debris & causes my property to flood because of Heavens Tree's poor drainage. Howellsville is also covered with debris. My culvert needs to be cleaned out/fixed because your road (which was not approved by the State) has caused it to partially collapse from the drainage/flooding/debris. This needs to be fixed ASAP.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

117

Name Lisa Reeves
Address 59 Fellows Drive
Front Royal, VA 22630
E-Mail lareeves1@gmail.com

What is the name of the roadway your property is located on? Fellows Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Fellows Drive (gravel) | (1) | 2 | 3 | 4 | 5 |
| (2) | Farms River Road | 1 | 2 | 3 | (4) | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. n/a

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage (storm water; flash flooding); Widen, one lane impassable in places; larger culvert pipe at my property. road is washing away on sides/ditches.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Intersection of Flynn/Fellows going towards Novel/Stonewall Rd. terrible passage space - needs to be widened. Farms River Rd. & Fellows needs drainage - water pools over road with heavy rains. Farms River Always has potholes/ruts. needs frequent grading & new gravel

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Fellows Drive - from our driveway towards Farms River Rd the storm water has nowhere to go except into our front yard property and washes out road. There is no drain pipe/system. When water reaches Farms River it pools - non-functional ditches/pipe, under Fellows.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

118

Name JOHN J MATLECK JR
Address 1346 HIGH TOP RD
LINDEN VA 22642
E-Mail

What is the name of the roadway your property is located on? HIGH TOP RD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HIGH TOP RD | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

~~Others, if applicable.~~
GOING DOWN THE HILL ON HIGH TOP PAST CROSSWAY IS BAD BECAUSE OF RUN OFF

What, in your opinion, are the most needed improvements to the roadway that serves your property?
That little bit of ROADWAY Always The stones wash out creating HUMPS past old NIGHT WIND HOUSE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☒

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
SAME AS ABOVE STEEPNESS OF HILL SOMETIMES CAUSES WASHOUT

Spring Hill is great since it was PAVED

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

119

Name WILLIAM J. REGAN
Address 968 GOODE DR.
FRONT ROYAL VA 22630
E-Mail

What is the name of the roadway your property is located on? GOODE DR.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | GOODE DR. | 1 | 2 | 3 | 4 | 5 |
| (2) | OLD OAK | 1 | 2 | 3 | 4 | 5 |
| (3) | COPENHAVER | 1 | 2 | 3 | 4 | 5 |
| (4) | PINE RIDGE | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

| | | | | | |
|---|---|---|---|---|---|
| WESTERN LN. | 1 | 2 | 3 | 4 | 5 |

What, in your opinion, are the most needed improvements to the roadway that serves your property?
REPL THE ~~CULVERTS~~ CULVERTS THAT ARE NOLONGER FUNCTIONING AND CLEAN THE DITCHES FOR PROPER DRAINAGE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
WIDEN - CULVERTS - DRAINAGE - MAINTAIN THE MAJOR LOOPS THROUGH THE FARMS, NOT SURE TAR AND CHIP IS THE ANSWER, THAT COULD BE HARDER TO MAINTAIN THAN GRAVEL ROADS PLUS SPEED ISSUES

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
DITCHES NEED REPAIR

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

120

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Guy McManamay
Address 4452 Howellsville Rd
Front Royal, VA 22630
E-Mail

What is the name of the roadway your property is located on? Howellsville Rd + Walker Farm Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Howellsville Road | 1 | 2 | 3 | 4 | (5) |
| (2) | Walker Farm Road | 1 | 2 | (3) | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Better ditches + Culverts for Walker Farm which washes out + floods Howellsville during heavy rains

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
See above

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

121

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Wade Grim
Address 437 High Top Road
Linden, VA 22642
E-Mail brndog579@comcast.net

What is the name of the roadway your property is located on? High Top Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | High Top Road | 1 | (2) | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

~~Bumps.~~

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Bumps and dust are my primary concern. Drainage is a huge problem from my property to the road. The current set up does not work well + results in erosion.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

At the top of High Top Rd, stop signs need to be placed at the ends of Blue Valley Rd. I've had numerous close encounters of cars shooting out onto High Top Road.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

In the last 5 years of residing here (437 High Top), I've never had more problems with the bank eroding and clogging the storm pipes. My driveway continues to wash out onto High Top Road also - mostly due to improper planning when the area was developed. Clear cutting the bank under the power lines adds to this problem.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

122

Name Johnnie L. Proud Jr.
Address 115 Martins Farm Rd
Front Royal VA 22630
E-Mail doubleg1701@yahoo.com

What is the name of the roadway your property is located on? Martins Farm Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Martins Farm Rd. | 1 | 2 | 3 | (4) | 5 |
| (2) | Lake Rd | 1 | (2) | 3 | 4 | 5 |
| (3) | Western Ln | 1 | (2) | 3 | 4 | 5 |
| (4) | Old Oak | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
We have low traffic. Sine and potholes repair

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Old Oak & Western Ln. need to be widened. These are hard travelled & should be considered for paving

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
At the entrance to Martins Farm off of Lake Rd the roadway is lower than water drainage area that is what causes the potholes. needs to be cleaned 1-2 feet. Just the first 50-100 feet

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

123

Name B. J. THOMAS
Address PO. BOX 744
Notesville, VA. 20182-0744
E-Mail

What is the name of the roadway your property is located on? Blue Mountain Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition | | | | |
|---|---|---|---|---|---|---|
| | | Poor | | Fair | | Good |
| (1) | | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

Storm water off roadway puddles in front of and sometimes floods the Shen. Farms Groc. store.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

See above

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

124

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Lewis + Diane Hutchison
Address 492 Flynn Dr
Front Royal Va 22630
E-Mail

What is the name of the roadway your property is located on? Flynn Dr

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Flynn ~~Fellows~~ Dr | 1 | 2 | (3) | 4 | 5 |
| (2) | ~~Flynn~~ Dr | 1 | 2 | (3) | 4 | 5 |
| (3) | Fellow | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
better Drainage and Roads widen, and Pot holes

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
all roads have pot holes, need proper drainage ditches and some need widen, (Farm View, Young, etc.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Stormwate crossing the Road way creating a washout Condition. it is at intersection of Fellows & Flynn left & Right of Fellows

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

125

Name Michael Kraemer
Address 2746 High Top Rd
Linden VA 22642
E-Mail mkraemer@timberlake.com

What is the name of the roadway your property is located on? HIGH TOP RD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | HIGH TOP RD | 1 | 2 | 3 | 4 | 5 |
| (2) | CROSSWAY LANE | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Grading, water control

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

- The hill from our property down to crossway lane does not have a sufficient ditch for water to follow + frequently washes out.
- The culvert on the corner of crossway LN + High Top Rd is not functional. It fills w/ mud soon after being dug out, causing water + mud to fill road.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

126

Name Cheryl James
Address 123 Goode Drive
Front Royal, VA 22630
E-Mail njaggie@centurylink.net

What is the name of the roadway your property is located on? Goode Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Goode Drive | 1 | 2 | 3 | 4 | (5) |
| (2) | Vaught Drive | 1 | 2 | (3) | 4 | 5 |
| (3) | Cindy's Way | 1 | 2 | 3 | (4) | 5 |
| (4) | | 1 | 2 | 3 | (4) | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Fine to get to my house; further up Goode can get rutty after rains

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
The short steep hill at Cindy's Way and Vaught gets bumpy from tires spinning to get up it

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Only in extreme conditions, coming off Blue Mtn to bottom of hill on Cindy's Way - stream has overflowed over road several times.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

2011-09-07 15:55 RECEIVED 09/07/2011 15:38 01 WARREN COUNTY SFSDM
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127

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Francois R Ouimet
Mailing Address 217 Corron Drive
Front Royal, VA 22630
E-Mail oldsmobil@comcast.net

What is the name of the roadway your property is located on? McDonald Farm Road

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | McDonald Farm | 1 | 2 | 3 | 4 | 5 |
| (2) | Tomohawk | 1 | 2 | 3 | 4 | 5 |
| (3) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (4) | Freezeland Rd. | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
Old Linden (2)

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Ditches, culverts at driveways and grading & gravel - Paving of course would be great

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Storm water crosses road and washes silt and gravel into my yard at 59 McDonald Farm. Also on Tulip Poplar on right side towards McDonald, culvert does not work

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

128

Name Susan Dent
Address 51 Cliffside Rd
Linden, Va 22642
E-Mail sdent2880@centurylink.net

What is the name of the roadway your property is located on? Cliffside

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Cliffside | 1 | 2 | 3 | 4 | 5 |
| (2) | McDonald Farm | 1 | 2 | 3 | 4 | 5 |
| (3) | Tulip Poplar | 1 | 2 | 3 | 4 | 5 |
| (4) | Tomahawk | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Paving + ditches
Gravel doesn't help it washes off

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Pave all it would probably save money in the long run. Dust is terrible

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
All of Cliffside when you first turn on it are a mess. The keep washing out. I have spend a thousands on my ~~dirt~~ driveway and it does no good

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

129

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name David + Sandra Glenney
Address 33 Fern Court
Front Royal VA 22630
E-Mail glenneylaw@aol.com

What is the name of the roadway your property is located on? Fern Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Mountain Lake Drive | 1 | 2 | 3 | 4 | 5 |
| (2) | Blue Mt Rd. | 1 | 2 | 3 | 4 | 5 |
| (3) | Drummer Hill | 1 | 2 | 3 | 4 | 5 |
| (4) | Fern Court | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Paving

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Pavement + clearing snow

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
water runs down with a hard storm + washes away the stone cover

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

130

Name MARY King Miller
Address 973 Buck Mt. Rd.
Bentonville, VA. 22610-0000
E-Mail

What is the name of the roadway your property is located on? River Overlook

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | River Overlook | 1 | 2 | 3 | 4 | 5 |
| (2) | Windy Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | Lake Drive | 1 | 2 | 3 | 4 | 5 |
| (4) | 638 | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
MAINTENCE

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
MAINTENANCE

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
LAKE DRIVE

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

131

Name Reed Basley
Address 8530 Hicks Island Rd
Lanexa VA 23089
E-Mail reedbasley@yahoo.com

What is the name of the roadway your property is located on? Riley Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old OAK Drive | 1 | 2 | 3 | 4 | 5 |
| (2) | Drummer Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Some Drains need to be fixed. Tar and chip the main Roads would keep Dust Down

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
going uphill from the Lake - Drummer Hill I believe should be paved on the steep part at the "T"

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Riley Court has a low place that gets muddy because the Drain is too small & clogs easily

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

132

DAVID

Name
Address

Dianna Dougherty
PO Box 513
Linden, VA 22642

E-Mail

What is the name of the roadway your property is located on? Old Linden

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Old Linden | 1 | (2) | 3 | 4 | 5 |
| (2) | Tomahawk | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable: Tomahawk home owners have bulldozers at on on Road surface - vehicles cannot pass over without vehicle damage

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Road off control - ditch on one side - widen natural areas

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Tomahawk Rd from Freezeland to Old Linden - Pave or add chip with speed bumps

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Plugged pipes - Tomahawk - Old Linden at catch of Tulip Pathway - Old Linden in front of lots 13 & 14

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

133

Name Charles Richardson + Kaylee Richardson
Address 88 Wambach Ct.
Front Royal VA 22630
E-Mail cojack1116@yahoo.com

What is the name of the roadway your property is located on? Wambach Ct.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Reid | 1 | 2 | 3 | 4 | 5 |
| (2) | Drummer Hill | 1 | 2 | 3 | 4 | 5 |
| (3) | Venus Branch | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Chip + Tar at least on Hills + Trouble areas. Reliable snow removal 24hr operations so those that have critical jobs + small children can still access main roads without depending on their own equipment ATV's/snow Blower

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Same As Above

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Where reid + Drummer Hill meet. Drain Pipe always clogged

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

My notes on Back.

- I support a significant increase in dues if it means better, more improved, roadways.

I E: Chip + Tar or pavement on main loops and in trouble some Hills + Areas that require lots of maintainig. Reid is a major problem with Hills + washouts that continue to take its toll on our vehicles up here.

I would support a $50/$100/or even a $200 Annual increase for our road improvements.

also: Sand at spring lake would be nice for the kids to play in. - just a thought for 2012 Summer.

Thank you!

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

134

Name Karolyn / Terry Weaver
Address 712 Youngs Dr
Front Royal VA 22630
E-Mail Tweaver@RADobson.com

What is the name of the roadway your property is located on? Youngs Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farm View | 1 | 2 | 3 | 4 | 5 |
| (2) | Youngs Dr. | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage, more gravel

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Trees cut back, need passage for 2 car to pass

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Farm View coming down to Youngs Dr
Youngs Dr. top of hill and standing water around last curve near houses #655, 651 -
more culverts or replacements.
the problem area is house #632 area

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

House #415 up hill - road washing out to Farm View
Youngs Dr. #55

[illegible]

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

135

Name Sherwin Little
Address 9127 Lookout Lane
Bent Altn., Va. 24059
E-Mail

What is the name of the roadway your property is located on? River Overlook and Timberline Ridge Rds

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Lake | 1 | 2 | 3 | 4 | 5 |
| (2) | Timberline Ridge | 1 | 2 | 3 | 4 | 5 |
| (3) | Old Oak | 1 | 2 | 3 | 4 | 5 |
| (4) | River Overlook | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
River Overlook is overgrown and very narrow for the last 1/5 mile to the cul de sac

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Lake is a mess and needs to be paved with macadam

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ] on Lake

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

over please

I voted to have Warren Co. take over the management of Shenandoah Farms Sanitary district because I believed there was slippage in the funds being provided or the road problem was being handled in too "relaxed" approach by those hired to do the job.

I have had to maintain the approach to my property myself for years. When I bought it the road was impassable due to large sapplings blocking the road. There is now only a single lane into those properties at the end of River Overlook and this is only because I opened it up.

I did not receive your letter and this questionnaire until the evening of Sept 6th 2011.

Thank you for your effort in improving the roads in Shennandoah Farms
I own lots 9+10 on River Overlook, which are on the Culdesac at the end of the road.

Jim Ritch

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

faxed 9-9-11 pm

136

Name Edward P. Gibson Sr.
Address 684 Youngs Dr
Front Royal, Va 22630
E-Mail Pandjcab@yahoo.com

What is the name of the roadway your property is located on? Youngs Dr.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Farmview Rd - @ Beginning | 1 | 2 | 3 | 4 | 5 |
| (2) | Youngs Dr. | 1 | 2 | 3 | 4 | 5 |
| (3) | To House | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

My property + many other neighbor homes had no problem at all until the "grader" comes down rips into + makes the property

What, in your opinion, are the most needed improvements to the roadway that serves your property?

To stop trying to make water ways where the road at one time had no problem w/water ways and is now destroying people's property.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

To put back the land + stone, much Bigger for ground + Surface Drainage than destroying + creating problems that we never had in the 12 years I've lived here.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☑

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

The beginning of Farmview Rd + Youngs Dr. Shenandoah Farms Road Service has destroyed our road into a total disaster. Stop Trying To Be God + Destroying Property. That is the Problem. Men Cannot Control Water!! →

Over

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Stop Creating Problems with trying to make a road to Fast. 11/Aug

Right below & before second curve on Youngs Dr.
Roadway & land colliers with one another. Land of
Patric Skulley on 632 Youngs Dr. is too low & Road
way is to low which creates flooding problems &
severe pot holes.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

137

Name Justin & Tracey Pauley
Address 129 Martins Farm Rd
Front Royal VA 22630
E-Mail jtpauley@comcast.net

What is the name of the roadway your property is located on? Martins Farm Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | ~~Lake Drive~~ Martins Farm | 1 | 2 | 3 | 4 | 5 |
| (2) | Lake Drive | 1 | 2 | 3 | 4 | 5 |
| (3) | Western Lane | 1 | 2 | [illegible] | | 5 |
| (4) | Old Oak | 1 | 2 | 3 | 4 | 5 |

Others, if applicable. Donna Drive — 3 until you get near Wendy Hill and the drops to 2.
Venus Branch, Youngs Drive, & Pine ridge. Gary Lane, Heavens Tree

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Martins Farm is pretty decent only gets a large water puddle at the beginning of the road. The Hill at the top of lake Drive right before turning on Donna Drive becomes very rutted & horrible to climb →

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Heavens tree where my sister-in-law lives is very narrow & rutted. 108 Heavens Tree.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Lake Drive Has tea water running across the road during Heavy rains. Walkers Farm looks to have a lot of Standing water as well.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Husbands truck can barely climb lake Drive when gravel is first put on the road. In my SUV I - Jars the people in side. The hill going down lake Drive towards Gary Lane & martins farm becomes very rutted almost like a wash board. Old oak & Dogwood Farms also have the wash board like surface.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

138 A

Name Kim Strader
Address 90 Reid Drive
Front Royal, VA 22630
E-Mail kas3a@virginia.edu

What is the name of the roadway your property is located on? Reid Drive
I also own property on Peggy's Court

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Reid Dr. | 1 | 2 | (3) | 4 | 5 |
| (2) | Old Oak | 1 | (2) | 3 | 4 | 5 |
| (3) | Venus Branch | 1 | 2 | 3 | (4) | 5 |
| (4) | Drummer Hill | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage is always an issue as well as washboards.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Bump at Drummer Hill & Peggy's Court is almost always bad.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
There is a culvert pipe above my house (90 Reid Dr.), in the turn, that often gets clogged. I dig it out but it is kinda deep and sometimes difficult to find. When this pipe is clogged, the road gets eaten out and my driveway pipe gets clogged causing further damage to the road.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

OVER →

Chris Fisher: cfisher@warrencountyva.net

There is another pipe below my house at the intersection of Drummer Hill, Briar and Reid that is rarely dug out and opened.

The pipe at Drummer Hill and Susans Crt(?) is also always clogged and rarely cleaned out. Its on the corner below the greenhouse w/ burgundy trim and it has a fox statue on a rock.

The pipe across from Bobby Court on Venus Branch is another one that gets clogged and causes extensive damage to the road.

All in all if residents would help keep the culvert pipes open there would be less damage. At one time, people in the neighborhood would pitch in and help keep culvert pipes open but many of them have now moved away, gotten too old or have deceased.

Please note: I am glad to hear that this study will take into consideration the downstream effects while looking at improvements to the drainage system.

Thank you for the opportunity to comment.

Kim

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

138 B

Name Sharon C. Izzo
Address 550 Vaught Dr.
Front Royal 22630
E-Mail

Ph. # (540-635-4544)

What is the name of the roadway your property is located on? Vaught Drive

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Vaught Dr. | 1 | 2 | 3 | 4 | 5 |
| (2) | Mountain Lakes Dr. | 1 | 2 | 3 | 4 | 5 |
| (3) | Blue Mountain Rd. | 1 | 2 | 3 | 4 | 5 |
| (4) | Howellsville Rd | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.
Cindy's Way - Very Poor Condition

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Drainage ditches need repair. I'm on the downside & get the road washed onto my property due to neighbors who will not fix their drains. Some of road is paved, please finish us where there is a cluster of homes.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
All of Mountain Lake Rd in A.M. when buses come. Very dangerous for regular working people to get out. Cindy's road is at times only passable by trucks. Roads have to be constantly maintained so people can have alternate routes.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] (yes) No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
All of the above statement is applicale to my property. Houses with the following #'s 571 & 551 have broken pipes on their driveways & are clogged. Water rushes to my property & down, creating washout of all stone on road plus other debris that rushes with the water surge. Ditches need to be constructed. (Over)

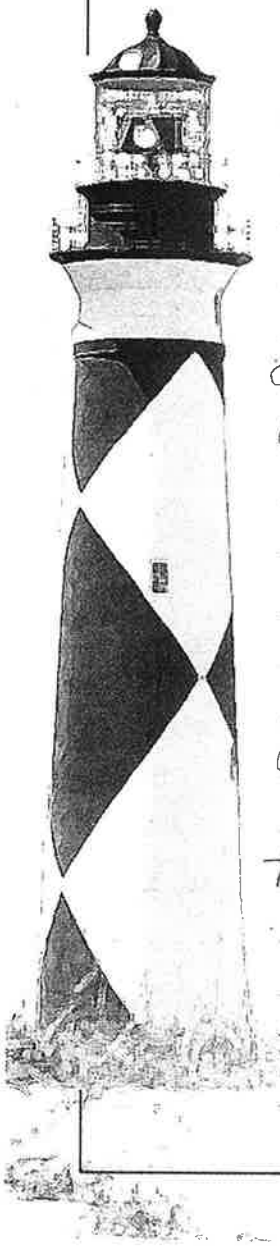
Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

properly. Neighbors need to be made to repain their driveway drains to prevent water coming directly into my property as well as neighbor at 520 Vaught Dr. This area turns into a complete mud hole, In winter the ruts at the road at top of my drive are almost impossible to drive thru without danage to car.

We here on this section of Vaught Dr. have called many times about this road condition with no results. Winter is coming & we need help on this road as well as many other side roads. Thank you

[illegible] T.220



# A Special Note...

Sept 8, 2011

Mr. Fisher

Why would you send us this Questionnaire.

The POSF doesht do anything for Patty Tract LN. We are a State road.

No thanks to the POSF. We had to beg, Some one to do a swipe down this road Several years ago Some our Friends Could get down here to take my husband to the hospital.

Yet we Pay the same Fee for Sanitary that everyone else does.

All we get is the

Noise from the Park behind our house.
People are in that Park all night
Long. even tho there are hours
Posted. So thanks for Nothing.

Grace Cain

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

139

Name Cecil Talley / Sylna Knight Flanagan
Address 121 Wambach Ct.
Front Royal, VA 22630
E-Mail cwtalley08@gmail.com

What is the name of the roadway your property is located on? Wambach Ct.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Wambach Ct | 1 | 2 | 3 | (4) | 5 |
| (2) | Reid Dr. | 1 | (2) | 3 | 4 | 5 |
| (3) | Drummer Hill | 1 | (2) | 3 | 4 | 5 |
| (4) | Venus Branch | 1 | (2) | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Needs new ditches / drains, covert pipe at end of the road (begining).

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
In front of Reggie Ct the hill needs a new drain, it flatens out on Reid Dr, it has washboards, intersection @ Venus Branch + Drummer hill, you cant see who's coming each way need a stop sigh.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

over →

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Ditches / drains need to be put in in front of our neighbor's driveway, water lays in the rd in front of their driveways.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Old oak + Venus branch need a stop sign. It also has
rorrible drainage problems on Old oak where the flat
spots are. When you pass Spring lake on your way
to drummer, the road is down to big rocks, needs
grated. Between Wamboch Ct and the Split tree
the water crosses the rd when it gets to heavy,
where Pickford Ct is and along the tree the rd gets
rorrible with huge rocks, no dirt, its hard to
drive up. Past the Split tree going down to the
next curve it get Big huge ruts on coming up side

140

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name William Bower
Address 135 Mosbys Meadow LN
Front Royal, VA 22630
E-Mail WJBower2000@yahoo.com

What is the name of the roadway your property is located on? Mosbys Meadow LN

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Mosbys Meadow LN | 1 | 2 | 3 | 4 | 5 |
| (2) | Old Oak | 1 | 2 | 3 to 4 | | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Culverts + drainage system needs correcting
Subsequent paving would be nice

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
All of the above - The drainage ditch at the intersection of Mosbys Meadow LN + Mt. Laurel (one pipe under Mt Laurel) is bent closed + non functional causing water to run across the roadway resulting in gravel (vast amounts) build up in our back yard - The pipe under Mosbys Meadow is too small to allow proper drainage, again resulting in overflow causing washout conditions + gravel accumulation in our backyard. This has happened 4 times. We have had to pay to → over

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

have the gravel removed + the drainage ditch dug out which is rather costly.

Thank you

* Pictures are available: Please let me know if you need them + I will send them via email

email wjbower2000@yahoo.com
ph 540-837 1639

141

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name Ted & Suzanne Soliday
Address 218 Cindys Way
Front Royal VA 22630
E-Mail tdnsw2@comcast.net

What is the name of the roadway your property is located on? Cindy's Way

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Cindys Way | (1) | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
improved drainage | culverts installed – Pave Cindys Way at least up to Vaught if not entirely
Creek washes out Cindys Way every rainy season –

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
The large drain on Cindys Way – down close to end of road – is seperated – my husband walked thru it after last spring storm – and noticed gap in pipe – this could compromise road – cave in ?

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

(1) as soon as you turn onto Cindys Way off Blue Mtn – that low creek bed floods road every rainy season
(2) at the 1st curve a culvert or drain pipe is needed in front of the 1st A frame house

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

## Chris Fisher

**From:** Ted And Suzanne [tednsuz@comcast.net]
**Sent:** Thursday, September 08, 2011 10:27 AM
**To:** 'Chris Fisher'
**Subject:** Road Study Input
**Attachments:** Road Study.pdf

Hello Mr. Fisher-
The attached hand written study feedback- may be hard to read.

Here are some main points to consider- and I thank you as always for your diligent work effort to maintain these roads up here.

Hopefully, I can make this clear to you in writing:

1. The first creek path Cindy's Way crosses- always floods. The drain pipes become full of debris. Some years back the pipes were replaced and the old rusting pipes lay near the work area to this day- polluting the area.

2. The second creek path Cindy's Way crosses over, is down past our house at 218 Cindy's way- There is a "bridge" here. The pipe to route the creek under the road is large enough to walk through. My husband walked through this pipe after the last big flood this past spring, and there is a huge gap and separation in the pipe- this eventually may cause the road to cave in ---?

3. The other big issue is the first A frame home (do not know the address) on Cindy's Way at the first curve, does not have a properly piped culvert at their driveway. The road constantly washes out here, the home owners have left behind 3 white pipes and now have tried to do some sort of make shift pipe installation, with a small black flexible tube just ½ way buried- it is a mess. That is just going to add to the problem.

4. Of course our request is for Cindy's Way to be considered for a tar/chip or asphalt in the future. The road is constantly washed out in various sections- full of potholes. We personally work with other neighbors to fill. Also the road on both hills- becomes washboard very quickly after any rain.

We wanted to bring these items to your attention, again we thank you-
Ted and Suzanne Soliday
218 Cindy's Way
Front Royal, VA 22630
540.364.5155

---

Total Control Panel

Login

To: cfisher@warrencounty.va.net
From: tednsuz@comcast.net

Message Score: 1
My Spam Blocking Level: Medium

Block this sender
Block comcast.net

High (60):
Medium (75):
Low (90):

*This message was delivered because the content filter score did not exceed your filter level.*

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

142

Name Walter Bryan
Address 1173 High Top Rd
Linden, VA 22642
E-Mail

What is the name of the roadway your property is located on? High Top Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | High Top Rd | 1 | 2 | (3) | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
See attachment

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
See attachment

Have you observed any drainage issues on the roadways that serve your property?

Yes ☐ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
See attachment

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

# Attachment



I moved into Shenandoah Farms in February 1996, as the sanitary district was being established. I joined the POSF Board of Directors in September of that year.

I think that most of the roads have been considerably improved since the sanitary district was established, but they are still a long way from interstate highway standards. When I moved in, some of the roads had ruts nearly a foot deep.

~~Many~~

Many of the ~~roads~~ roads in Shenandoah Farms are a tight squeeze for two cars to meet.

I have observed that when stone is added to the roads, it does not last long. I am not sure where it all goes. Some of it gets thrown off to the sides when cars drive over it.

Some of the drainage problems on my road and other roads have been improved by replacement of old pipes and installation of new pipes, where there had not been one.

Drainage problems ~~will~~ will continue to arise as more houses are built in Shenandoah Farms and water runs down into people's front doors. My neighbor across the road had that problem. A new pipe installation alleviated the problem somewhat.

I learned a valuable lesson from that: Don't build a house on the side of a mountain. My house is on top of the mountain. All water runs downhill from me.

A chronic problem with drainage has been the fact that people don't keep their drive-way culverts open. This diverts water out of the drainage ditch onto the roadway, cutting grooves and gullies in the roadway. This was a continuing source of anguish in board meetings.

I always said that I could think of only two ways to confront the problem. One would be to start suing people who do not keep their culverts open. The other would be to take over the job ourselves and increase the fees to pay for it. We never did either one.

I have been off the board for several years now. The only Shenandoah Farms road that I regularly drive on now is the one that I live on; High Top Rd.

Walter Bryan

143

Vicki Richard

376 Bragg Drive

Front Royal, VA 22630

Email: vikkers11@yahoo.com

540-631-0428

Name of my roadway/property? Bragg Drive

Roadways I use most frequently to access my property. : Rate of condition

1. Bragg Drive Fair-3
2. Reynolds 2-Fair
3. Blue Mountain Rd 5-Good
4. Howellsville Rd 4 Good

What are the most important improvement to the roadway that serves your property?

Reynolds has a lot of wash boarding and pot holes and ruts. Can this be regarded?

Intersection of Wells and Reynolds has a great deal of pot holes

The intersection of Blue Mountain Rd and Reynolds there is a big dip and pot holes. The dip should be repaved to so that Blue Mountain Rd and Reynolds meet at the same level. Having to maneuver the dip slows the driver from pulling out on to Blue Mountain Rd. This delay in pulling out has caused several accidents.

What are the most needed improvements to the roadways other than the one that serves your property?

1 Howellsville Rd. washouts frequently

2 Vesey washouts often. Needs to be regraded and additional drainage added

3 Low Water Bridge area floods often.

4 Low Water Bridge needs to be repaved, the ruts causes backups on the bridge

5 Low Water Bridge should needs to be repaired from where the river took the shoulder. The lack of a proper shoulder makes the road more narrow which makes it hard for two cars to be on opposing sides of the road. Too close a fit for the cars to be safe. The shoulder needs to be widened.

6 The sign that there is no fishing from bridge is ineffective. Not sure how to fix that problem. Too many people stand on the bridge which is a major safety issue. Can the bridge be widened?

7 Intersection of Morgan Ford and Howellsville has obstructed visibility when turning right from Low Water Bridge. One cannot see over the hill/grade. Could a sign to "yield to oncoming vehicles" be added at that site? The vehicles turning right from Morgan Ford t on to Howellsville turn way too fast

but they can see the oncoming vehicles the other vantage point the driver cannot see until well in to the turn

8 Intersection of Blue Mountain Rd and Bragg drive. Vehicles coming down Blue Mountain Road speed down the hill w/o looking at what vehicles may be turning from Bragg. The spot where the dirt road and the paved road meet. Perhaps a SLOW or Yield sign can be placed on Blue Mountain prior to meeting up with the paved portion of the road. This is the case on many intersections coming down Blue Mountain. Vehicles go at a high rate of speed and do not look for oncoming vehicles at intersections. The vehicles go too fast to see pedestrians or school buses.

9 Though the speed limit is posted as 15mph in the Farms most people go above that speed constantly. That is a serious issue for the safety of pedestrians

10 Vehicles turning from Wells on to Reynolds go too fast. A STOP or YIELD sign should be there

11 Drivers on Bragg Drive do not go the speed limit. Several times while walking my dogs I have been almost hit by reckless drivers. Specifically those residents located at 552 Bragg and 623 Bragg. There is a need for a PEDESTRIANS HAVE THE RIGHT OF WAY sign added to Bragg as well as Blue Mountain Rd. Since there are no sidewalks and not likely to be, I have to walk in the road. The drivers are to watch for me but do not. I've had 6 near hits in 2 months. Each driver has cussed, yelled and blame me for being in the road and in their way. There is no shoulder for me to jump to safety. I do have the right of way. Perhaps signs can be added to the area from 552 Bragg to the intersection of Bragg and Blue Mountain Rd or perhaps notices can be issued within in the newsletter. Can the drivers be considered as reckless driving and be ticketed accordingly?

12 Intersection of Blue Mountain Rd and Howellsville Rd at the little store has limited visibility when turning left from Howellsville to Blue Mountain. Oncoming traffic from the other direction needs to slow down. Perhaps a YIELD TO ONCOMING TRAFFIC sign can be added. There is limited visibility from that turning area due to trees/foliage and the curve.

13 Though Reynolds and Bragg are secondary roads it can take days to get the roads cleared of snow. Often residents cannot get out of their roadway to get to work or school.

14 The snow plows drag rocks and debris while removing the snow. The snow plows often miss parts of the road and do not clear the entire road. Are these drivers trained on snowplowing? One has to wonder since most do not seem to be too competent at this task

15 Draining water freezes on Blue Mountain Rd. throughout the winter. Perhaps that road can be sanded more often during the winter. Or the water flow down the mountain be redirected somehow.

<u>Have you observed any drainage issues on the roadways that serve your property?</u>

Yes. There are several washouts and wash boarding throughout the entire road (Bragg) when it rains

Often water flows over the culverts in front of 376 Bragg and across from 402 Bragg. I assume this is due to dirt and rocks flowing into the culverts clogging the flow of water.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

144

Name Dennis & Rebecca Hamel
Address 674 High Top Rd
Linden VA 22642
E-Mail beccehamel@AOL.com

What is the name of the roadway your property is located on? High Top Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Freezeland | 1 | 2 | 3 | 4 | (5) |
| (2) | High Top Rd | (1) | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Proper grading - in 2007 we spent $2500.00 to repair the "hump" from the road into our driveway due to improper grading of the road. We were unable to get in to our driveway without scraping the underside of our car and Jeep. And now it's happening again.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Freezeland is in excellent condition.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☑ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
674 High Top Rd - Improper grading. Instead of the roadway sloping towards the ditch, the water streams down the dirt roadway away from the ditch and erodes the asphalt apron of our driveway.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Drive Repairs


**DIAMOND'S PAVING, INC.**
565 Loop Rd.
Front Royal, Va. 22630
**540 635-6194**/Toll Free **866-537-4710**
diamondspavinginc.com
Email: diamondspaving@earthlink.net


Paid $250.00
05 Jun 07

# CONTRACT PROPOSAL

| | | |
|---|---|---|
| Contact Name: Mr. Mrs. Hamel | Phone: | Page No. _____ of _____ |
| Street 674 High Top Linden | City/State/Zip VA 22642 | |
| subdivision if applicable | Date of Plans: | Estimator: |

## Prep (check all that apply)

- ☐ Remove Grass
- ☐ Apply Weed Killer
- ☐ Widen Driveway _____
- ☑ Regrade Driveway
- ☐ Add Gravel (approximate tons)
  - ☐ 57'S _____ tons
  - ☑ 21-A 4 tons
  - ☐ C and R _____ tons
  - ☐ Dust _____ tons
  - ☐ Rip Rap _____ tons
  - ☐ Surge _____ tons
- ☐ Gravel Removal _____ tons
- ☐ Install Drainage Grates _____ ft.
- ☐ Pipe Installation
  - ☐ Steel _____ width _____ ft.
  - ☐ Plastic _____ width _____ ft.
- ☐ Add Ditch (specify) _____
- ☑ Other: Haul away old asphalt & cut down entrance of driveway and repave

## Asphalt (check all that apply)

- ☐ Base Mix Asphalt _____ inches
- ☑ Surface Asphalt 2 inches
- ☐ Driveway Topping _____ inches
- ☐ Asphalt Rail (specify) _____
- ☐ Coarse Surface Driveway
- ☑ Smooth Surface Driveway
- ☐ Patch (specify) _____

**Warranty:** Diamond's Paving Inc. grants all customers a one year guarantee against major breaks and damages to new asphalt. Driveways which have had existing asphalt work performed by another asphalt company other than Diamond's Paving Inc., are NOT eligible for the one year guarantee.

**Payment:** All Payments will be collected in full from home owner upon completion of work stated above. All credit card purchases are subject to a 2.1% processing fee. All customers approved for financing will be subject to a 9.9% interest fee on the unpaid balance.

**Acceptance of Proposal:** The terms and conditions as stated above are satisfactory and are hereby accepted. I/we hereby authorize Diamond's Paving Inc. to perform the specified work in accordance with this agreement for the sum of: $ 2500 . _____ (dollars) Two thousand Five Hundred 00/100

Payable as follows: ☐ CASH ☐ CHECK ☐ CREDIT CARD ☐ CASHIER'S CHECK

Approved Signature Tracy Diamond

DATE 5/29/07 Customer Signature R Hamel

Other Comments:

NOTE: This proposal may be withdrawn by us if not accepted within 30 days.

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

145

Name: Reanna Jacobson
Address: 687 High Top Rd
Linden VA 22642
E-Mail: Reannalelito@aol.com

What is the name of the roadway your property is located on? High Top Rd

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | High Top Rd | 1 | (2) | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?

Paving and guardrails.

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Stop signs at Blue Valley Rd/High Top and Crossway/High Top

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

on High Top Rd at Crossway and also on High Top Rd around house number 437.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

146

Name John Yu
Address 2478 High Top Rd
Linden VA 22642
E-Mail

What is the name of the roadway your property is located on?

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Crossway In | 1 | 2 | 3 | 4 | 5 |
| (2) | High Top Rd | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
High Top Rd to Crossway In is very dangerous road to drive when it rans / snows

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
crossway In

Have you observed any drainage issues on the roadways that serve your property?

Yes [✓] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Atten: Chris Fisher

147

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

Name CAROL Adrienne Stevens
Address c/o Debbie Merritt
151 FARM RIDGE
~~E-Mail~~ Front Royal, VA 22630

What is the name of the roadway your property is located on? Reid Dr + Judy Lane

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | OLD OAK | 1 | 2 | 3 | 4 | 5 |
| (2) | EMIS BRANCH | 1 | 2 | 3 | 4 | 5 |
| (3) | DRUMMERHILL | 1 | 2 | 3 | 4 | 5 |
| (4) | Reid | 1 - | 2 | 3 | 4 | 5 |

Others, if applicable. SHARON + Gales 1 - 2
Judy LN 1 - 2

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Proper Subgrade, base installed properly, curb DRAINAGE each SIDE Rd, side + cross DRAINS

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.
Reid DR + Pickford
SHARON + Gales

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ] Other Rdwy Contractor cut RUN DRAINS on Properties on Reid DR. Pot holes etc.

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Reid Dr + Brian
SHARON + Gales
Judy Ln

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

245

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

148

Name Veronica Hunt & Larry Kerns
Address 270 Freeze Road
Linden, Va 22642
E-Mail None

What is the name of the roadway your property is located on? Freeze Rd.

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | Freeze Road | 1 | (2) | 3 | 4 | 5 |
| (2) | Crossway | 1 | 2 | 3 | (4) | 5 |
| (3) | High Top | 1 | 2 | 3 | (4) | 5 |
| (4) | Freezeland | 1 | 2 | 3 | 4 | (5) |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
Ditch line is washed out rt. side needs surge stone - Broken Concrete to slow water to prevent washout could become issue this winter. (sliding in ditch)

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection etc.) and deficiencies including safety issues.

Have you observed any drainage issues on the roadways that serve your property?

Yes [X] No [ ]

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.
Bottom of hill freeze silts in due to ditchline washing. has been corrected 2-3 times in the last year but suspect it to be a re-occuring problem due to ditchline washing.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

Thank you
Sincerely
Larry B. Kerns

P1

**Shenandoah Farms Sanitary District**
**Resident Roadway Survey and Evaluation Questionnaire**
**August 4, 2011**

149

Name MARTEN / PROCTOR
Address 18225 ROSE ST
OROVELAND, FL 34736
E-Mail PROPHEAD@DIGITAL.NET

What is the name of the roadway your property is located on? LOT 43 MT VIEW HIGHTOP
HIGHTOP ROAD

What roadways in Shenandoah Farms do you use most frequently to access your property? (1) being the roadway you live on or serves your property and (2) through (4) those roads you would use to enter or exit the community and rate their condition.

| | Roadway | Condition: Poor | | Fair | | Good |
|---|---|---|---|---|---|---|
| (1) | | 1 | 2 | 3 | 4 | 5 |
| (2) | | 1 | 2 | 3 | 4 | 5 |
| (3) | | 1 | 2 | 3 | 4 | 5 |
| (4) | | 1 | 2 | 3 | 4 | 5 |

Others, if applicable.

What, in your opinion, are the most needed improvements to the roadway that serves your property?
THERE IS A CULVERT UNDER HIGHTOP THAT DIVERTS WATER FROM ACROSS THE STREET WHICH LEAVES THE MORE CLAY, GRAVEL & ROCKS TO BE MOVED SOUTH TO THE EDGE OF ALL PROPERTIES. THIS IS

What, in your opinion, are the most needed improvements to the roadways other than the one that serves your property? Be as specific as possible noting the location (roadway, house number, nearest intersection, etc.) and deficiencies including safety issues.
Problems.

Have you observed any drainage issues on the roadways that serve your property?

Yes ☒ No ☐

If so, can you provide a brief description and location such as a non functional storm pipe, stormwater out of the ditch line, stormwater crossing the roadway creating a washout condition etc.

Thank you for taking time to complete this survey. This information will be compiled and used to assist in determining roadway improvement needs and for future planning.

Chris Fisher: cfisher@warrencountyva.net

SEE ATTACHED SHEET

P2

Martin Proctor, 18225 Rose Street, Groveland, FL 34736 prophead@digital.net owner with my wife of Lot 43, Shen Farms, Mountain View section on Hightop Road

There is a culvert under Hightop Road that diverts water from across the street (east side) right into the middle of my property Lot 43. This culvert should be moved to the south edge of my property before paving or upgrading Hightop. The water flowing into my property is causing problems during heavy or sustained rains.

## Chris Fisher

**From:** Glenda Skelley [glendaskelley@gmail.com]
**Sent:** Sunday, September 11, 2011 2:47 AM
**To:** cfisher@warrencountyva.net
**Subject:** Shenandoah Farms Resident Road Survey

150

Just wanted make sure you were aware of the entrance issues that exist at the head of Mosby Meadow Lane. I've lived at this location for 11 years, and where the road intersects Old Oak Lane is always subject to wash-boarding. Because of the grade of the road there, it is difficult to enter Old Oak without spinning your vehicle's tires. This is particularly true in the winter when there is snow, then ice at the entrance, or if someone is speeding along on Old Oak, which is often the case. Something that contributes to this issue is the lack of a clear line of sight in either direction on Old Oak. You have to speed up to pull out quickly enough so that you are not half way in the intersection when a vehicle comes speeding up, and there have been several near misses there as people try to turn onto Old Oak.

Thanks for the opportunity to comment on the roads.

Glenda Skelley
88 Mosby Meadow Lane
Front Royal, VA 22630

---

Protected by Spam Titan

Login

To: cfisher@warrencountyva.net
From: glendaskelley@gmail.com

Message Score: 1
My Spam Blocking Level: Medium

High (60):
Medium (75):
Low (90):

Block this sender
Block gmail.com

*This message was delivered because the content filter score did not exceed your filter level.*

# APPENDIX D

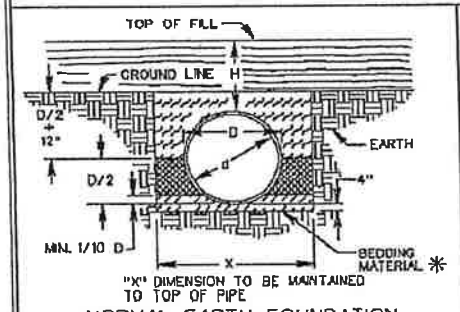
## Typical Culvert Installation and Private Entrance Details

THE ATTACHED STANDARD IS TAKEN FROM THE VDOT ROAD AND BRIDGE STANDARDS.
THE ENTIRE COLLECTION OF 2008 VDOT ROAD AND BRIDGE STANDARDS CAN BE
VIEWED AND PRINTED ON-LINE AT THE FOLLOWING ADDRESS:
http://www.vdot.virginia.gov/business/locdes/2008_standards_complete_sections.asp

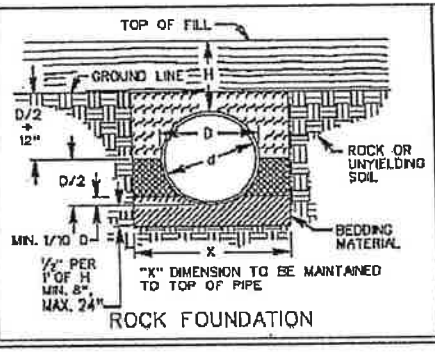
REVISED ON 1/04 REVISED ON 7/05

PB-1

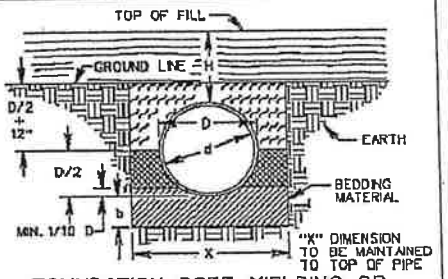
## NO PROJECTION OF PIPE ABOVE GROUND LINE




NORMAL EARTH FOUNDATION

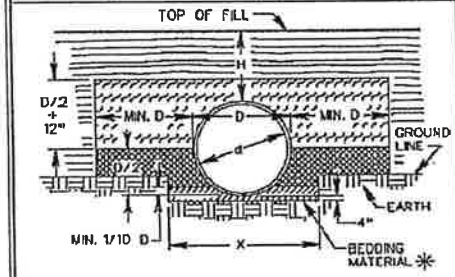



ROCK FOUNDATION

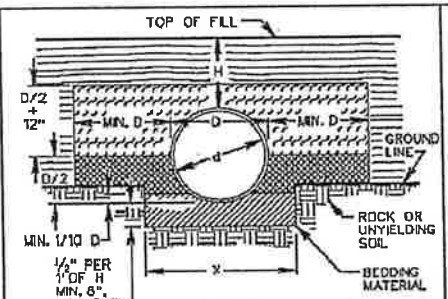



FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

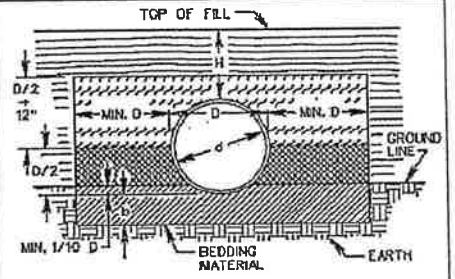
## PIPE PROJECTION ABOVE GROUND LINE




NORMAL EARTH FOUNDATION




ROCK FOUNDATION




FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

CULVERTS LESS THAN d = 36"
X = D + 24"

CULVERTS WHERE d = 36" AND OVER
X = D + 36"

METHOD "A" PIPE BEDDING SHALL BE USED AS FOLLOWS UNLESS OTHERWISE NOTED ON PLANS:

RIGID PIPE
WHEN H IS LESS THAN OR EQUAL TO 30'

FLEXIBLE PIPE
AS SHOWN ON TABLES

✳ MAY BE ELIMINATED UNDER ENTRANCE PIPE EXCEPT FOR PLASTIC PIPE INSTALLATIONS, WHERE DIRECTED BY THE ENGINEER.

H = HEIGHT OF COVER MEASURED FROM TOP OF DRAINAGE STRUCTURE TO FINISHED GRADE.

D = OUTSIDE DIAMETER OF PIPE.

d = INSIDE DIAMETER OF PIPE.

b = DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

✳✳ FOR PLASTIC PIPE INSTALLATIONS, CLASS I BACKFILL MATERIAL SHALL BE USED IN LIEU OF CLASS II.

BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.

CLASS II BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS. ✳✳

EMBANKMENT

SHEET 1 OF 4

| SPECIFICATION REFERENCE |
|---|
| 302 |
| 303 |

# INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
# CIRCULAR PIPE BEDDING AND BACKFILL - METHOD "A"

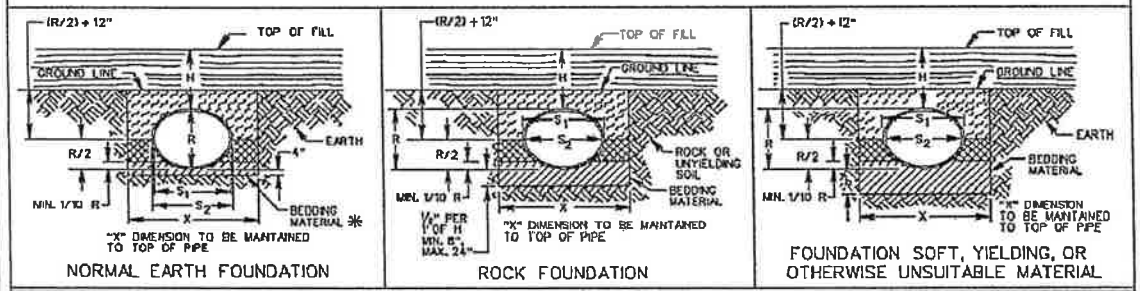
VIRGINIA DEPARTMENT OF TRANSPORTATION

107.01

REVISED ON 1/04 REVISED ON 7/04 REVISED ON 7/05

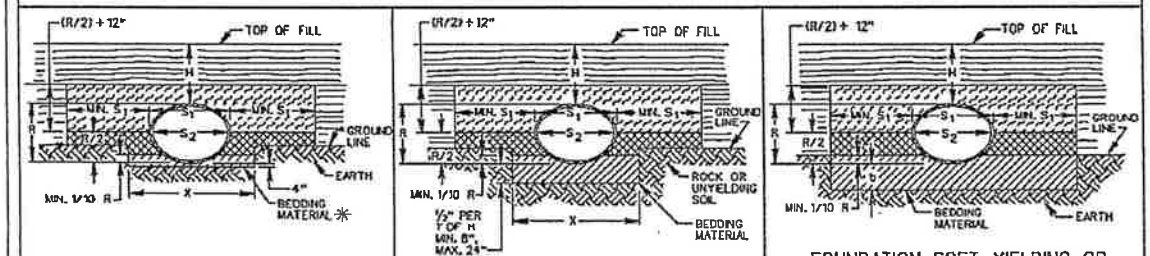
PB-1

NO PROJECTION OF PIPE ABOVE GROUND LINE




NORMAL EARTH FOUNDATION | ROCK FOUNDATION | FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

PIPE PROJECTION ABOVE GROUND LINE




NORMAL EARTH FOUNDATION | ROCK FOUNDATION | FOUNDATION SOFT, YIELDING, OR OTHERWISE UNSUITABLE MATERIAL

CULVERTS LESS THAN $S_1$ = 36"
$X = S_2 + 24"$
CULVERTS WHERE $S_1$ = 36" AND OVER
$X = S_2 + 36"$
METHOD "A" PIPE BEDDING SHALL BE USED AS FOLLOWS UNLESS OTHERWISE NOTED ON PLANS:
RIGID PIPE
WHEN H IS LESS THAN OR EQUAL TO 30'
FLEXIBLE PIPE
AS SHOWN ON TABLES

✳ MAY BE ELIMINATED UNDER ENTRANCE PIPE WHERE DIRECTED BY THE ENGINEER.

H = HEIGHT OF COVER MEASURED FROM TOP OF DRAINAGE STRUCTURE TO FINISHED GRADE.
$S_1$ = OUTSIDE SPAN OF PIPE.
$S_2$ = INSIDE SPAN OF PIPE.
R = OUTSIDE RISE OF PIPE.
b = DEPTH AS SHOWN ON PLANS OR TO FIRM BEARING SOIL.

BEDDING MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
CLASS I BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
CLASS II BACKFILL MATERIAL IN ACCORDANCE WITH SECTION 302 OF THE ROAD AND BRIDGE SPECIFICATIONS.
EMBANKMENT

SHEET 2 OF 4

INSTALLATION OF PIPE CULVERTS AND STORM SEWERS
ELLIPTICAL PIPE BEDDING AND BACKFILL - METHOD "A"
VIRGINIA DEPARTMENT OF TRANSPORTATION

SPECIFICATION REFERENCE
302
303

107.02

| ACCEPTABLE ELLIPTICAL SUBSTITUTION FOR ROUND PIPE | |
|---|---|
| ROUND SIZE (IN.) | EQUIVALENT ELLIPTICAL SIZE [SPAN X RISE] (IN.) |
| 15 | 23 x 14 |
| 18 | 23 x 14 |
| 24 | 30 x 19 |
| 27 | 34 x 22 |
| 30 | 38 x 24 |
| 33 | 42 x 27 |
| 36 | 45 x 29 |
| 42 | 53 x 34 |

THE ATTACHED STANDARD IS TAKEN FROM THE VDOT ROAD AND BRIDGE STANDARDS. THE ENTIRE COLLECTION OF 2008 VDOT ROAD AND BRIDGE STANDARDS CAN BE VIEWED AND PRINTED ON-LINE AT THE FOLLOWING ADDRESS:

http://www.vdot.virginia.gov/business/locdes/2008_standards_complete_sections.asp

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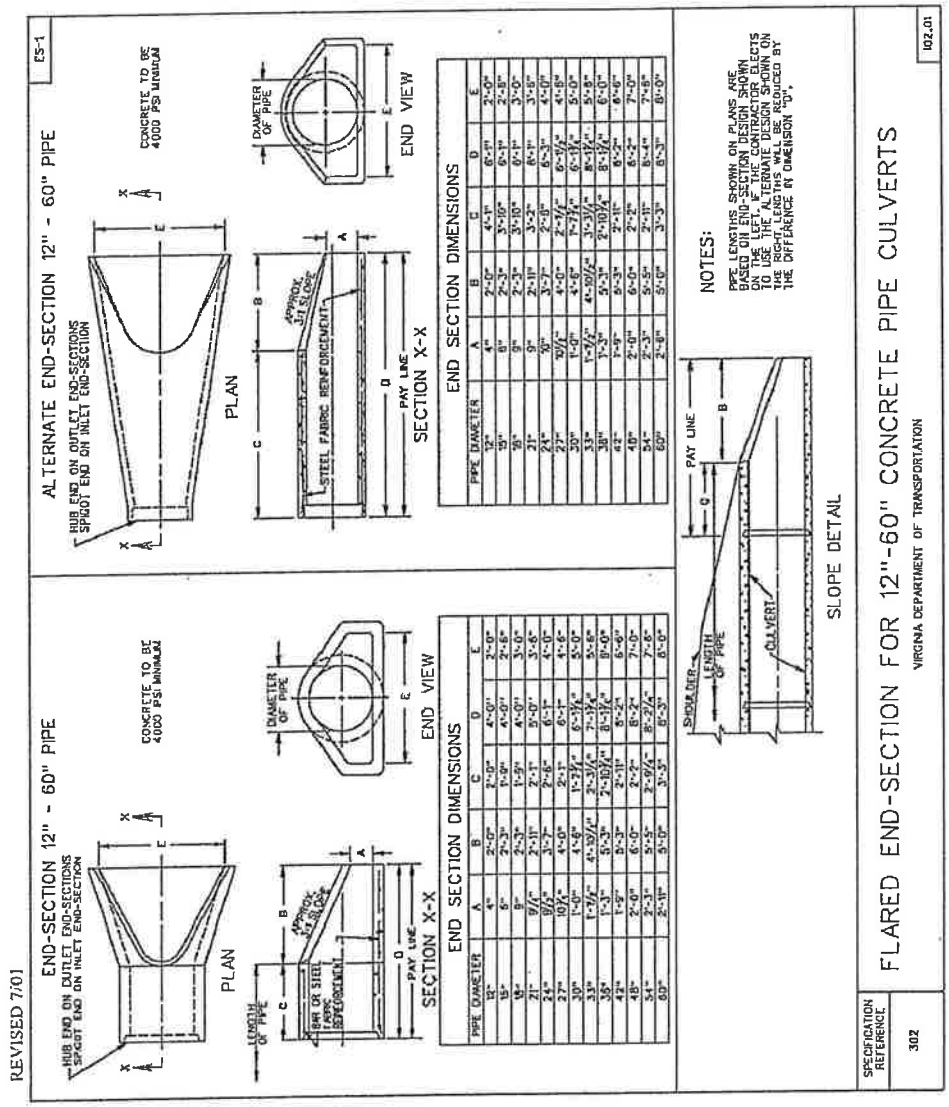

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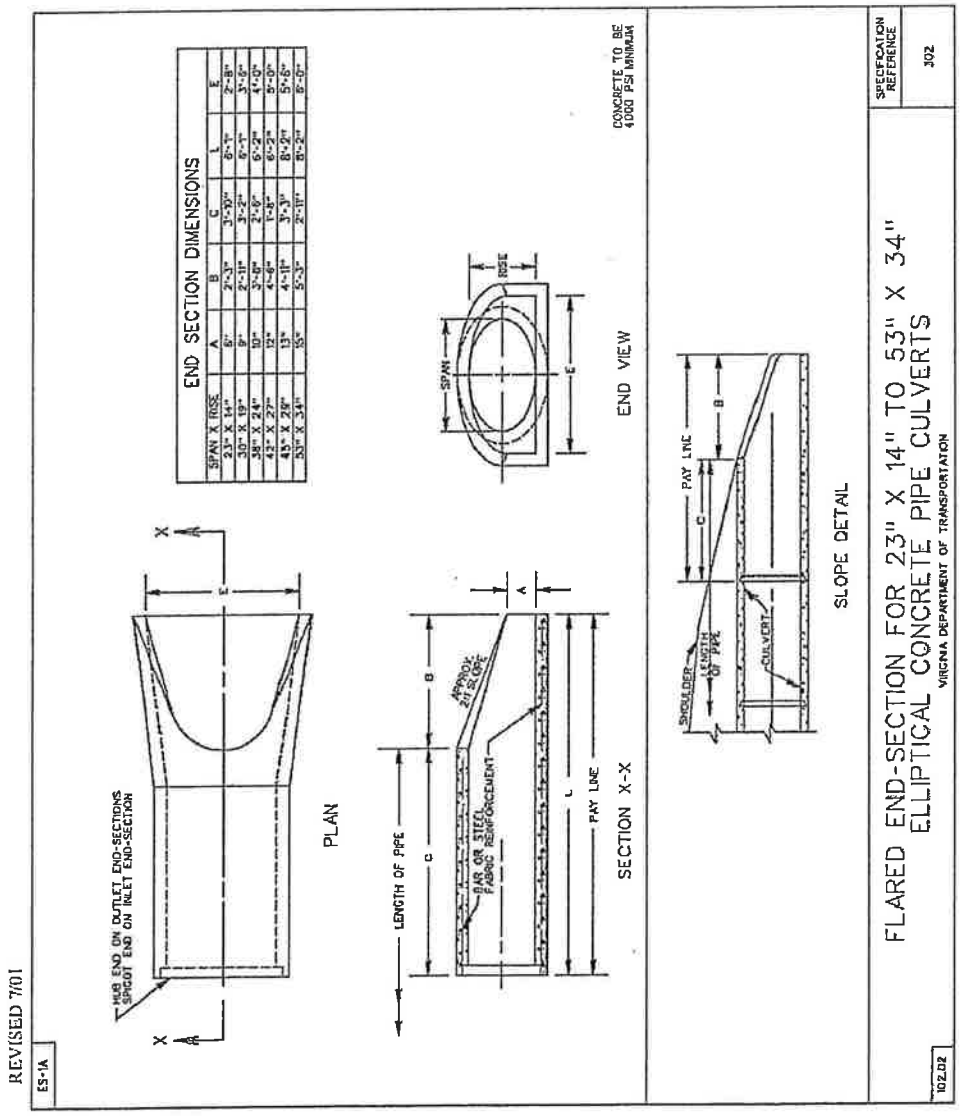

THE ATTACHED STANDARD IS TAKEN FROM THE VDOT ROAD AND BRIDGE STANDARDS.
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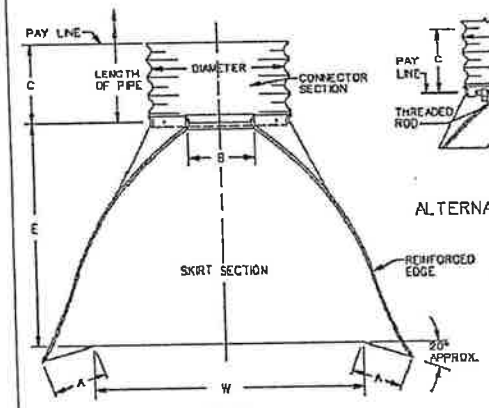
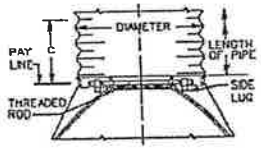
REVISED 7/01

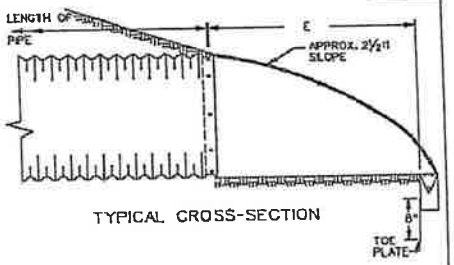
ES-2



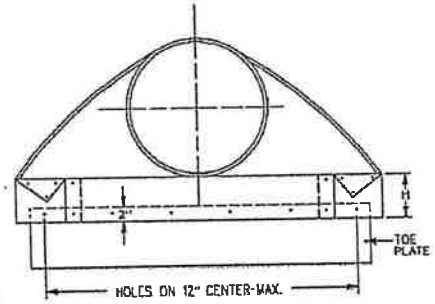

PLAN




ALTERNATE CONNECTION




TYPICAL CROSS-SECTION




ELEVATION

| PIPE DIAMETER | SHEET THICKNESS | | DIMENSIONS | | | | | |
|---|---|---|---|---|---|---|---|---|
| | STEEL | ALUMINUM | A 1" TOL. | B MAX. | H 1" TOL. | E ½" TOL. | W 2" TOL. | C |
| 12" | .064" | .050" | 6" | 6" | 5" | 21" | 24" | 24" |
| 15" | .064" | .060" | 7" | 8" | 6" | 26" | 30" | 24" |
| 18" | .064" | .060" | 8" | 10" | 6" | 31" | 36" | 24" |
| 21" | .064" | .060" | 10" | 12" | 6" | 36" | 42" | 24" |
| 24" | .064" | .060" | 10" | 13" | 6" | 41" | 48" | 24" |
| 27"/30" | .064" | .075" | 12" | 15" | 8" | 51" | 60" | 24" |
| 36" | .064" | .075" | 14" | 19" | 9" | 60" | 72" | 36" |
| 42" | .064" | .105" | 16" | 22" | 11" | 69" | 84" | 36" |
| 48" | .064" | .105" | 18" | 27" | 12" | 78" | 90" | 24" |
| 54" | .064"/.079" | .105" | 18" | 30" | 12" | 84" | 102" | 36" |
| 60" | .064"/.079" | .105"/.135" | 18" | 33" | 12" | 87" | 114" | 36" |

NOTES:

1. TOE PLATE TO BE PUNCHED TO MATCH HOLES IN SKIRT LIP. ¾" GALVANIZED BOLTS TO BE FURNISHED. LENGTH OF TOE PLATE IS W + 10" FOR 12" TO 30" DIAMETER PIPE AND W + 22" FOR 36" TO 60" DIAMETER PIPE.
2. SKIRT SECTION 12" TO 30" DIAMETER PIPE TO BE MADE IN ONE PIECE.
3. SKIRT SECTION FOR 36" TO 54" DIAMETER PIPE MAY BE MADE FROM TWO SHEETS JOINED BY RIVETING OR BOLTING ON CENTER LINE. 60" MAY BE CONSTRUCTED IN 3 PIECES.
4. CONNECTOR SECTION, CORNER PLATE AND TOE PLATE TO BE SAME SHEET THICKNESS AS SKIRT.
5. END-SECTION AND FITTINGS ARE TO BE STEEL FOR USE WITH STEEL PIPE.
6. END-SECTION AND FITTINGS ARE TO BE ALUMINUM ALLOY FOR USE WITH ALUMINUM ALLOY PIPE.
7. EITHER THE STEEL OR ALUMINUM END-SECTION DETAILED MAY BE USED FOR PLASTIC PIPE SIZES SHOWN IN STD. PC-1 OR AN APPROVED PLASTIC END-SECTION MAY BE USED.
8. WHERE FLARED END-SECTION ARE TO BE USED WITH ASPHALT COATED AND PAVED METAL PIPE, END SECTIONS DO NOT NEED TO BE COATED OR PAVED.

| SPECIFICATION REFERENCE | FLARED END-SECTION FOR 12"-60" CORRUGATED PIPE CULVERTS | |
|---|---|---|
| 302 | VIRGINIA DEPARTMENT OF TRANSPORTATION | 102.03 |

THE ATTACHED STANDARD IS TAKEN FROM THE VDOT ROAD AND BRIDGE STANDARDS. THE ENTIRE COLLECTION OF 2008 VDOT ROAD AND BRIDGE STANDARDS CAN BE VIEWED AND PRINTED ON-LINE AT THE FOLLOWING ADDRESS:

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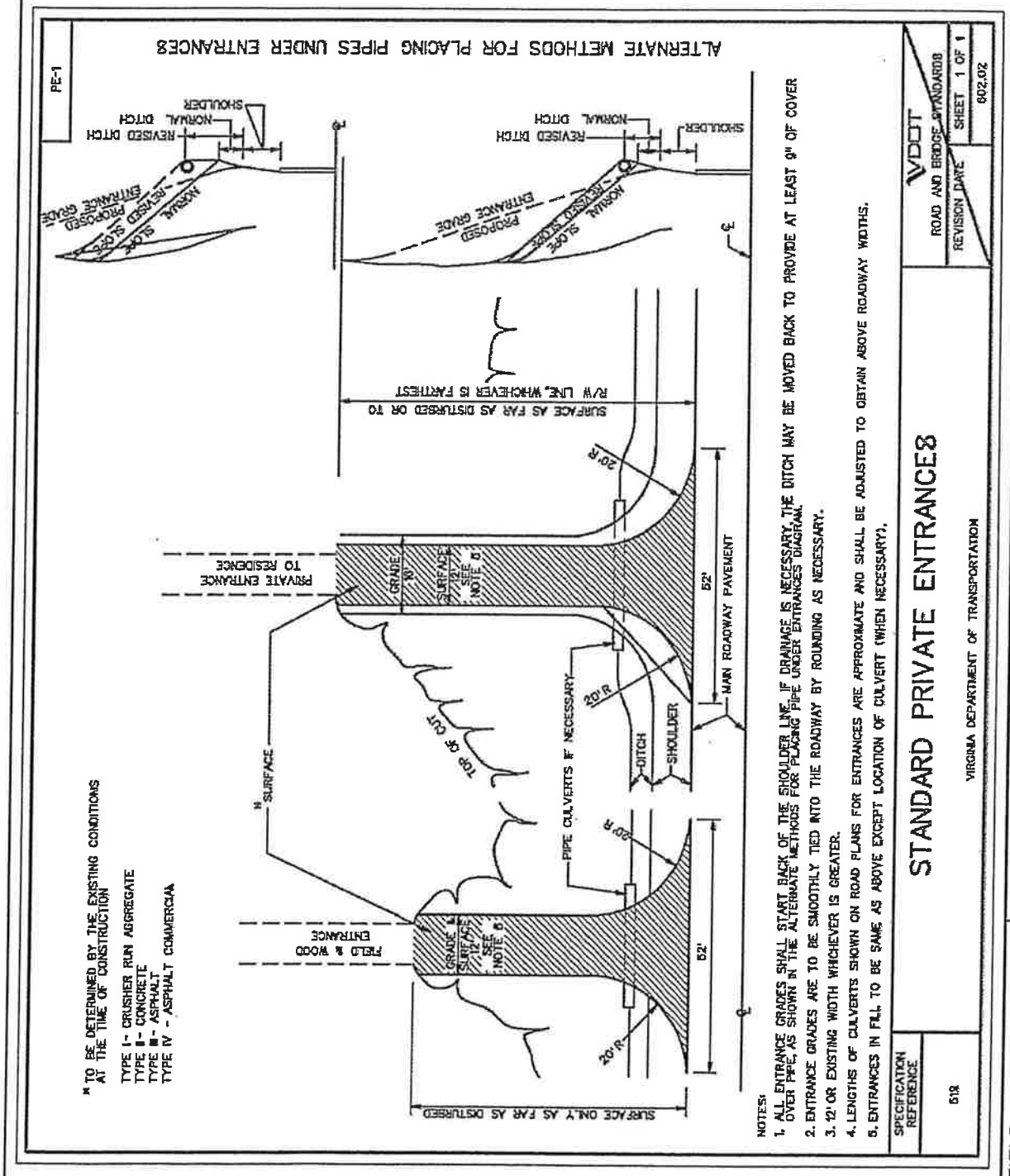


# APPENDIX E

## Storm Water Management Culvert Tables, Ditch Tables and Map Panels

# APPENDIX E-1

## Culvert Tables by Road Name

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Barbara Drive | BD 1+00 | 0.02 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 18 | 34 | D | 2 | E |
| Barbara Drive | BD 1+25 | 0.02 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 18 | 34 | D | 2 | E |
| Barbara Drive | BD 3+00 | 0.06 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 54 | D | 1 | |
| Barbara Drive | BD 11+00 | 0.21 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 18 | | D | 2.64 | |
| Barbara Drive | BD 11+25 | 0.21 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 18 | 222 | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Benson Court | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Bobbie Court | BCT 2+0 | 0.04 | SD | SD | R | E | 25 | 30 | 1 | RCP | 29 | | D | 347.01 | |
| Bobbie Court | BCT 4+50 | 0.09 | 2 X 18 | 2x24 | R | E | 25 | 18 | 1 | CMP | 29 | | D | 13.18 | |
| Bobbie Court | BCT 5+00 | 0.10 | 15 | 15 | P | E | 25 | 30 | 1 | RCP | 29 | 85 | D | 1 | E |
| Bobbie Court | BCT 8+75 | 0.17 | 2 X 18 | 2 X 18 | R | P | 25 | 18? | 1 | HDPE | 29 | | D | 7.68 | |
| Bobbie Court | BCT 13+00 | 0.27 | 2 X 18 | 2 X 18 | R | E | 25 | 30 | 1 | CMP | 29 | | D | 7.93 | |
| bbie Court | BCT 15+00 | 0.28 | 18 | 2 X 18 | P | E | 25 | 30 | 1 | RCP | 29 | 85 | D | 6 | |
| | | | | | | | | | | | | | | | |
| Bragg Drive | BGD 1+00 | 0.02 | 15 | 2 X 18 | P | E | 25 | 12 | 1 | CMP | 7 | | B | 15 | E |
| Bragg Drive | BGD 2+00 | 0.04 | 15 | 2 X 18 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 14 | E |
| Bragg Drive | BGD 4+75 | 0.09 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 3 | E |
| Bragg Drive | BGD 5+60 | 0.11 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 1 | E |
| Bragg Drive | BGD 6+50 | 0.12 | 12 | 15 | R | P | 30? | 15? | 1 | HDPE | 7 | | B | 3.03 | |
| Bragg Drive | BGD 7+00 | 0.13 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 126 | B | 3 | |
| Bragg Drive | BGD 9+00 | 0.17 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 7 | 167 | B | 1 | |
| Bragg Drive | BGD 12+50 | 0.24 | 12 | 15 | P | E | 30 | 18 | 1 | CMP | 7 | 217 | B | 2.1 | |
| Bragg Drive | BGD 13+50 | 0.26 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 217 | B | 1.5 | E |
| Bragg Drive | BGD 14+00 | 0.27 | 12 | 15 | P | E | 30 | 18 | 1 | CMP | 7 | 255 | B | 1.5 | E |
| Bragg Drive | BGD 15+50 | 0.29 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 282 | B | 1 | |
| Bragg Drive | BGD 21+50 | 0.41 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 391 | B | 1 | |
| Bragg Drive | BGD 21+51 | 0.41 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 7 | 376 | B | 1 | E |
| Bragg Drive | BGD 22+50 | 0.43 | 12 | 15 | P | N | 20? | 18? | 1 | HDPE | 7 | 403 | B | 3.97 | |
| Bragg Drive | BGD 30+50 | 0.58 | 12 | 15 | P | E | 35 | 12 | 1 | CMP | 7 | 552 | B | 2 | E |
| Bragg Drive | BGD 31+50 | 0.60 | 12 | 15 | P | E | 20 | 15 | 1 | HDPE | 7 | 658 | B | 3 | E |
| Bragg Drive | BGD 33+00 | 0.63 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 7 | | B | 3.36 | |
| Bragg Drive | BGD 40+50 | 0.77 | 18 | 2 X 18 | R | P | 25? | 18? | 3 | HDPE | 7 | | B | 18.67 | |
| | | | | | | | | | | | | | | | |
| Briar Lane | BL 0+00 | 0.00 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 30 | | B | 4.69 | |
| Briar Lane | BL 5+00 | 0.09 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 92 | B | 1 | E |
| Briar Lane | BL 7+00 | 0.13 | 15 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 10.82 | |
| Briar Lane | BL 8+00 | 0.15 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.01 | |
| r Lane | BL 11+50 | 0.22 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 1.99 | |
| Briar Lane | BL 12+00 | 0.23 | 12 | 15 | P | N | 20 | 12? | 1 | HDPE | 30 | 232 | B | 1 | E |
| Briar Lane | BL 16+00 | 0.30 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 30 | | B | 6.79 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brook View Road | NO CULVERTS MAPPED | | | | | | | | | | 29 | | | | |
| Brookview Lane | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| Cappy Road | CR 0+20 | 0.00 | 15 | 18 | R | P | 30? | 24? | 1 | HDPE | 01 | | B | 7.14 | |
| Cappy Road | CR 1+00 | 0.02 | 12 | 15 | P | E | 30 | 12 | 1 | CMP | 01 | 25 | B | 1 | E |
| Cappy Road | CR 3+50 | 0.07 | 18 | 3x18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 38.03 | |
| Cindy's Way | CW 2+50 | 0.05 | SD | SD | R | E | 20 | 24 | 1 | CMP | 14 | | D | 108.03 | |
| Cindy's Way | CW 4+50 | 0.09 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 14 | 40 | D | 2.5 | |
| Cindy's Way | CW 8+50 | 0.16 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 14 | | D | 2.51 | |
| Cindy's Way | CW 13+50 | 0.26 | SD | SD | R | E | 25 | 60 | 1 | CMP | 14 | | D | 74.27 | |
| ıdy's Way | CW 14+50 | 0.27 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 14 | 277 | D | 1 | |
| Cindy's Way | CW 16+25 | 0.31 | 15 | 15 | P | N. | 20? | 15? | 1 | HDPE | 14 | 317 | D | 1 | |
| Cindy's Way | CW 20+00 | 0.38 | 18 | 2 X 18 | R | E | 30 | 12 | 1 | HDPE | 14 | | D | 5.94 | |
| Cindy's Way | CW 21+50 | 0.41 | 15 | 15 | P | E | 40 | 12 | 1 | CMP | 14 | 408 | D | 1 | |
| Cindy's Way | CW 22+00 | 0.42 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 14 | 419 | D | 1 | |
| Cliffside Road | CR 1+50 | 0.03 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 31 | B | 1 | |
| Cliffside Road | CR 2+50 | 0.05 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 54 | B | 1 | E |
| Cliffside Road | CR 2+75 | 0.05 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 51 | B | 2 | E |
| Cliffside Road | CR 3+50 | 0.07 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 73 | B | 2.5 | E |
| Cliffside Road | CR 4+00 | 0.08 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 1.19 | |
| Cliffside Road | CR 4+25 | 0.08 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 79 | B | 1 | |
| Cliffside Road | CR 5+50 | 0.10 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 101 | B | 1 | |
| Cliffside Road | CR 6+50 | 0.12 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 126 | B | 0.7 | E |
| Cliffside Road | CR 8+00 | 0.15 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 1.52 | |
| Cliffside Road | CR 9+50 | 0.18 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 163 | B | 1 | |
| Cliffside Road | CR 11+75 | 0.22 | 18 | 2 X 18 | R | E | 30 | 18 | 1 | CMP | 05 | | B | 19.45 | |
| Copenhover Road | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| Crossway Lane | CL 4+00 | 0.08 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.32 | |
| Crossway Lane | CL 8+80 | 0.17 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 02 | | B | 6.37 | |
| | | | | | | | | | | | | | | | E |
| Dillard Court | DC 0+50 | 0.01 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 11 | 132 | B | 1 | |
| Dillard Court | DC 3+00 | 0.06 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 11 | 185 | B | 1 | E |
| lard Court | DC 5+00 | 0.09 | 12 | 15 | R | N | 20? | 18? | 1 | HDPE | 11 | | B | 4.8 | |
| Dogwood Farm Road | DFR 9+50 | 0.18 | 15 | 15 | P | E | 12 | 8 | 1 | PLAST | 21 | 181 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dogwood Farm Road | DFR 11+00 | 0.21 | 2 X 18 | 2x24 | R | P | 20? | 15? | 1 | HDPE | 21 | | D | 13.89 | |
| Dogwood Farm Road | DFR 17+00 | 0.32 | 3x18 | 2x24 | R | E | 15 | 12 | 1 | HDPR | 21 | | D | 18.83 | |
| Dogwood Farm Road | DFR 17+25 | 0.33 | 2 X 18 | 2 X 18 | R | E | ? | ? | 1 | ? | 21 | | D | 6.16 | |
| Dogwood Farm Road | DFR 19+00 | 0.36 | 15 | 18 | P | N | 15? | 15 | 1 | HDPE | 21 | 361 | D | 1.75 | |
| Dogwood Farm Road | DFR 25+00 | 0.47 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 21 | 476 | D | 1 | E |
| Dogwood Farm Road | DFR 27+75 | 0.53 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 21 | | D | 1.2 | |
| Dogwood Farm Road | DFR 30+20 | 0.57 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 21 | 884 | D | 1 | E |
| Dogwood Farm Road | DFR 32+70 | 0.62 | SD | SD | R | E | 35 | 24 | 2 | CMP | 21 | | D | 129.2 | |
| | | | | | | | | | | | | | | | |
| Donna Court | DNC ? | 0.00 | 15 | 18 | P | N | 15? | 15? | 1 | HDPE | 16 | 17 | D | 1.2 | |
| Donna Court | DNC 1+40 | 0.03 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 3.27 | |
| | | | | | | | | | | | | | | | |
| Drummer Hill Road | DHR 1+50 | 0.03 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 2.13 | |
| ummer Hill Road | DHR 2+50 | 0.05 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 38 | D | 1 | E |
| Drummer Hill Road | DHR 4+00 | 0.08 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 100 | D | 1 | E |
| Drummer Hill Road | DHR 4+50 | 0.09 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 100 | D | 1 | E |
| Drummer Hill Road | DHR 8+50 | 0.16 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 1.85 | |
| Drummer Hill Road | DHR 12+00 | 0.23 | 3x18 | SD | R | E | 30 | 18 | 1 | CMP | 23 | | D | 20.31 | |
| Drummer Hill Road | DHR 15+50 | 0.29 | SD | SD | R | E | 30 | 60 | 2 | CMP | 23 | | D | 1203.43 | |
| Drummer Hill Road | DHR 24+00 | 0.45 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 1.51 | |
| Drummer Hill Road | DHR 24+01 | 0.45 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 474 | D | 1 | E |
| Drummer Hill Road | DHR 27+50 | 0.52 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 23 | | D | 3.37 | |
| Drummer Hill Road | DHR 31+50 | 0.60 | 2 X 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 23 | | D | 10.57 | |
| Drummer Hill Road | DHR 34+50 | 0.65 | 15 | 18 | P | E | 20 | 18 | 1 | CMP | 23 | 628 | D | 1.5 | E |
| Drummer Hill Road | DHR 37+00 | 0.70 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 22 | | D | 6.75 | |
| Drummer Hill Road | DHR 43+50 | 0.82 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 5.74 | |
| Drummer Hill Road | DHR 45+50 | 0.86 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 28 | 836 | D | 1 | E |
| Drummer Hill Road | DHR 47+50 | 0.90 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 2.48 | |
| Drummer Hill Road | DHR 51+00 | 0.97 | 15 | 15 | P | N | 20 | 12? | 1 | HDPE | 28 | 912 | D | 1 | E |
| Drummer Hill Road | DHR 54+50 | 1.03 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 2.05 | |
| Drummer Hill Road | DHR 61+50 | 1.16 | 15 | 18 | R | P | 20? | 18? | 1 | HDPE2 | 23 | | D | 2.72 | |
| Drummer Hill Road | DHR 66+50 | 1.26 | 15 | 15 | R | E | 20 | 18 | 1 | CMP | 23 | | D | 0.48 | |
| Drummer Hill Road | DHR 74+50 | 1.41 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 29 | | D | 1.43 | |
| Drummer Hill Road | DHR 75+50 | 1.43 | 15 | 15 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 0.65 | |
| Drummer Hill Road | DHR 78+00 | 1.48 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 29 | 1447 | D | 1.18 | |
| Drummer Hill Road | DHR 78+25 | 1.48 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 29 | | D | 1 | E |
| Drummer Hill Road | DHR 79+00 | 1.50 | 2 X 18 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 29 | 1550 | D | 7.33 | |
| Drummer Hill Road | DHR 83+00 | 1.57 | 15 | 18 | P | E | 30 | 12 | 1 | HDPE | 29 | | D | 1.5 | |
| ummer Hill Road | DHR 85+50 | 1.62 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 29 | | D | 1.69 | |
| Drummer Hill Road | DHR 89+50 | 1.70 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 29 | ???? | D | 4.61 | |
| Drummer Hill Road | DHR 97+75 | 1.85 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 24 | 1859 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drummer Hill Road | DHR 100+00 | 1.89 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | 1872 | D | 1 | E |
| Drummer Hill Road | DHR 100+50 | 1.90 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | 1872 | D | 1 | E |
| Drummer Hill Road | DHR 101+00 | 1.91 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | | D | 1 | E |
| Drummer Hill Road | DHR 105+00 | 1.99 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 24 | 61 | B | 8.54 | |
| Drummer Hill Road | DHR 114+00 | 2.16 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | | B | 4.7 | |
| | | | | | | | | | | | | | | | |
| Dry Run Court | DRC 1+50 | 0.03 | SD | SD | R | E | 22 | 60 | 2 | RCP | 11 | | D + B | 620.66 | E |
| Dry Run Court | DRC 4+00 | 0.08 | 15 | 15 | P | E | 22 | 16 | 1 | CMP | 11 | 71 | D | 1 | E |
| Dry Run Court | DRC 4+01 | 0.08 | 15 | 15 | P | E | 15 | 16 | 1 | CMP | 11 | 74 | D | 1 | E |
| Dry Run Court | DRC 6+50 | 0.12 | 18 | 2 X 18 | R | E | 38' | 18 | 1 | CMP | 11 | | D | 4.06 | |
| Dry Run Court | DRC 10+50 | 0.20 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 11 | 209 | D | 1.15 | |
| Dry Run Court | DRC 11+50 | 0.22 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 11 | 218 | D | 1.1 | E |
| Dry Run Court | DRC 12+00 | 0.23 | 15 | 15 | P | E | 12 | 12 | 1 | PVC | 11 | 209 | D | 1 | E |
| / Run Court | DRC 14+50 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 266 | D | 1 | E |
| Dry Run Court | DRC 14+75 | 0.28 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 280 | D | 1 | E |
| Dry Run Court | DRC 15+75 | 0.30 | 15 | 15 | P | E | 12? | 12? | 1 | CMP? | 11 | 298 | D | 1 | E |
| Dry Run Court | DRC 18+00 | 0.34 | 2 X 18 | 2 X 18 | R | E | 20 | 18 | 1 | PVC | 11 | | D | 8 | |
| Dry Run Court | DRC 20+00 | 0.38 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 394 | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Eagles Crag Road | NO CULVERTS MAPPED | | | | | | | | | | 27 | | | | |
| | | | | | | | | | | | | | | | |
| Ehlers Drive | ED 0+00 | 0.00 | 18 | 2 X 18 | R | P | 25 | 24? | 1 | HDPE | 7 | | B | 20.42 | |
| Ehlers Drive | ED 3+50 | 0.07 | 15 | 2 X 18 | P | E | 15 | 18 | 1 | HDPE | 7 | 65 | B | 15 | E |
| Ehlers Drive | ED 5+00 | 0.09 | 15 | 2 X 18 | P | N | 20 | 18? | 1 | HDPE | 7 | 101 | B | 15 | E |
| Ehlers Drive | ED 8+50 | 0.16 | 18 | 2 X 18 | R | P | 25 | 24? | 1 | HDPE | 7 | | B | 16.59 | |
| | | | | | | | | | | | | | | | |
| Elinore Lane | EL 1+00 | 0.02 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 18 | | B | 8.56 | |
| Elinore Lane | EL 2+00 | 0.04 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 18 | 83 | B | 3.56 | |
| Elinore Lane | EL 4+00 | 0.08 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 121 | B | 1 | E |
| Elinore Lane | EL 4+50 | 0.09 | 12 | 15 | R | P | 30? | 18? | 1 | HDPE | 18 | | B | 4.74 | |
| Elinore Lane | EL 11+00 | 0.21 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 18 | | B | 5.39 | |
| Elinore Lane | EL 15+20 | 0.29 | 15 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 18 | | B | 13.23 | |
| Elinore Lane | EL 17+00 | 0.32 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 18 | | B | 2.1 | |
| Elinore Lane | EL 18+50 | 0.35 | 12 | 15 | R | P | 25? | 15? | | HDPE | 18 | | B | 0.5 | |
| | | | | | | | | | | | | | | | |
| Elseas Farm Road | EFR 6+00 | 0.11 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 06 | | B | 2.4 | |
| | | | | | | | | | | | | | | | |
| Farm View Road | FVR 3+50 | 0.07 | 12 | 15 | P | E | ? | ? | 1 | CMP | 11 | 55 | B | 1 | E |
| :rm View Road | FVR 10+50 | 0.20 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 9 | 196 | B | 2 | E |
| Farm View Road | FVR 12+00 | 0.23 | 12 | 15 | P | E | 20? | 12 | 1 | CMP | 9 | 234 | B | 3 | E |
| Farm View Road | FVR 14+75 | 0.28 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 9 | 275 | B | 0.35 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Farm View Road | FVR 16+00 | 0.30 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 9 | 289 | B | 0.72 | |
| | | | | | | | | | | | | | | | |
| Farms Ridge Road | FRR 0+25 | 0.00 | 15 | 18 | R | P | 25? | 15 | 1 | HDPE | 35 | | C | 1.65 | |
| Farms Ridge Road | FRR 2+50 | 0.05 | 15 | 15 | P | N | 20? | 15 | 2 | HDPE | 33 | 163 | C | 1 | E |
| Farms Ridge Road | FRR 4+00 | 0.08 | 15 | 15 | P | N | 20? | 15 | 1 | HDPE | 33 | 193 | C | 1 | E |
| | | | | | | | | | | | | | | | |
| Farms River Road | FRRD 0+50 | 0.01 | 18 | 2 X 18 | R | E | 22 | 12 | 1 | CMP | 9 | | B | 25.04 | |
| Farms River Road | FRRD 3+50 | 0.07 | 15 | 2 X 18 | P | N | 20? | 18? | 1 | HDPE | 9 | 2989 | B | 12 | E |
| Farms River Road | FRRD 13+50 | 0.26 | 12 | 15 | P | E | 12 | 12 | 1 | PVC | 9 | 266 | B | 2 | E |
| Farms River Road | FRRD 18+00 | 0.34 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 9 | 342 | B | 6 | E |
| Farms River Road | FRRD 19+00 | 0.36 | 18 | 2 X 18 | R | P | 25? | 24 | 1 | HDPE | 9 | | B | 18.21 | |
| Farms River Road | FRRD 22+00 | 0.42 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 9 | 416 | B | 1 | E |
| Farms River Road | FRRD 27+50 | 0.52 | SD | SD | R | E | 23 | 24 | 1 | CMP | 10 | | B | 60.15 | |
| ms River Road | FRRD 31+00 | 0.59 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 10 | 74 | B | 1 | E |
| Farms River Road | FRRD 32+25 | 0.61 | 18 | 2 X 18 | R | E | 23 | 15 | 1 | PVC | 10 | | B | 20.47 | |
| Farms River Road | FRRD 36+00 | 0.68 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 10 | 668 | B | 3 | E |
| Farms River Road | FRRD 38+00 | 0.72 | 15 | 18 | R | E | 25 | 18 | 1 | CMP | 10 | | B | 8.32 | |
| Farms River Road | FRRD 38+75 | 0.73 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 10 | 722 | B | 8.3 | |
| | | | | | | | | | | | | | | | |
| Farm Riverview Road | FRVR 1+75 | 0.03 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 19 | 305 | B | 1 | E |
| Farm Riverview Road | FRVR 5+00 | 0.09 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 19 | 378 | B | 1 | E |
| Farm Riverview Road | FRVR -10+00 | 0.20 | 18 | 3x18 | R | P | 25? | 24? | 1 | HDPE | 15 | | B | 31.36 | |
| Farm Riverview Road | FRVR -11+50 | 0.22 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -11+51 | 0.22 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -13+00 | 0.25 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | 49 | B | 1 | E |
| Farm Riverview Road | FRVR -13+01 | 0.25 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -14+50 | 0.27 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | 15 | B | 1 | E |
| Farm Riverview Road | FRVR -14+51 | 0.27 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| | | | | | | | | | | | | | | | |
| Fellows Drive | FD 5+00 | 0.09 | 12 | 15 | R | E | 25 | 18 | 1 | CMP | 10 | | B | 2 | E |
| Fellows Drive | FD 5+50 | 0.10 | 12 | 15 | R | E | 20 | 18 | 1 | CMP | 10 | | B | 1 | E |
| Fellows Drive | FD 12+75 | 0.24 | 12 | 15 | P | E | 15? | 15? | 1 | CMP? | 10 | 292 | B | 3 | E |
| Fellows Drive | FD 14+50 | 0.27 | 12 | 15 | P | E | 15? | 15? | 1 | HDPE | 10 | 255 | B | 1 | E |
| Fellows Drive | FD 14+51 | 0.27 | 12 | 15 | P | N | 15? | 15? | 1 | HDPE | 10 | 270 | B | 3 | E |
| Fellows Drive | FD 17+00 | 0.32 | 12 | 15 | P | E | 25 | 15 | 1 | CMP | 10 | 222 | B | 4 | E |
| Fellows Drive | FD 17+25 | 0.33 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 215 | B | 1 | E |
| Fellows Drive | FD 20+00 | 0.38 | 15 | 18 | R | E | 70 | 15 | 1 | CMP | 10 | | B | 5.75 | |
| Fellows Drive | FD 25+50 | 0.48 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 10 | 59 | B | 5 | E |
| llows Drive | FD 27+75 | 0.53 | 18 | 2 X 18 | R | E | 46 | 15 | 1 | CMP | 10 | | B | 16.18 | |
| | | | | | | | | | | | | | | | |
| Fern Court | FC 1+00 | 0.02 | 15 | 15 | P | N | 20 | 15 | 1 | HDPE | 23 | 30 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| Flynn Drive | FND 5+00 | 0.09 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 102 | B | 2 | E |
| Flynn Drive | FND 7+00 | 0.13 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 136 | B | 3 | E |
| Flynn Drive | FND 9+75 | 0.18 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 10 | | B | 11.53 | |
| Flynn Drive | FND 10+00 | 0.19 | 12 | 15 | P | E | 15? | 15? | 1 | CMP? | 10 | 194 | B | 4 | E |
| Flynn Drive | FND 12+75 | 0.24 | 12 | 15 | P | E | 15? | 15 | 1 | CMP | 10 | 242 | B | 2 | E |
| Flynn Drive | FND 18+75 | 0.36 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 10 | | B | 2.83 | |
| Flynn Drive | FND 23+60 | 0.45 | 12 | 15 | R | N | 20? | 15? | 1 | HDPE | 10 | | B | 1.3 | |
| | | | | | | | | | | | | | | | |
| Freeze Road | FR 5+50 | 0.10 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 125 | B | 1 | E |
| Freeze Road | FR 4+00 | 0.08 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 02 | | B | 1.27 | |
| Freeze Road | FR 6+50 | 0.12 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 125 | B | 1 | E |
| Freeze Road | FR 7+50 | 0.14 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 157 | B | 1 | E |
| eze Road | FR 10+50 | 0.20 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 6.12 | |
| Freeze Road | FR 15+25 | 0.29 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 292 | B | 3 | E |
| Freeze Road | FR 20+50 | 0.39 | 15 | 18 | R | P | 35 | 15 | 2 | HDPE | 02 | | B | 8.04 | |
| Freeze Road | FR 23+25 | 0.44 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 8.46 | |
| | | | | | | | | | | | | | | | |
| Gary Lane | GL 0+25 | 0.00 | 18 | 2 X 18 | R | E | 18 | 15 | 1 | CMP | 16 | | D | 5.25 | |
| Gary Lane | GL 10+50 | 0.20 | 18 | 2 X 18 | R | E | 18 | 12 | 1 | CMP | 21 | | D | 5.93 | |
| Gary Lane | GL 14+50 | 0.27 | 15 | 18 | R | E | 20 | 12 | 1 | STEEL | 21 | | D | 2.64 | |
| | | | | | | | | | | | | | | | |
| Gary Lane (western section) | GLW 2+75 | 0.05 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 16 | | D | 6.47 | |
| Gary Lane (western section) | GLW 3+00 | 0.06 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 16 | 370 | D | 1 | E |
| Gary Lane (western section) | GLW 6+50 | 0.12 | 2 X 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 16 | | D | 8.79 | |
| Gary Lane (western section) | GLW 7+75 | 0.15 | 18 | 2 X 18 | P | N | 20? | 15? | 1 | HDPE | 16 | 462 | D | 4 | |
| | | | | | | | | | | | | | | | |
| Gayles Lane | GYL 3+00 | 0.06 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 31 | 90 | B | 2 | E |
| Gayles Lane | GYL 5+50 | 0.10 | 12 | 15 | R | P | 40 | 18? | 1 | HDPE | 31 | | B | 2.93 | |
| Gayles Lane | GYL 7+00 | 0.13 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 31 | 125 | B | 4 | E |
| Gayles Lane | GYL 9+00 | 0.17 | 15 | 18 | R | N | 30 | 15 | 1 | HDPE | 31 | | B | 5.16 | |
| | | | | | | | | | | | | | | | |
| Goode Drive | GD 2+75 | 0.05 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 17 | | D | 1 | E |
| Goode Drive | GD 6+00 | 0.11 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 3 | |
| Goode Drive | GD 6+50 | 0.12 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 16 | 84 | D | 1 | E |
| Goode Drive | GD 7+50 | 0.14 | 15 | 18 | R | E | ? | ? | 1 | CMP | 16 | | D | 3 | |
| Goode Drive | GD 9+00 | 0.17 | 15 | 15 | P | E | 18 | 12 | 1 | CMP | 16 | 172 | D | 1 | E |
| Goode Drive | GD 11+00 | 0.21 | 15 | 18 | R | E | ? | ? | 1 | ? | 16 | | D | 2.23 | |
| ode Drive | GD 11+01 | 0.21 | 15 | 15 | P | E | ? | ? | 1 | ? | 16 | 195 | D | 1 | E |
| Goode Drive | GD 11+50 | 0.22 | 15 | 18 | P | E | 12 | 12 | 1 | PVC | 16 | 221 | D | 1.1 | E |
| Goode Drive | GD 15+25 | 0.29 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 281 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Goode Drive | GD 17+50 | 0.33 | 18 | 2 X 18 | R | E | 18 | ? | 1 | CMP | 17 | | D | 4.38 | |
| Goode Drive | GD 22+50 | 0.43 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 17 | 421 | D | 1 | E |
| Goode Drive | GD 23+50 | 0.45 | 2 X 18 | 2 X 18 | R | E | 20 | 16 | 1 | CMP | 17 | | D | 7.34 | |
| Goode Drive | GD 23+51 | 0.45 | 18 | 2 X 18 | P | E | 12 | 12 | 2 | CMP | 17 | 467 | D | 5 | E |
| Goode Drive | GD 26+25 | 0.50 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 493 | D | 3 | E |
| Goode Drive | GD 32+00 | 0.61 | 18 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 22 | | D | 3.19 | |
| Goode Drive | GD 34+25 | 0.65 | 18 | 2 X 18 | R | E | 18 | 12 | 1 | CMP | 22 | | D | 3.19 | |
| Goode Drive | GD 36+75 | 0.70 | 18 | 2 X 18 | R | E | 18 | 18 | 1 | CMP | 22 | | D | 3.7 | |
| Goode Drive | GD 43+00 | 0.81 | 18 | 2 X 18 | P | E | 12 | 12 | 2 | CMP | 22 | 785 | D | 3.25 | |
| Goode Drive | GD 44+50 | 0.84 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 22 | | D | 1.07 | |
| Goode Drive | GD 46+00 | 0.87 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 22 | | D | 2.82 | |
| Goode Drive | GD 48+25 | 0.91 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 22 | | D | 2.14 | |
| Goode Drive | GD 58+00 | 1.10 | 2 X 18 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 28 | | D | 7.86 | |
| | | | | | | | | | | | | | | | |
| Heavens Tree Trail | HTT 3+00 | 0.06 | 18 | 2 X 18 | R | P | 25? | 18 | 1 | HDPE | 27 | | C | 5 | E |
| Heavens Tree Trail | HTT 7+00 | 0.13 | 2 X 18 | 2x24 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 14.37 | |
| Heavens Tree Trail | HTT 8+50 | 0.16 | 18 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 4.92 | |
| Heavens Tree Trail | HTT 10+50 | 0.20 | 2 X 18 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 6.87 | |
| Heavens Tree Trail | HTT 14+50 | 0.27 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 20 | | C | 6.87 | |
| Heavens Tree Trail | HTT 14+50 | 0.27 | 2 X 18 | 3x18 | P | N | 15? | 15 | 1 | HDPE | 20 | 285 | C | 11.1 | |
| Heavens Tree Trail | HTT 17+50 | 0.33 | 2 X 18 | 3x18 | P | E | 15? | 15 | 1 | CMP | 20 | 108 | C | 11.1 | |
| Heavens Tree Trail | HTT 22+30 | 0.42 | 3x18 | SD | R | P | 25? | 18? | 1 | HDPE | 19 | | C | 19.35 | E |
| | | | | | | | | | | | | | | | |
| Heim Jones Road | NO CULVERTS MAPPED | | | | | | | | | | 05 + 06 | | B | | |
| | | | | | | | | | | | | | | | |
| High Top Road | HTR 12+00 | 0.23 | 12 | 15 | R | P | 35 | 15 | 1 | HDPE | 01 | | B | 1.62 | |
| High Top Road | HTR 15+50 | 0.29 | SD | SD | R | E | 35 | 18 | 2 | CMP | 01 | | B | 82.02 | |
| High Top Road | HTR 19+00 | 0.36 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 6.09 | |
| High Top Road | HTR 23+00 | 0.44 | 12 | 15 | R | E | 30 | 15 | 1 | HDPE | 01 | | B | 4.07 | |
| High Top Road | HTR 27+75 | 0.53 | 12 | 15 | R | E | 30 | 15 | 1 | HDPE | 01 | | B | 2.72 | |
| High Top Road | HTR 33+75 | 0.64 | 15 | 18 | R | E | 40 | 18 | 1 | CMP | 02 | | B | 6.37 | |
| High Top Road | HTR 40+00 | 0.76 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 4.16 | |
| High Top Road | HTR 47+75 | 0.90 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 903 | B | 0.87 | |
| High Top Road | HTR 49+00 | 0.93 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 2.17 | |
| High Top Road | HTR 50+25 | 0.95 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 02 | | B | 0.82 | |
| High Top Road | HTR 51+75 | 0.98 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 971 | B | 0.48 | |
| High Top Road | HTR 52+00 | 0.98 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.34 | |
| High Top Road | HTR 53+00 | 1.00 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 1005 | B | 1 | E |
| gh Top Road | HTR 56+00 | 1.06 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 1 | E |
| High Top Road | HTR 61+50 | 1.16 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.78 | |
| High Top Road | HTR 62+00 | 1.17 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1173 | B | 0.3 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Top Road | HTR 63+00 | 1.19 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1205 | B | 1.08 | |
| High Top Road | HTR 64+00 | 1.21 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1205 | B | 1.23 | |
| High Top Road | HTR 68+00 | 1.29 | 12 | 15 | R | P | 30 | 18 | 1 | HDPE | 03 | | B | 2.35 | |
| High Top Road | HTR 69+50 | 1.32 | 12 | 15 | R | N | 30? | 18? | 1 | HDPE | 03 | | B | 2.95 | |
| High Top Road | HTR 71+50 | 1.35 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1339 | B | 1 | E |
| High Top Road | HTR 77+50 | 1.47 | 12 | 15 | P | N | 20? | 18 | 1 | HDPE | 03 | 1473 | B | 5 | E |
| High Top Road | HTR 81+00 | 1.53 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 03 | | B | 10.18 | |
| High Top Road | HTR 85+00 | 1.61 | 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 02 | | B | 29.8 | |
| High Top Road | HTR 89+25 | 1.69 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1679 | B | 1 | E |
| High Top Road | HTR 89+50 | 1.70 | 12 | 15 | R | E | 30 | 12 | 1 | CMP | 02 | | B | 4.91 | |
| High Top Road | HTR 91+00 | 1.72 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1722 | B | 1 | E |
| High Top Road | HTR 94+00 | 1.78 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1745 | B | 3.5 | E |
| High Top Road | HTR 97+50 | 1.85 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 7.26 | |
| gh Top Road | HTR 99+50 | 1.88 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 3.12 | |
| High Top Road | HTR 103+00 | 1.95 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 7.28 | |
| High Top Road | HTR 107+50 | 2.04 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2028 | B | 1 | E |
| High Top Road | HTR 109+50 | 2.07 | 12 | 15 | R | E | 40 | 15 | 1 | CMP | 02 | | B | 4.47 | |
| High Top Road | HTR 115+00 | 2.18 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 5.9 | |
| High Top Road | HTR 117+50 | 2.23 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2239 | B | 2 | E |
| High Top Road | HTR 118+50 | 2.24 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 01 | | B | 6.67 | |
| High Top Road | HTR 121+50 | 2.30 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 01 | | B | 6.84 | |
| High Top Road | HTR 132+00 | 2.50 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 01 | | B | 2.26 | |
| High Top Road | HTR 138+50 | 2.62 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2628 | B | 1 | E |
| High Top Road | HTR 141+50 | 2.68 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2239 | B | 0.59 | |
| High Top Road | HTR 141+51 | 2.68 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2682 | B | 1 | E |
| High Top Road | HTR 142+00 | 2.69 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2691 | B | 0.6 | |
| High Top Road | HTR 143+00 | 2.71 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2702 | B | 1 | E |
| High Top Road | HTR 144+00 | 2.73 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2727 | B | 1 | E |
| High Top Road | HTR 146+50 | 2.77 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2775 | B | 1 | E |
| | | | | | | | | | | | | | | | |
| Hobbs Knob Road | HKR 2+00 | 0.04 | 18 | 2 X 18 | R | E | 25 | 12 | 1 | CMP | 13 | | D | 4.45 | |
| Hobbs Knob Road | HKR 4+25 | 0.08 | 15 | 15 | P | E | 35 | 12 | 1 | CMP | 13 | 64 | D | 1 | E |
| Hobbs Knob Road | HKR 7+00 | 0.13 | 15 | 18 | R | E | 25 | 16 | 1 | CMP | 13 | | D | 1.91 | |
| Hobbs Knob Road | HKR 8+50 | 0.16 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 13 | | D | 1.91 | |
| Hobbs Knob Road | HKR 14+00 | 0.27 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 13 | | D | 3.65 | |
| Hobbs Knob Road | HKR 16+50 | 0.31 | 2 X 18 | 2 X 18 | R | E | 20 | 24 | 1 | CMP | 14 | | D | 7.09 | |
| Hobbs Knob Road | HKR 25+00 | 0.47 | 15 | 15 | R | E | 25 | 12 | 1 | CMP | 14 | | D | 0.82 | |
| | | | | | | | | | | | | | | | |
| ney Farm Lane | HFL 2+75 | 0.05 | 2 X 18 | 2x24 | R | E | 25? | 15? | 1 | CMP | 22 | | D | 13.21 | |
| Honey Farm Lane | HFL 9+00 | 0.17 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 22 | 298 | D | 1 | E |
| Honey Farm Lane | HFL 10+50 | 0.20 | 15 | 15 | P | N | 15? | 12 | 1 | HDPE | 22 | 784 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Honey Farm Lane | HFL 12+00 | 0.23 | 15 | 18 | P | N | 15? | 12? | 1 | HDPE | 22 | 818 | D | 2 | E |
| Honey Farm Lane | HFL 13+50 | 0.26 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 383 | D | 2 | E |
| Honey Farm Lane | HFL 14+50 | 0.27 | 15 | 18 | R | E | 18 | 15 | 1 | CMP | 22 | | D | 2.22 | |
| | | | | | | | | | | | | | | | |
| Honey Farm Lane | HFL 0+00 | 0.00 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 22 | | D | 2.08 | |
| | | | | | | | | | | | | | | | |
| Hopkins Bluff Road | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Huck Finn Drive | HFD 3+50 | 0.07 | 15 | 15 | P | E | 30 | 12 | 1 | CMP | 17 | 49 | D | 1 | |
| Huck Finn Drive | HFD 3+75 | 0.07 | 18 | 2X18 | R | N | 25? | 18? | 1 | HDPE | 17 | | B/D | 3.3B 1.25D | |
| Huck Finn Drive | HFD 6+00 | 0.11 | 15 | 15 | R | N | 25? | 18? | 1 | HDPE | 17 | | D | 1 | |
| Huck Finn Drive | HFD 7+00 | 0.13 | 15 | 15 | P | N | 20? | 18? | 1 | HDPE | 23 | 92 | D | 1 | |
| Huck Finn Drive | HFD 9+50 | 0.18 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 23 | | B | 3.3 | |
| ck Finn Drive | HFD 10+00 | 0.19 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | ??? | B | 3 | |
| Huck Finn Drive | HFD 12+00 | 0.23 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 23 | 175 | B | 1 | E |
| Huck Finn Drive | HFD 13+00 | 0.25 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 18 | | B | 5 | |
| Huck Finn Drive | HFD 15+00 | 0.28 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 18 | 223 | B | 4 | E |
| Huck Finn Drive | HFD 17+50 | 0.33 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 277 | B | 1 | E |
| Huck Finn Drive | HFD 18+00 | 0.34 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 303 | B | 2.1 | |
| Huck Finn Drive | HFD 18+10 | 0.34 | 12 | 15 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 2.1 | |
| Huck Finn Drive | HFD 20+00 | 0.38 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 329 | B | 1 | |
| | | | | | | | | | | | | | | | |
| Jennings Farm Court | JFC 1+00 | 0.02 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 27 | D | 1 | E |
| Jennings Farm Court | JFC 2+50 | 0.05 | 15 | 18 | P | N | 30 | 12 | 1 | CMP | 23 | 50 | D | 3 | E |
| Jennings Farm Court | JFC 3+00 | 0.06 | 15 | 15 | P | N | 20? | 18? | 1 | HDPE | 23 | 83 | D | 1 | E |
| Jennings Farm Court | JFC 3+50 | 0.07 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 76 | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Joans Quadrangle Road | JQR 4+00 | 0.08 | 12 | 15 | P | E | 20 | 18 | 1 | HDPE | 18 | 188 | B | 2 | E |
| Joans Quadrangle Road | JQR 5+90 | 0.11 | 15 | 18 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 8.31 | |
| Joans Quadrangle Road | JQR 10+00 | 0.19 | 12 | 15 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 3.79 | |
| | | | | | | | | | | | | | | | |
| Judy Lane | JL 7+60 | 0.14 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 31 | | B | 2.48 | |
| | | | | | | | | | | | | | | | |
| Kits Court | KC 4+60 | 0.09 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 29 | | D | 1.39 | |
| Kits Court | KC 9+00 | 0.17 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 23 | | D | 1.33 | |
| | | | | | | | | | | | | | | | |
| Lake Drive | LD 0+00 | 0.00 | 15 | 15 | R | E | 50 | 18 | 1 | CMP | 19 | | D | 1 | E |
| Lake Drive | LD 1+00 | 0.02 | 15 | 18 | R | E | 24 | 18 | 1 | CMP | 19 | | D | 1.77 | |
| ıke Drive | LD 4+50 | 0.09 | 15 | 15 | P | E | 18 | 15 | 1 | CMP | 20 | ? | D | 1 | E |
| Lake Drive | LD 5+50 | 0.10 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 20 | 602 | D | 1 | E |
| Lake Drive | LD 6+20 | 0.12 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 4.43 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lake Drive | LD 8+00 | 0.15 | 15 | 18 | P | E | 20 | 12 | 1 | PVC | 20 | 557 | D | 2 | |
| Lake Drive | LD 11+50 | 0.22 | 2 X 18 | 2x24 | R | P | 25? | 24 | 1 | HDPR | 20 | | D | 13.75 | |
| Lake Drive | LD 20+50 | 0.41 | 15 | 15 | R | N | 25 | 15? | 1 | HDPE | 16 | | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Lake Drive South | LDS 4+00 | 0.08 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 16 | 79 | D | 1.8 | |
| Lake Drive South | LDS 5+50 | 0.10 | 2 X 18 | 3x18 | R | P | 25? | 18? | 1 | HDPE | 16 | | D | 11.28 | |
| Lake Drive South | LDS 7+50 | 0.14 | 2 X 18 | 3x18 | R | N | 25? | 15? | 1 | HDPE | 16 | | D | 11.28 | |
| Lake Drive South | LDS 11+75 | 0.22 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 16 | | D | 0.47 | |
| | | | | | | | | | | | | | | | |
| Little Place | NO CULVERTS MAPPED | | | | | | | | | | 23 | | | | |
| | | | | | | | | | | | | | | | |
| Lookout Point Way | LPW 0+50 | 0.01 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 193 | B | 1 | |
| Lookout Point Way | LPW 4+00 | 0.08 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 04 | | B | 1 | E |
| ɔkout Point Way | LPW 6+00 | 0.11 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 3.8 | |
| Lookout Point Way | LPW 9+50 | 0.18 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 161 | B | 3 | E |
| Lookout Point Way | LPW 10+50 | 0.20 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 205 | B | 4 | E |
| | | | | | | | | | | | | | | | |
| Marino Lane | ML 0+35 | 0.01 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 5.83 | |
| Marino Lane | ML 2+50 | 0.05 | 15 | 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 2.59 | |
| Marino Lane | ML 4+50 | 0.09 | 15 | 15 | P | E | 28 | 12 | 1 | CMP | 20 | ? | D | 1 | E |
| Marino Lane | ML 5+50 | 0.10 | 2 X 18 | 3x18 | R | P | 25? | 24? | 1 | HDPE | 20 | | D | 10.02 | |
| Marino Lane | ML 10+50 | 0.20 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Markham Farm Road | MFR 1+50 | 0.03 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 8 | ?? | D | 1 | E |
| Markham Farm Road | MFR 4+00 | 0.08 | 18 | 2 X 18 | P | E | 20 | 18 | 1 | CMP | 8 | 208 | D | 3.95 | |
| Markham Farm Road | MFR 11+50 | 0.22 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 8 | ?? | D | 1 | E |
| Markham Farm Road | MFR 14+50 | 0.27 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 8 | | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Markham Place | MP 1+50 | 0.03 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 8 | ?? | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Martins Farm Road | MFRR 1+75 | 0.03 | 15 | 18 | R | N | 25? | 15 | 1 | HDPE | 16 | | D | 2.63 | |
| Martins Farm Road | MFRR 6+25 | 0.12 | 15 | 18 | P | E | 15 | 18 | 1 | PVC | 21 | 115 & | D | 3 | E |
| Martins Farm Road | MFRR 7+50 | 0.14 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 21 | 129 | D | 3.25 | E |
| Martins Farm Road | MFRR 8+75 | 0.17 | 18 | 2 X 18 | R | N | 25? | 18? | 1 | HDPE | 21 | | D | 5.43 | |
| | | | | | | | | | | | | | | | |
| McDonalds Farm Road | MCFR 0+50 | 0.01 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 11 | B | 1 | |
| McDonalds Farm Road | MCFR 1+25 | 0.02 | 12 | 15 | P | N | | | | | 04 | 191 | B | 1 | |
| McDonalds Farm Road | MCFR 3+25 | 0.06 | 12 | 15 | P | E | 30 | 12 | 1 | CMP | 04 | 94 | B | 1 | E |
| cDonalds Farm Road | MCFR 4+75 | 0.09 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 04 | | B | 2 | E |
| McDonalds Farm Road | MCFR 6+75 | 0.13 | 12 | 15 | R | E | 40 | 18 | 1 | CMP | 04 | | B | 1.25 | |
| McDonalds Farm Road | MCFR 7+00 | 0.13 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 04 | 132 | B | 1 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| McDonalds Farm Road | MCFR 7+75 | 0.15 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 145 | B | 1 | |
| McDonalds Farm Road | MCFR 9+00 | 0.17 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 165 | B | 1 | |
| McDonalds Farm Road | MCFR 9+75 | 0.18 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 185 | B | 1 | |
| McDonalds Farm Road | MCFR 10+00 | 0.19 | 12 | 15 | P | E | 60 | 18 | 1 | CMP | 04 | 166 + | B | 3 | E |
| McDonalds Farm Road | MCFR 11+25 | 0.21 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 205 | B | 1 | E |
| McDonalds Farm Road | MCFR 11+50 | 0.22 | 18 | 2 X 18 | R | P | 30 | 18 | 1 | HDPE | 04 | | B | 16.37 | |
| McDonalds Farm Road | MCFR 12+00 | 0.23 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 238 | B | 1 | |
| McDonalds Farm Road | MCFR 12+50 | 0.24 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 225 | B | 1 | |
| McDonalds Farm Road | MCFR 13+25 | 0.25 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 247 | B | 1 | |
| McDonalds Farm Road | MCFR 13+26 | 0.25 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 238 | B | 2 | |
| McDonalds Farm Road | MCFR 14+25 | 0.27 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 265 | B | 1 | |
| McDonalds Farm Road | MCFR 15+50 | 0.29 | 15 | 2 X 18 | P | E | 20 | 18 | 1 | CMP | 05 | 294 | B | 12.56 | |
| McDonalds Farm Road | MCFR 15+51 | 0.29 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 285 | B | 2 | |
| :Donalds Farm Road | MCFR 15+75 | 0.30 | 15 | 2 X 18 | R | E | 30 | 18 | 2 | CMP | 05 | | B | 12.56 | |
| McDonalds Farm Road | MCFR 16+50 | 0.31 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 331 | B | 1 | |
| McDonalds Farm Road | MCFR 16+51 | 0.31 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 326 | B | 1 | |
| McDonalds Farm Road | MCFR 17+00 | 0.32 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 05 | 327 | B | 1 | E |
| McDonalds Farm Road | MCFR 17+50 | 0.33 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 327 | B | 2 | |
| McDonalds Farm Road | MCFR 18+00 | 0.34 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 352 | B | 3 | E |
| McDonalds Farm Road | MCFR 18+50 | 0.35 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 345 | B | 2 | |
| McDonalds Farm Road | MCFR 19+50 | 0.37 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 363 | B | 2 | |
| McDonalds Farm Road | MCFR 20+50 | 0.39 | SD | SD | R | E | 30 | 36 | 1 | CMP | 05 | | B | 57 | |
| McDonalds Farm Road | MCFR 25+50 | 0.48 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 484 | B | 1 | |
| McDonalds Farm Road | MCFR 28+50 | 0.54 | 12 | 15 | P | N | 20 | 15 | 1 | CMP | 05 | 541 | B | 1 | |
| | | | | | | | | | | | | | | | |
| McIlee Court | MC 0+50 | 0.01 | 2 X 18 | 3x18 | R | E | 24 | 24 | 1 | PVC | 21 | | D | 8.92 | |
| McIlee Court | MC 4+00 | 0.08 | 15 | 18 | P | E | 50 | 24 | 1 | CMP | 21 | 57 | D | 2.36 | E |
| McIlee Court | MC 7+25 | 0.14 | 2 X 18 | 2x24 | P | E | 18 | 24 | 1 | CMP | 21 | 122 | D | 14.88 | |
| McIlee Court | MC 7+25 | 0.14 | SD | SD | R | P | 25? | 18? | 1 | HDPE | 21 | | D | 54.2 | E |
| McIlee Court | MC 10+00 | 0.19 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 21 | ??? | D | 1 | E |
| McIlee Court | MC 10+50 | 0.20 | 18 | 2 X 18 | R | P | 25? | 18? | 1 | HDPE | 21 | | D | 5.07 | |
| McIlee Court | MC 11+00 | 0.21 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 21 | 191 | D | 1 | E |
| McIlee Court | MC 16+50 | 0.31 | 18 | 2 X 18 | R | P | 20? | 18? | 1 | HDPE | 21 | | D | 3.53 | |
| McIlee Court | MC 17+50 | 0.33 | 18 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 21 | | D | 3.53 | |
| | | | | | | | | | | | | | | | |
| Mosbys Meadow Lane | MML 8+00 | 0.15 | 12 | 15 | R | E | 15 | 12 | 1 | CMP | 32 | | B | 0.42 | |
| Mosbys Meadow Lane | MML 1+00 | 0.02 | 18 | 2 X 18 | R | N | 30? | 15 | 1 | HDPE | 32 | | B | 24 | |
| | | | | | | | | | | | | | | | |
| ountain Lake Drive | MLD 3+00 | 0.06 | 15 | 15 | P | E | 12 | 15 | 1 | CMP | 22 | 545 | D | 1 | E |
| Mountain Lake Drive | MLD 7+00 | 0.13 | 15 | 15 | P | E | 24 | 15 | 1 | CMP | 22 | 369 | D | 1 | E |
| Mountain Lake Drive | MLD 8+75 | 0.17 | 15 | 18 | R | E | 35 | 15 | 1 | CMP | 22 | | D | 2.21 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mountain Lake Drive | MLD 15+00 | 0.28 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 22 | 208 | D | 1 | E |
| Mountain Lake Drive | MLD 16+00 | 0.30 | 15 | 18 | R | P | 25 | 15 | 1 | HDPE | 23 | | D | 2.08 | |
| Mountain Lake Drive | MLD 18+50 | 0.35 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 23 | 114 | D | 2 | E |
| Mountain Lake Drive | MLD 19+00 | 0.36 | 15 | 18 | R | E | 30 | 18 | 1 | CMP | 23 | | D | 3 | E |
| Mountain Lake Drive | MLD 20+50 | 0.39 | 15 | 18 | P | E | 15 | 15 | 1 | CMP | 23 | 100 | D | 3 | E |
| Mountain Lake Drive | MLD 21+00 | 0.40 | 18 | 2 X 18 | R | P | 30? | 18? | 1 | HDPE | 23 | | D | 5.17 | |
| Mountain Lake Drive | MLD 21+25 | 0.40 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 23 | 80 | D | 3 | E |
| | | | | | | | | | | | | | | | |
| Mountain Laurel Lane | MLL 0+00 | 0.00 | 3x18 | SD | R | E | 12 | 12 | 1 | CMP | 32 | | C + B | 23.9 | |
| Mountain Laurel Lane | MLL 11+25 | 0.21 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 34 | | C + B | 5.9 | |
| Mountain Laurel Lane | MLL 13+25 | 0.25 | SD | SD | R | E | 20 | 15 | 1 | CMP | 34 | | C + B | 92.97 | |
| | | | | | | | | | | | | | | | |
| Myers Drive | MD 5+00 | 0.09 | SD | SD | R | E | 20 | 18 | 2 | CMP | 19 | | B | 93.64 | |
| ers Drive | MD 6+00 | 0.11 | 12 | 15 | P | N | 15? | 15? | 1 | HDPE | 19 | | B | 1 | E |
| | | | | | | | | | | | | | | | |
| Nancy Court | NC 0+00 | 0.00 | 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 33 | | C | 3.37 | E |
| Nancy Court | NC 3+50 | 0.07 | 15 | 15 | R | N | 30? | 15? | 1 | HDPE | 33 | | C | 0.83 | |
| Nancy Court | NC 6+00 | 0.11 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 33 | | C | 2.89 | |
| | | | | | | | | | | | | | | | |
| Old Linden Road | OLR 2+00 | 0.04 | 18 | 3x18 | R | P | 30? | 24? | 2? | HDPE | 04 | | B | 30 | E |
| Old Linden Road | OLR 9+50 | 0.18 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 04 | | B | 7 | E |
| Old Linden Road | OLR 11+50 | 0.22 | 15 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 04 | | B | 11 | E |
| Old Linden Road | OLR 12+00 | 0.23 | 18 | 2 X 18 | R | P | 30? | 24? | 1 | HDPE | 04 | | B | 16.67 | |
| Old Linden Road | OLR 16+00 | 0.30 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 04 | | B | 6 | |
| Old Linden Road | OLR 21+50 | 0.41 | 15 | 18 | R | P | 30 | 24? | 1 | HDPE | 04 | | B | 7.21 | |
| Old Linden Road | OLR 31+25 | 0.59 | 18 | 3x18 | R | P | 30 | 24? | 2 | HDPE | 04 | | B | 36.08 | |
| Old Linden Road | OLR 43+50 | 0.82 | 18 | 3x18 | R | P | 30 | 24? | 2 | HDPE | 04 | | B | 37.35 | |
| | | | | | | | | | | | | | | | |
| Old Oak Lane | OOL 1+50 | 0.03 | 15 | 15 | P | E | 22 | 15 | 1 | CMP | 22 | 31 | D | 1 | E |
| Old Oak Lane | OOL 5+00 | 0.09 | 15 | 15 | P | E | 30 | 18 | 1 | CMP | 21 | 127 | D | 1 | E |
| Old Oak Lane | OOL 5+01 | 0.09 | 2 X 18 | 3x18 | R | E | 25 | 18 | 1 | CMP | 21 | | D | 9.14 | |
| Old Oak Lane | OOL 9+50 | 0.18 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 21 | 195 | D | 1 | E |
| Old Oak Lane | OOL 12+00 | 0.23 | 3x18 | SD | R | E | 20 | 24 | 1 | CMP | 21 | | D | 26.75 | |
| Old Oak Lane | OOL 12+25 | 0.23 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 21 | 241 | D | 1 | E |
| Old Oak Lane | OOL 19+50 | 0.37 | 2 X 18 | 2 X 18 | R | E | 24 | 15 | 1 | CMP | 28 | | D | 7.75 | |
| Old Oak Lane | OOL 24+50 | 0.46 | 18 | 2 X 18 | R | E | 20 | 24 | 1 | HDPE | 28 | | D | 4.37 | |
| Old Oak Lane | OOL 26+00 | 0.49 | SD | SD | R | E | 25 | 36 | 2 | CMP | 28 | | D | 190.35 | |
| Old Oak Lane | OOL 26+01 | 0.49 | 15 | 15 | P | E | 15 | 30 | 1 | CMP | 28 | 517 | D | 1 | E |
| d Oak Lane | OOL 33+80 | 0.64 | 2 X 18 | 3x18 | R | P | 30 | 24? | 1 | HDPE | 27 | | C | 9.43 | |
| Old Oak Lane | OOL 38+50 | 0.73 | 18 | 2 X 18 | R | E | 30 | 24 | 1 | CMP | 27 | | C | 5.1 | |
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 24 | 1 | CMP | 27 | | D | 234.72 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 30 | 1 | CMP | 27 | | D | 234.72 | |
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 48 | 1 | STEEL | 27 | | D | 234.72 | |
| Old Oak Lane | OOL 43+00 | 0.81 | SD | SD | R | E | 25 | 60 | 2 | CMP | 27 | | D | 1951.7 | |
| Old Oak Lane | OOL 44+50 | 0.84 | 15 | 15 | R | E | 25 | 48 | 1 | CMP | 27 | | D | 0.6 | |
| Old Oak Lane | OOL 53+00 | 1.00 | SD | SD | R | E | 30 | 48 | 2 | CMP | 27 | | B +D | 1402.28 | |
| Old Oak Lane | OOL 53+00 | 1.00 | SD | SD | R | E | 30 | 52 | 1 | CMP | 27 | | B +D | 1402.28 | |
| Old Oak Lane | OOL 55+00 | 1.04 | 2 X 18 | 3x18 | R | E | 30 | 15 | 1 | CMP | 27 | | C | 12.07 | |
| Old Oak Lane | OOL 57+00 | 1.08 | 15 | 15 | R | E | 18 | 15 | 1 | CMP | 27 | | C | 1 | E |
| Old Oak Lane | OOL 61+25 | 1.16 | SD | SD | R | E | 30 | 15 | 1 | CMP | 32 | | C | 42.81 | |
| Old Oak Lane | OOL 61+50 | 1.16 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 32 | 1196 | C | 1 | |
| Old Oak Lane | OOL 62+75 | 1.19 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 32 | 1196 | C | 1 | E |
| Old Oak Lane | OOL 64+50 | 1.22 | 2 X 18 | 3x18 | R | P | 30 | 18? | 1 | HDPE | 32 | | C | 8.53 | |
| Old Oak Lane | OOL 72+50 | 1.37 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 32 | | C | 2.33 | |
| Old Oak Lane | OOL 78+50 | 1.49 | 2 X 18 | 3x18 | R | E | 20 | 12 | 1 | CMP | 32 | | C | 8.39 | |
| Old Oak Lane | OOL 79+75 | 1.51 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 32 | | C | 4.93 | |
| Old Oak Lane | OOL 80+25 | 1.52 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 32 | 1522 | C | 2 | E |
| Old Oak Lane | OOL 81+25 | 1.54 | 15 | 15 | P | E | 25 | 12 | 1 | HDPE | 32 | 64 | C | 1 | E |
| Old Oak Lane | OOL 82+00 | 1.55 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 34 | | C | 2 | E |
| Old Oak Lane | OOL 83+00 | 1.57 | 15 | 15 | R | E | 30 | 15 | 1 | CMP | 34 | | C | 1 | E |
| Old Oak Lane | OOL 85+25 | 1.61 | SD | SD | R | E | 30 | 24 | 1 | CMP | 34 | | C | 73.82 | |
| Old Oak Lane | OOL 87+50 | 1.66 | 15 | 15 | R | E | 25 | 18 | 1 | HDPE | 34 | | C | 0.61 | |
| Old Oak Lane | OOL 89+50 | 1.70 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 34 | | C | 5.11 | |
| Old Oak Lane | OOL 92+00 | 1.74 | 15 | 18 | R | E | 22 | 12 | 1 | CMP | 34 | | C | 2.62 | |
| | | | | | | | | | | | | | | | |
| Old Oregon Road | OOR 0+50 | 0.01 | 18 | 2 X 18 | R | N | 25? | 18? | 1 | HDPE | 27 | | C | 3.32 | |
| Old Oregon Road | OOR 1+00 | 0.02 | 15 | 18 | P | E | 20? | 12 | 1 | CMP | 27 | ?? | C | 2.36 | |
| Old Oregon Road | OOR 4+00 | 0.08 | 15 | 18 | P | E | 30 | 18 | 1 | CMP | 27 | 98 | C | 1.1 | |
| Old Oregon Road | OOR 10+50 | 0.20 | 2 X 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 21 | | C | 6.87 | |
| Old Oregon Road | OOR 13+25 | 0.25 | 15 | 18 | P | E | 30 | 15 | 1 | CMP | 21 | 242 | C | 2.54 | |
| Old Oregon Road | OOR 17+25 | 0.33 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 21 | | C | 2.95 | |
| Old Oregon Road | OOR 23+25 | 0.44 | 2 X 18 | 3x18 | R | E | 25 | 15 | 1 | CMP | 21 | | C | 9.27 | |
| Old Oregon Road | OOR 26+60 | 0.50 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 4.46 | |
| Old Oregon Road | OOR 27+50 | 0.52 | 15 | 18 | R | E | 25 | 15 | 1 | CMP | 21 | | D | 2.44 | |
| Old Oregon Road | OOR 28+50 | 0.54 | 15 | 15 | R | N | 25 | 15 | 1 | HDPE | 21 | | D | 0.5 | E |
| Old Oregon Road | OOR 28+75 | 0.54 | 15 | 15 | P | N | 15 | 15 | 1 | HDPE | 22 | | D | 0.5 | E |
| | | | | | | | | | | | | | | | |
| Otto Place | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Parker Circle | PC 0+00 | 0.00 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 29 | | D | 1.65 | |
| Parker Circle | PC 1+50 | 0.03 | 15 | 15 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 0.92 | |
| Parker Circle | PC 2+50 | 0.05 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 29 | | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Peggys Court | PGC 0+00 | 0.00 | 12 | 15 | R | R | 30 | 15 | 1 | CMP | 24 | | B | 3.28 | |
| Peggys Court | PGC 2+70 | 0.05 | 12 | 15 | P | E | 20 | 8 | 1 | CMP | 24 | 53 | B | 1 | E |
| | | | | | | | | | | | | | | | |
| Pickford Court | PFC 0+50 | 0.01 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 0.42 | |
| Pickford Court | PFC 3+00 | 0.06 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 30 | | B | 6.8 | |
| Pickford Court | PFC 6+00 | 0.11 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | | B | 3 | E |
| | | | | | | | | | | | | | | | |
| Pine Ridge Drive int. mtg Lake L | NO CULVERTS MAPPED | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Pine Ridge Drive int. w/Brookvie | PRD 4+00 | 0.08 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 435 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 5+00 | 0.09 | 15 | 15 | P | N | 12? | 12 | 1 | HDPE | 22 | 485 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 9+00 | 0.17 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 529 | D | 1 | E |
| ıe Ridge Drive int. w/Brookvie | PRD 14+00 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 625 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 18+50 | 0.35 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 708 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 25+00 | 0.47 | 15 | 15 | P | E | 12 | 10 | 1 | CMP | 22 | nr 848 | D | 0.1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 25+50 | 0.48 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 848 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 32+00 | 0.61 | 15 | 15 | P | E | 12? | 12? | 1 | CMP | 28 | 958 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 33+50 | 0.63 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 995 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 39+00 | 0.74 | 15 | 18 | R | P | 25? | 18? | 1 | HDPE | 28 | | D | 1.81 | |
| Pine Ridge Drive int. w/Brookvie | PRD 41+50 | 0.79 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1150 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 41+51 | 0.79 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1163 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 43+60 | 0.83 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1212 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 43+80 | 0.83 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1077 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 54+50 | 1.03 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1337 | D | 1 | E |
| Pine Ridge Drive int. w/Brookvie | PRD 45+55 | 0.86 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1338 | D | 1 | |
| Pine Ridge Drive int. w/Brookvie | PRD 46+00 | 0.87 | 15 | 18 | R | N | 25? | 18? | 1 | HDPE | 28 | | D | 1.63 | |
| | | | | | | | | | | | | | | | |
| Pine Ridge Drive int. w/Mountai | PRD NEGATIVE NUMBERS TO -19+00 NO CULVERTS LOCATED NEEDED OR PRPOSED | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Reid Drive | RD 5+50 | 0.10 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 90 | B | 1 | E |
| Reid Drive | RD 7+50 | 0.14 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 30 | | B | 1 | |
| Reid Drive | RD 7+60 | 0.14 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 141 | B | 1 | |
| Reid Drive | RD 13+50 | 0.26 | 12 | 15 | R | N | 40 | 18? | 1 | HDPE | 30 | | B | 1.57 | |
| Reid Drive | RD 18+50 | 0.35 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 4.87 | |
| Reid Drive | RD 23+00 | 0.44 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 31 | | B | 3.28 | |
| Reid Drive | RD 34+00 | 0.64 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 31 | | B | 4.35 | |
| Reid Drive | RD 37+50 | 0.71 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 3.04 | |
| ɛid Drive | RD 38+00 | 0.72 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 712 | B | 1 | E |
| Reid Drive | RD 39+50 | 0.75 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 3.59 | |
| Reid Drive | RD 44+50 | 0.84 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 9.21 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | |
| Reynolds Drive | RYD 6+00 | 0.11 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 2.11 | |
| Reynolds Drive | RYD 7+00 | 0.13 | SD | SD | R | E/N | 20 | 15 | 1 | CMP | 6 | | B | 377 | |
| Reynolds Drive | RYD 7+00 | 0.13 | SD | SD | R | E | 20 | 24 | 1 | CMP | 6 | | B | 377 | |
| Reynolds Drive | RYD 8+00 | 0.15 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 0.2 | |
| Reynolds Drive | RYD 12+00 | 0.23 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 2.24 | |
| Reynolds Drive | RYD 17+00 | 0.32 | 18 | 3x18 | R | P | 20 | 18? | 1 | HDPE | 6 | | B | 29.6 | |
| Reynolds Drive | RYD 19+00 | 0.36 | 12 | 15 | P | E | 20 | 12 | 1 | HDPE | 6 | 1175 | B | 4 | E |
| Reynolds Drive | RYD 22+00 | 0.42 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 6 | 1175 | B | 8 | E |
| Reynolds Drive | RYD 25+50 | 0.48 | SD | SD | R | E/N | 20 | 12 | 1 | CMP | 6 | | B | 49.04 | |
| Reynolds Drive | RYD 27+50 | 0.52 | SD | SD | R | E/N | 20 | 12 | 1 | CMP | 7 | | B | 157.79 | |
| Reynolds Drive | RYD 31+50 | 0.60 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 7 | | B | 5.15 | |
| Reynolds Drive | RYD 35+75 | 0.68 | 18 | 2 X 18 | R | E/N | 30 | 12 | 1 | CMP | 7 | | B | 21 | |
| Reynolds Drive | RYD 36+00 | 0.68 | 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 7 | | B | 21 | |
| Reynolds Drive | RYD 37+00 | 0.70 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 7 | 821 | B | 1 | E |
| Reynolds Drive | RYD 46+50 | 0.88 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 7 | | B | 7.75 | |
| Reynolds Drive | RYD 48+50 | 0.92 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 7 | 671 | B | 2 | E |
| Reynolds Drive | RYD 51+50 | 0.98 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 7 | | B | 7.87 | |
| Reynolds Drive | RYD 56+25 | 1.07 | SD | SD | R | E | 30 | 24 | 1 | CMP | 7 | | B/D | 28B+38D | |
| Reynolds Drive | RYD 65+00 | 1.23 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 8 | | D | 5.74 | |
| Reynolds Drive | RYD 67+00 | 1.27 | 2x24 | SD | R | P | 25 | 15? | 1 | HDPE | 8 | | D | 31.99 | |
| Reynolds Drive | RYD 72+00 | 1.36 | 2 X 18 | 2 X 18 | R | P | 25 | 18? | 1 | HDPE | 8 | | D | 6.72 | |
| Reynolds Drive | RYD 74+00 | 1.40 | 2 X 18 | 3x18 | R | E | 40 | 12 | 1 | CMP | 8 | | D | 8.13 | |
| Reynolds Drive | RYD 78+00 | 1.48 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 13 | | D | 3.15 | |
| Reynolds Drive | RYD 80+00 | 1.52 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 13 | | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Ridgewood Lane | RL 0+00 | 0.00 | 18 | 2 X 18 | R | E/N | 30? | 15? | 1 | HDPE | 34 | CUL N | C | 3.5 | E |
| Ridgewood Lane | RL 6+25 | 0.12 | 2x24 | SD | R | E | 25 | 15 | 1 | CMP | 34 | | C | 31.1 | |
| Ridgewood Lane | RL 6+50 | 0.12 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 34 | 145 | C | 1.66 | |
| Ridgewood Lane | RL 10+00 | 0.19 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 34 | | C | 2.24 | |
| Ridgewood Lane | RL 11+50 | 0.22 | 3x18 | SD | R | E | 25 | 24 | 1 | CMP | 34 | | C | 25.42 | |
| | | | | | | | | | | | | | | | |
| Riley Court | RC 4+60 | 0.09 | 12 | 15 | P | N | 20 | 15? | 1 | HDPE | 30 | 82 | B | 3 | E |
| Riley Court | RC 6+00 | 0.11 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 6 | |
| Riley Court | RC 7+50 | 0.14 | 12 | 15 | P | N | 20 | 12? | 1 | HDPE | 30 | 150 | B | 1 | E |
| Riley Court | RC 9+50 | 0.18 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.67 | |
| Riley Court | RC 12+50 | 0.24 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | RCP | 30 | | B | 15.63 | |
| Riley Court | RC 14+00 | | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 4.37 | |
| Riley Court | RC 15+50 | | 12 | 15 | R | P | 20 | 12 | 1 | CMP | 30 | | B | 3.52 | |
| Riley Court | RC 16+00 | | 12 | 15 | P | N | 20 | 15? | 1 | HDPE | 30 | 280 | B | 1.25 | E |
| Riley Court | RC 19+50 | | 12 | 15 | R | P | 35 | 15? | 1 | HDPE | 30 | | B | 1.51 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| River Overlook Road | ROR 1+50 | 0.03 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 0.6 | |
| River Overlook Road | ROR 3+00 | 0.06 | 15 | 15 | R | P | 25? | 15? | 1 | HDPE | 20 | | D | 0.6 | |
| River Overlook Road | ROR 5+50 | 0.10 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 20 | | D | 1.55 | |
| River Overlook Road | ROR 8+50 | 0.16 | 15 | 18 | R | N | 20? | 15? | 1 | HDPE | 20 | | D | 1.16 | |
| River Overlook Road | ROR 9+50 | 0.18 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.16 | |
| River Overlook Road | ROR 14+00 | 0.27 | 15 | 18 | R | N | 20? | 15? | 1 | HDPE | 20 | | D | 1.88 | |
| River Overlook Road | ROR 18+50 | 0.35 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| River Overlook Road | ROR 21+00 | 0.40 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| | | | | | | | | | | | | | | | |
| Roaches Run Road | RRR 2+25 | 0.04 | 2 X 18 | 2 X 18 | R | E | 30 | 12 | 1 | CMP | 33 | | C | 7.25 | |
| | | | | | | | | | | | | | | | |
| Scott Farm Road | SFR 2+00 | 0.04 | 2 X 18 | 2x24 | R | E | 22 | 18 | 1 | CMP | 22 | | D | 13.5 | |
| ott Farm Road | SFR 4+25 | 0.09 | 15 | 15 | R | E | 20? | ? | 1 | CMP | 22 | | D | | |
| | | | | | | | | | | | | | | | |
| Sharon Lane | SL 3+60 | 0.07 | 12 | 15 | R | P | 35 | 15 | 1 | HDPE | 31 | | B | 3.84 | |
| Sharon Lane | SL 7+00 | 0.13 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 31 | | B | 0.66 | |
| Sharon Lane | SL 9+00 | 0.17 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 31 | | B | 9.06 | |
| | | | | | | | | | | | | | | | |
| Silver Fox Lane | SFL 1+25 | 0.03 | 15 | 18 | R | E | 15 | 24 | 1 | STEEL | 11 | | D | 1.13 | |
| Silver Fox Lane | SFL 4+50 | 0.09 | 15 | 15 | P | N | 15 | 15 | 1 | HDPE | 11 | 84 | D | 1 | E |
| Silver Fox Lane | SFL 7+50 | 0.14 | 15 | 15 | P | E | 30 | 12 | 1 | CMP | 11 | 84 | D | 1 | un be d |
| | | | | | | | | | | | | | | | |
| Spring Hollow Road | SHR 7+00 | 0.13 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 33 | 97 | C | 1 | E |
| Spring Hollow Road | SHR 10+25 | 0.19 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 33 | | C | 7.19 | |
| | | | | | | | | | | | | | | | |
| Spring Road | SR 5+00 | 0.09 | 2x24 | SD | R | E | 15 | 18 | 1 | CMP | 17 | | D | 36.78 | |
| Spring Road | SR 7+00 | 0.13 | 2 X 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 17 | 136 | D | 7 | E |
| Spring Road | SR 7+50 | 0.14 | 18 | 2 X 18 | P | E | 12 | 12 | 1 | CP | 17 | 140 | D | 5 | E |
| Spring Road | SR 10+00 | 0.19 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 176 | D | 3 | E |
| | | | | | | | | | | | | | | | |
| Susans Court | SC 0+00 | 0.00 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 30 | | B | 0.99 | |
| Susans Court | SC 3+00 | 0.06 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 8.7 | |
| Susans Court | SC 7+50 | 0.14 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.44 | |
| Susans Court | SC 9+50 | 0.18 | 12 | 15 | R | P | 30 | 24? | 1 | HDPE | 30 | | B | 3.05 | |
| Susans Court | SC 12+50 | 0.24 | 18 | 2 X 18 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 25.88 | |
| Susans Court | SC 13+50 | 0.26 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 30 | | B | 25.88 | |
| Susans Court | SC 15+40 | 0.29 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 30 | | B | 2.43 | |
| sans Court | SC 20+50 | 0.38 | 12 | 15 | R | P | 45 | 15? | 1 | HDPE | 30 | | B | 1.66 | |
| | | | | | | | | | | | | | | | |
| Tomahawk Way | TW 5+40 | 0.90 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 04A | | B | 3.82 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tomahawk Way | TW 5+50 | 0.90 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 04A | | B | 3.8 | |
| Tomahawk Way | TW 9+50 | 0.18 | 15 | 2 X 18 | R | E | 25? | 18 | 1 | CMP | 04A | | B | 12.06 | |
| Tomahawk Way | TW 13+50 | 0.26 | 12 | 15 | P | N | 30 | 15? | 1 | HDPE | 04A | ? | B | 2.5 | E |
| Tomahawk Way | TW 15+25 | 0.29 | 15 | 18 | R | E | 25 | 24? | 1 | CMP | 04A | | B | 5.87 | |
| Tomahawk Way | TW 17+25 | 0.33 | 12 | 15 | R | N | 30 | 24 | 1 | HDPE | 04A | | B | 4.01 | |
| Tomahawk Way | TW 17+75 | 0.34 | 12 | 15 | P | N | 15 | 18 | 1 | HDPE | 04A | ? | B | 4 | |
| Tomahawk Way | TW 21+75 | 0.41 | 12 | 12 | P | E | 20 | 12 | 1 | CMP | 04A | ? | B | 1 | E |
| Tomahawk Way | TW 22+00 | 0.42 | 15 | 15 | R | E | 25? | ? | 1 | CMP | 04A | | B | 1 | E |
| | | | | | | | | | | | | | | | |
| Thompson Mill Road | TMR 1+00 | 0.02 | SD | SD | R | E | 32 | 60 | 5 | CMP | 26 | | B + C | 3482.24 | |
| Thompson Mill Road | TMR 2+50 | 0.05 | 12 | 15 | P | N | 20? | 15? | 1 | HDPR | 26 | 545 | B | 1 | E |
| Thompson Mill Road | TMR 6+90 | 0.13 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 26 | | B | 6.43 | |
| Thompson Mill Road | TMR 8+60 | 0.16 | 12 | 15 | P | N | 20? | 15? | 1 | HDPR | 26 | 167 | B | 3 | E |
| ompson Mill Road | TMR 11+00 | 0.21 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 26 | | B | 11.07 | |
| Thompson Mill Road | TMR 14+50 | 0.27 | 12 | 15 | R | E | 30 | 12 | 1 | CMP | 26 | | B | 2.61 | |
| Thompson Mill Road | TMR 22+00 | 0.42 | 15 | 2 X 18 | R | P | 35 | 18? | 1 | HDPE | 26 | | B | 9.76 | |
| Thompson Mill Road | TMR 24+90 | 0.47 | 12 | 15 | R | E | 25 | 15 | 1 | CMP | 26 | | B | 0.89 | |
| Thompson Mill Road | TMR 27+00 | 0.51 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 26 | 502 | B | 1 | E |
| Thompson Mill Road | TMR 29+31 | 0.56 | 12 | 15 | R | P | 31 | 15? | 2 | HDPE | 26 | | B | 4.41 | |
| | | | | | | | | | | | | | | | |
| Timberline Ridge Road | TRR 0+00 | 0.00 | 3x18 | 2x24 | R | E | 40 | 12 | 1 | CMP | 27 | | C | 16.58 | |
| Timberline Ridge Road | TRR 3+50 | 0.07 | 18 | 2 X 18 | P | E | 20 | 12 | 1 | CMP | 27 | ?? | C | 4.5 | E |
| Timberline Ridge Road | TRR 8+50 | 0.16 | 15 | 15 | R | P | 30 | 15? | 1 | HDPE | 27 | | C | 0.72 | |
| Timberline Ridge Road | TRR 9+50 | 0.18 | 15 | 15 | P | E | 25? | 15 | 1 | DIP | 27 | 188 | C | 0.78 | |
| Timberline Ridge Road | TRR 14+00 | 0.27 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 27 | | C | 2.92 | |
| Timberline Ridge Road | TRR 15+30 | 0.29 | 2 X 18 | 2 X 18 | R | P | 25 | 15? | 1 | HDPE | 27 | | C | 7.57 | |
| Timberline Ridge Road | TRR 23+50 | 0.45 | 15 | 15 | R | E | 20 | 12 | 1 | CMP | 27 | | C | 1 | |
| | | | | | | | | | | | | | | | |
| Tulip Poplar Drive | TPD 1+50 | 0.03 | 12 | 15 | P | E | 20 | 12 | 1 | HDPE | 04 | 1035 | B | 0.14 | |
| Tulip Poplar Drive | TPD 4+00 | 0.08 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 62 | B | 0.42 | |
| Tulip Poplar Drive | TPD 7+50 | 0.14 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 142 | B | 3 | E |
| Tulip Poplar Drive | TPD 8+50 | 0.16 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 04 | | B | 6.47 | |
| Tulip Poplar Drive | TPD 10+00 | 0.19 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 192 | B | 1 | E |
| Tulip Poplar Drive | TPD 11+00 | 0.21 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 220 | B | 2 | E |
| Tulip Poplar Drive | TPD 12+00 | 0.23 | 15 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 04 | | B | 12.34 | |
| Tulip Poplar Drive | TPD 13+25 | 0.25 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 04 | 250 | B | 8 | E |
| Tulip Poplar Drive | TPD 15+00 | 0.28 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 260 | B | 1 | E |
| Tulip Poplar Drive | TPD 16+00 | 0.30 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 284 | B | 3 | E |
| lip Poplar Drive | TPD 17+50 | 0.33 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 334 | B | 4 | E |
| Tulip Poplar Drive | TPD 19+50 | 0.37 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 05 | 364 | B | 7 | E |
| Tulip Poplar Drive | TPD 20+00 | 0.38 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 309 | B | 1 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Tulip Poplar Drive | TPD 20+50 | 0.39 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 05 | | B | 7.52 | |
| Tulip Poplar Drive | TPD 20+51 | 0.39 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 396 | B | 1 | |
| Tulip Poplar Drive | TPD 22+00 | 0.42 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 432 | B | 1 | E |
| Tulip Poplar Drive | TPD 24+00 | 0.45 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 5.6 | |
| Tulip Poplar Drive | TPD 25+50 | 0.48 | 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 40 | |
| Tulip Poplar Drive | TPD 26+50 | 0.50 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 438 | B | 3 | E |
| Tulip Poplar Drive | TPD 28+00 | 0.53 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 464 | B | 1 | E |
| Tulip Poplar Drive | TPD 29+75 | 0.56 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 484 | B | 0.38 | |
| Tulip Poplar Drive | TPD 30+75 | 0.58 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 506 | B | 0.86 | |
| Tulip Poplar Drive | TPD 32+00 | 0.61 | 12 | 15 | P | E | 40 | 12 | 1 | CMP | 05 | 518 + | B | 1.72 | |
| Tulip Poplar Drive | TPD 33+00 | 0.63 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 586 | B | 2.4 | E |
| Tulip Poplar Drive | TPD 36+50 | 0.69 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 7.75 | |
| Tulip Poplar Drive | TPD 36+51 | 0.69 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 1535 | B | 1 | |
| | | | | | | | | | | | | | | | |
| Valley Farms Road | VFR 0+00 | 0.00 | 18 | 2 X 18 | R | E | 30 | 13X1 | 1 | ECMP | 34 | | C | 3.62 | |
| Valley Farms Road | VFR 0+25 | 0.00 | 18 | 2 X 18 | P | N | 20? | 15? | 1 | HDPE | 34 | 1668 | C | 3.6 | |
| Valley Farms Road | VFR 10+25 | 0.19 | 15 | 15 | R | N | 25? | 15 | 1 | HDPE | 34 | | C | 0.36 | |
| | | | | | | | | | | | | | | | |
| Vaught Drive | VD 9+75 | 0.18 | 15 | 15 | R | E | ? | ? | 2 | ? | 17 | | D | 0.89 | |
| Vaught Drive | VD 10+50 | 0.20 | 15 | 18 | R | P | 20? | 15? | 2 | HDPE | 17 | | D | 2.72 | |
| Vaught Drive | VD 11+00 | 0.21 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 12 | D | 1.25 | E |
| Vaught Drive | VD 13+75 | 0.26 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 17 | 257 | D | 1 | E |
| Vaught Drive | VD 15+00 | 0.28 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 267 | D | 2 | E |
| Vaught Drive | VD 17+50 | 0.33 | 2x24 | SD | R | P | 30? | 18? | 1 | HDPE | 17 | | D | 32.02 | |
| Vaught Drive | VD 18+25 | 0.35 | 2x24 | SD | R | E | 20 | 24 | 1 | CMP | 17 | | D | 32.02 | |
| Vaught Drive | VD 19+50 | 0.37 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 17 | 371 | D | 1.2 | E |
| Vaught Drive | VD 21+50 | 0.41 | 18 | 2 X 18 | R | P | 25 | 18 | 1 | HDPE | 17 | | D | 3.22 | |
| Vaught Drive | VD 22+50 | 0.43 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 17 | 415 | D | 2.2 | E |
| Vaught Drive | VD 27+00 | 0.51 | 18 | 2 X 18 | R | E | 23 | 15 | 1 | CMP | 17 | | D | 3.76 | |
| Vaught Drive | VD 28+75 | 0.54 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 22 | 551 | D | 2.5 | E |
| Vaught Drive | VD 30+50 | 0.58 | 15 | 18 | P | E | 15 | 15 | 1 | CMP | 22 | 571 | D | 2 | E |
| | | | | | | | | | | | | | | | |
| Venus Branch Road | VBR 1+50 | 0.03 | 15 | 18 | P | N | 20 | 15? | 1 | HDPE | 29 | 36 | D | 2 | |
| Venus Branch Road | VBR 2+25 | 0.04 | 15 | 18 | R | E | 22 | 15 | 1 | STEEL | 29 | | D | 2.2 | |
| Venus Branch Road | VBR 3+00 | 0.06 | 2 X 18 | 3x18 | R | E | 18 | 12 | 1 | CMP | 29 | | D | 11.78 | |
| Venus Branch Road | VBR 3+50 | 0.07 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 29 | 62 | D | 1.35 | |
| Venus Branch Road | VBR 6+50 | 0.12 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 29 | | D | 1.54 | |
| Venus Branch Road | VBR 8+50 | 0.16 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 3.24 | |
| Venus Branch Road | VBR 9+50 | 0.18 | 2x24 | SD | R | E | 20 | 15 | 1 | CMP | 29 | | D | 35.39 | |
| Venus Branch Road | VBR 13+50 | 0.26 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 29 | | D | 3.07 | |
| Venus Branch Road | VBR 16+75 | 0.32 | 18 | 2 X 18 | R | E | 20? | 15 | 1 | CMP? | 29 | | D | 3.95 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Venus Branch Road | VBR 22+75 | 0.43 | SD | SD | R | E | 30 | 48 | 1 | CMP | 29 | | D | 244.74 | |
| Venus Branch Road | VBR 24+00 | 0.45 | 15 | 15 | R | E | 25 | 12 | 1 | CMP | 29 | | D | 0.55 | |
| Venus Branch Road | VBR 26+00 | 0.49 | 15 | 18 | R | P | 30 | 15? | 1 | HDPE | 29 | | D | 2.25 | |
| Venus Branch Road | VBR 27+50 | 0.52 | 15 | 18 | R | E | 25 | 18 | 1 | CMP | 29 | | D | 3 | |
| Venus Branch Road | VBR 29+75 | 0.56 | 18 | 2 X 18 | R | E | 20 | 24 | 1 | RCP | 29 | | D | 3.12 | |
| Venus Branch Road | VBR 35+00 | 0.66 | 15 | 18 | P | E | 20? | 12? | 1 | CMP? | 29 | | D | 2 | |
| Venus Branch Road | VBR 36+75 | 0.70 | 18 | 2 X 18 | R | E | 30? | 15? | 1 | CMP? | 29 | | D | 3.96 | |
| Venus Branch Road | VBR 42+25 | 0.80 | 2 X 18 | 2x24 | R | E | 20 | 15 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 42+25 | 0.80 | 2 X 18 | 2x24 | R | E | 20 | 12 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 48+00 | 0.91 | 2 X 18 | 2x24 | R | E | 18 | 12 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 52+25 | 0.99 | 15 | 15 | R | E | 25 | 15 | 1 | CMP | 36 | | D | 0.25 | |
| Venus Branch Road | VBR 56+40 | 1.07 | 15 | 18 | R | P | 30 | 24? | 1 | HDPE | 36 | | D | 2.29 | |
| Venus Branch Road | VBR 62+00 | 1.17 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 36 | | D | 1.48 | |
| Venus Branch Road | VBR 66+50 | 1.26 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 36 | | D | 1.84 | |
| Venus Branch Road | VBR 72+50 | 1.37 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 36 | | D | 3.13 | |
| Venus Branch Road | VBR 76+50 | 1.45 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 36 | | D | 4.08 | |
| Venus Branch Road | VBR 78+00 | 1.48 | 2 X 18 | 2x24 | R | P | 30 | 24? | 2 | HDPE | 27 | | D | 13.7 | |
| Venus Branch Road | VBR 83+00 | 1.57 | SD | SD | R | E | 25 | 60 | 3 | CMP | 27 | | C | 1386 | |
| | | | | | | | | | | | | | | | |
| Vesey Drive | VSD 0+50 | 0.01 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 38 | C | 5.25 | |
| Vesey Drive | VSD 4+00 | 0.08 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 74 | C | 4 | E |
| Vesey Drive | VSD 5+00 | 0.09 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 92 | C | 3.5 | E |
| Vesey Drive | VSD 8+00 | 0.15 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 32 | 276 | C | 1.5 | E |
| Vesey Drive | VSD 9+00 | 0.17 | 15 | 15 | R | E | 25 | 15 | 1 | CMP | 32 | | C | 1 | |
| Vesey Drive | VSD 10+50 | 0.20 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 33 | 180 | C | 1 | E |
| Vesey Drive | VSD 21+00 | 0.40 | 18 | 2 X 18 | P | E | 15 | 15 | 1 | HDPE | 33 | 402 | C | 4 | E |
| Vesey Drive | VSD 22+75 | 0.43 | 15 | 18 | R | N | 30? | 18? | 1 | HDPE | 33 | | C | 2.23 | E |
| Vesey Drive | VSD 28+30 | 0.54 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 33 | | C | 1.98 | |
| | | | | | | | | | | | | | | | |
| Walker Farm Drive | WFD 0+50 | 0.01 | 15 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 15 | | B | 10.31 | |
| Walker Farm Drive | WFD 1+25 | 0.02 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 15 | 29 | B | 9 | |
| Walker Farm Drive | WFD 2+25 | 0.04 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 15 | 4452 | B | 9 | |
| Walker Farm Drive | WFD 2+75 | 0.05 | 15 | 18 | P | E | 15 | 151 | 1 | CMP | 15 | 29 | B | 9 | |
| Walker Farm Drive | WFD 4+50 | 0.09 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 15 | ? | B | 9 | |
| Walker Farm Drive | WFD 6+00 | 0.11 | 15 | 15 | P | E | ? | ? | 1 | ? | 15 | 112 | D | 1 | E |
| Walker Farm Drive | WFD 6+75 | 0.13 | 2 X 18 | 3x18 | R | E | 20? | 12 | 1 | CMP | 15 | | D | 8.68 | |
| Walker Farm Drive | WFD 9+00 | 0.17 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 15 | | D | 2.95 | |
| Walker Farm Drive | WFD 11+00 | 0.21 | 18 | 2 X 18 | P | N | 15? | 12? | 1 | HDPE | 15 | 218 | D | 5 | E |
| alker Farm Drive | WFD 12+01 | 0.23 | 18 | 2 X 18 | P | N | 15? | 12? | 1 | HDPE | 15 | 218 | D | 5 | E |
| Walker Farm Drive | WFD 13+00 | 0.24 | 2 X 18 | 3x18 | R | P | 25 | 18 | 2 | HDPE | 15 | | D | 10.11 | |
| Walker Farm Drive | WFD 16+25 | 0.31 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 15 | | D | 3.13 | |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES (43560) | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Walker Farm Drive | WFD 18+00 | 0.34 | 15 | 15 | P | E | 15 | 12 | 1 | PVC | 20 | | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Wambach Court | WC 0+50 | 0.01 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 0.95 | |
| Wambach Court | WC 2+00 | 0.04 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 30 | 34 | B | 0.8 | E |
| Wambach Court | WC 3+50 | 0.07 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 30 | 62 | B | 5.07 | E |
| Wambach Court | WC 5+00 | 0.09 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 30 | 88 | B | 6.4 | E |
| Wambach Court | WC 7+50 | 0.14 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 13.51 | |
| Wambach Court | WC 12+00 | 0.23 | 15 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 30 | | B | 11.55 | |
| | | | | | | | | | | | | | | | |
| Wells Drive int. w/Reynolds Dr | WD 0+50 | 0.01 | 15 | 18 | R | P | 25 | 18 | 1 | HDPE | 8 | | D | 2.43 | |
| Wells Drive int. w/Markham Far | WD 4+00 | 0.08 | 3x18 | SD | P | E | 15 | 18 | 1 | CMP | 8 | 90 | D | 21 | E |
| Wells Drive int. w/Reynolds Dr | WD 8+50 | 0.16 | 15 | 15 | P | E | 20 | 12 | 1 | HDPE | 8 | 140 | D | 1 | E |
| Wells Drive int. w/Reynolds Dr | WD 9+50 | 0.18 | 15 | 15 | P | E | 12 | 12 | 1 | HDPE | 8 | 167 | D | 1 | |
| ells Drive int. w/Reynolds Dr | WD 17+00 | 0.32 | 15 | 15 | P | E | 25 | 12 | 1 | CMP | 8 | 321 | D | 1 | |
| Wells Drive int. w/Reynolds Dr | WD 21+00 | 0.40 | 15 | 18 | R | E | 15 | 18 | 1 | CMP | 8 | | | 2.8 | |
| | | | | | | | | | | | | | | | |
| Wendy Hill Road | WHR 2+50 | 0.05 | 15 | 15 | P | N | 15? | 15? | 1 | HDPE | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 10+00 | 0.19 | 15 | 15 | P | N | 15? | 15? | 1 | HDPE | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 11+00 | 0.21 | 15 | 15 | P | E | 24 | 12 | 2 | CMP | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 11+75 | 0.22 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| Wendy Hill Road | WHR 17+00 | 0.32 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 2.95 | |
| Wendy Hill Road | WHR 24+00 | 0.45 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 20 | 508 | D | 1 | E |
| Wendy Hill Road | WHR 28+00 | 0.53 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 2.02 | |
| Wendy Hill Road | WHR 29+50 | 0.56 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 21 | 603 | D | 1 | E |
| Wendy Hill Road | WHR 30+00 | 0.57 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 2.02 | |
| Wendy Hill Road | WHR 33+00 | 0.63 | 15 | 15 | P | E | 21 | 12 | 1 | CMP | 21 | 672 | D | 1 | E |
| Wendy Hill Road | WHR 33+01 | 0.63 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 21 | 667 | D | 1 | E |
| Wendy Hill Road | WHR 34+00 | 0.64 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 21 | 684 | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Western Lane | WL 2+00 | 0.04 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 16 | 24 | D | 1 | E |
| Western Lane | WL 3+00 | 0.06 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 16 | 52 | D | 1 | E |
| Western Lane | WL 9+50 | 0.18 | 18 | 2 X 18 | R | P | 20? | 18? | 1 | HDPE | 16 | | D | 4.47 | |
| Western Lane | WL 10+00 | 0.19 | 2 X 18 | 3x18 | R | E | 20 | 18 | 2 | CMP | 16 | | D | 9.51 | |
| Western Lane | WL 10+50 | 0.20 | 2 X 18 | 3x18 | R | P | 20? | 18? | 1 | HDPE | 16 | | D | 8.89 | |
| Western Lane | WL 13+25 | 0.25 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 16 | | D | 1.79 | |
| Western Lane | WL 14+00 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 272 | D | 1 | E |
| Western Lane | WL 19+50 | 0.37 | 15 | 18 | P | E | 15 | 12 | 2 | CPM | 16 | 382 | D | 3 | E |
| Western Lane | WL 23+00 | 0.44 | 2 X 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 14 | | D | 7.09 | |
| estern Lane | WL 23+01 | 0.44 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 14 | | D | 1 | E |
| Western Lane | WL 24+00 | 0.45 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 14 | 461 | D | 1 | E |
| Western Lane | WL 26+00 | 0.49 | 15 | 15 | P | N | 25? | 18? | 1 | HDPE | 14 | 497 | D | 1 | E |

**Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name**

43560

| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Western Lane | WL 26+50 | 0.50 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 14 | 488 | D | 1 | E |
| Western Lane | WL 30+50 | 0.58 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 574 | D | 1 | E |
| Western Lane | WL 39+00 | 0.74 | 15 | 15 | P | N | 15? | 12? | 1 | HDPE | 16 | 724 | D | 1 | E |
| Western Lane | WL 39+10 | 0.74 | 15 | 18 | R | P | 25? | 24? | 2? | HDPE | 16 | | D | 2 | |
| Western Lane | WL 42+10 | 0.80 | 15 | 15 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 0.27 | |
| Western Lane | WL 45+50 | 0.85 | 15 | 18 | R | P | 30? | 15? | 1 | HDPE | 16 | | D | 1.03 | |
| Western Lane | WL 51+50 | 0.98 | 15 | 18 | P | N | 15 | 12? | 1 | HDPE | 16 | 978 | D | 2 | E |
| Western Lane | WL 52+00 | 0.98 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 978 | D | 1 | E |
| Western Lane | WL 52+50 | 0.99 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 978 | D | 1 | E |
| Western Lane | WL 55+50 | 1.05 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1032 | D | 1 | E |
| Western Lane | WL 56+00 | 1.06 | 18 | 2 X 18 | R | P | 25? | 15 | 1 | HDPE | 22 | | D | 5.29 | |
| Western Lane | WL 57+50 | 1.09 | 15 | 15 | P | E | 12 | 15 | 1 | CMP | 22 | 1072 | D | 1 | E |
| Western Lane | WL 62+00 | 1.17 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 22 | 1170 | D | 2.2 | E |
| Western Lane | WL 63+75 | 1.21 | 2 X 18 | 3x18 | R | E | 25 | 18 | 1 | CMP | 22 | | D | 8.75 | |
| Western Lane | WL 65+00 | 1.23 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1238 | D | 1 | E |
| Western Lane | WL 66+00 | 1.25 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1238 | D | 1 | E |
| Western Lane | WL 67+00 | 1.27 | 15 | 18 | P | E | ? | ? | 1 | ? | 22 | 1266 | D | 1.1 | E |
| Western Lane | WL 69+00 | 1.31 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 1300 | D | 2.7 | E |
| Western Lane | WL 70+00 | 1.33 | 18 | 2 X 18 | P | E | 12 | ? | 1 | CMP | 22 | 1324 | D | 3.8 | E |
| Western Lane | WL 71+00 | 1.34 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1342 | D | 1 | E |
| Western Lane | WL 71+00 | 1.34 | 18 | 2 X 18 | R | P | 25? | 18? | 1 | HDPE | 22 | | D | 5.02 | |
| Western Lane | WL 72+00 | 1.36 | 15 | 15 | P | E | 12 | 12 | 1 | PVC | 22 | 1360 | D | 1 | E |
| Western Lane | WL 74+50 | 1.41 | 18 | 2 X 18 | P | E | 20 | 15 | 1 | CMP | 22 | 1408 | D | 3.35 | E |
| Western Lane | WL 75+00 | 1.42 | 2 X 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 22 | | D | 6.77 | |
| Western Lane | WL 88+50 | 1.68 | 15 | 15 | P | E | 12 | 15 | 2 | CMP | 28 | 1679 | D | 1 | E |
| | | | | | | | | | | | | | | | |
| Yarnell Court | YC 2+00 | 0.04 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 34 | 64? | C | 3 | E |
| Yarnell Court | YC 4+00 | 0.08 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 34 | 67 | C | 1 | E |
| Yarnell Court | YC 7+50 | 0.14 | 3x18 | SD | R | E | 25? | 24 | 1 | CMP | 34 | | C | 27.61 | |
| Yarnell Court | YC 13+00 | 0.25 | 15 | 18 | R | P | 30 | 15? | 1 | HDPE | 35 | ON SI | C | 1.24 | |
| Yarnell Court | YC 13+70 | 0.26 | 15 | 15 | R | P | 30 | 15? | 1 | HDPE | 35 | | C | 0.62 | |
| Yarnell Court | YC 21+50 | 0.41 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 35 | 402 | C | 1 | E |
| Yarnell Court | YC 22+50 | 0.43 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 35 | 418 | C | 1 | E |
| | | | | | | | | | | | | | | | |
| Youngs Drive | YD(S) 1+00 | 0.02 | 12 | 15 | P | E | 12 | 12 | 1 | CMP | 12 | 359 | B | 3 | E |
| Youngs Drive | YD(S) 5+00 | 0.09 | 15 | 18 | R | P | 20? | 18? | 1 | HDPE | 9 | | B | 8.39 | |
| Youngs Drive | YD(S) 6+50 | 0.12 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 9 | | B | 1 | E |
| Youngs Drive | YD(S) 7+50 | 0.14 | 12 | 15 | P | E | 12 | 12 | 1 | CMP | 9 | 481 | B | 1 | E |
| Youngs Drive | YD(S) 12+00 | 0.23 | 12 | 15 | R | P | 20? | 15? | 1 | HDPE | 9 | | B | 1.35 | |
| Youngs Drive | YD(S) 20+00 | 0.38 | 12 | 15 | R | E | 20? | 12 | 1 | CMP | 9 | | B | 0.36 | |
| Youngs Drive | YD(S) 20+01 | 0.38 | 12 | 15 | P | E | 12 | 12 | 2 | CMP | 9 | 712 | B | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by road name | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | 43560 | |
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| | | | | | | | | | | | | | | | |
| Youngs Drive | YD(N) 0.00 | 0.00 | 12 | 15 | R | E | 45 | 12 | 1 | CMP | 11 | | B | 0.76 | |
| Youngs Drive | YD(N) 11+50 | 0.23 | 15 | 2 X 18 | R | N | 25? | 24? | 1 | HDPE | 10 | | B | 12.29 | |
| Youngs Drive | YD(N) 15+00 | 0.28 | 12 | 15 | R | E | 18 | 12 | 1 | CMP | 10 | | B | 2 | E |

# APPENDIX E-2

## Culvert Tables by Map Panels

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Cappy Road | CR 0+20 | 0.00 | 15 | 18 | R | P | 30? | 24? | 1 | HDPE | 01 | | B | 7.14 | |
| Cappy Road | CR 1+00 | 0.02 | 12 | 15 | P | E | 30 | 12 | 1 | CMP | 01 | 25 | B | 1 | E |
| Cappy Road | CR 3+50 | 0.07 | 18 | 3x18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 38.03 | |
| High Top Road | HTR 12+00 | 0.23 | 12 | 15 | R | P | 35 | 15 | 1 | HDPE | 01 | | B | 1.62 | |
| High Top Road | HTR 15+50 | 0.29 | SD | SD | R | E | 35 | 18 | 2 | CMP | 01 | | B | 82.02 | |
| High Top Road | HTR 19+00 | 0.36 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 6.09 | |
| High Top Road | HTR 23+00 | 0.44 | 12 | 15 | R | E | 30 | 15 | 1 | HDPE | 01 | | B | 4.07 | |
| High Top Road | HTR 27+75 | 0.53 | 12 | 15 | R | E | 30 | 15 | 1 | HDPE | 01 | | B | 2.72 | |
| High Top Road | HTR 115+00 | 2.18 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 01 | | B | 5.9 | |
| High Top Road | HTR 117+50 | 2.23 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2239 | B | 2 | E |
| High Top Road | HTR 118+50 | 2.24 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 01 | | B | 6.67 | |
| High Top Road | HTR 121+50 | 2.30 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 01 | | B | 6.84 | |
| High Top Road | HTR 132+00 | 2.50 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 01 | | B | 2.26 | |
| High Top Road | HTR 138+50 | 2.62 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2628 | B | 1 | E |
| High Top Road | HTR 141+50 | 2.68 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2239 | B | 0.59 | |
| High Top Road | HTR 141+51 | 2.68 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2682 | B | 1 | E |
| High Top Road | HTR 142+00 | 2.69 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2691 | B | 0.6 | |
| High Top Road | HTR 143+00 | 2.71 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 01 | 2702 | B | 1 | E |
| Crossway Lane | CL 4+00 | 0.08 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.32 | |
| Crossway Lane | CL 8+80 | 0.17 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 02 | | B | 6.37 | |
| Freeze Road | FR 5+50 | 0.10 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 125 | B | 1 | E |
| Freeze Road | FR 4+00 | 0.08 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 02 | | B | 1.27 | |
| Freeze Road | FR 6+50 | 0.12 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 125 | B | 1 | E |
| Freeze Road | FR 7+50 | 0.14 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 157 | B | 1 | E |
| Freeze Road | FR 10+50 | 0.20 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 6.12 | |
| Freeze Road | FR 15+25 | 0.29 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 292 | B | 3 | E |
| Freeze Road | FR 20+50 | 0.39 | 15 | 18 | R | P | 35 | 15 | 2 | HDPE | 02 | | B | 8.04 | |
| Freeze Road | FR 23+25 | 0.44 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 8.46 | |
| High Top Road | HTR 33+75 | 0.64 | 15 | 18 | R | E | 40 | 18 | 1 | CMP | 02 | | B | 6.37 | |
| High Top Road | HTR 40+00 | 0.76 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 4.16 | |
| High Top Road | HTR 47+75 | 0.90 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 903 | B | 0.87 | |
| High Top Road | HTR 49+00 | 0.93 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 2.17 | |
| High Top Road | HTR 50+25 | 0.95 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 02 | | B | 0.82 | |
| High Top Road | HTR 51+75 | 0.98 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 971 | B | 0.48 | |
| High Top Road | HTR 52+00 | 0.98 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.34 | |
| High Top Road | HTR 53+00 | 1.00 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 1005 | B | 1 | E |
| High Top Road | HTR 56+00 | 1.06 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 1 | E |
| High Top Road | HTR 61+50 | 1.16 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 0.78 | |
| High Top Road | HTR 85+00 | 1.61 | 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 02 | | B | 29.8 | |
| High Top Road | HTR 89+25 | 1.69 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1679 | B | 1 | E |
| High Top Road | HTR 89+50 | 1.70 | 12 | 15 | R | E | 30 | 12 | 1 | CMP | 02 | | B | 4.91 | |
| High Top Road | HTR 91+00 | 1.72 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1722 | B | 1 | E |
| High Top Road | HTR 94+00 | 1.78 | 12 | 15 | P | N | 20 | 15 | 1 | HDPE | 02 | 1745 | B | 3.5 | E |
| High Top Road | HTR 97+50 | 1.85 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 7.26 | |
| High Top Road | HTR 99+50 | 1.88 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 3.12 | |
| High Top Road | HTR 103+00 | 1.95 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 02 | | B | 7.28 | |
| High Top Road | HTR 107+50 | 2.04 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2028 | B | 1 | E |
| High Top Road | HTR 109+50 | 2.07 | 12 | 15 | R | E | 40 | 15 | 1 | CMP | 02 | | B | 4.47 | |
| High Top Road | HTR 144+00 | 2.73 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2727 | B | 1 | E |
| High Top Road | HTR 146+50 | 2.77 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 02 | 2775 | B | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| High Top Road | HTR 62+00 | 1.17 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1173 | B | 0.3 | |
| High Top Road | HTR 63+00 | 1.19 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1205 | B | 1.08 | |
| High Top Road | HTR 64+00 | 1.21 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1205 | B | 1.23 | |
| High Top Road | HTR 68+00 | 1.29 | 12 | 15 | R | P | 30 | 18 | 1 | HDPE | 03 | | B | 2.35 | |
| High Top Road | HTR 69+50 | 1.32 | 12 | 15 | R | N | 30? | 18? | 1 | HDPE | 03 | | B | 2.95 | |
| High Top Road | HTR 71+50 | 1.35 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 03 | 1339 | B | 1 | E |
| High Top Road | HTR 77+50 | 1.47 | 12 | 15 | P | N | 20? | 18 | 1 | HDPE | 03 | 1473 | B | 5 | E |
| High Top Road | HTR 81+00 | 1.53 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 03 | | B | 10.18 | |
| Cliffside Road | CR 1+50 | 0.03 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 31 | B | 1 | |
| Cliffside Road | CR 2+50 | 0.05 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 54 | B | 1 | E |
| Cliffside Road | CR 2+75 | 0.05 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 51 | B | 2 | E |
| Cliffside Road | CR 3+50 | 0.07 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 73 | B | 2.5 | E |
| Cliffside Road | CR 4+00 | 0.08 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 1.19 | |
| Cliffside Road | CR 4+25 | 0.08 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 79 | B | 1 | |
| Cliffside Road | CR 5+50 | 0.10 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 101 | B | 1 | |
| Cliffside Road | CR 6+50 | 0.12 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 126 | B | 0.7 | E |
| Cliffside Road | CR 8+00 | 0.15 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 1.52 | |
| Cliffside Road | CR 9+50 | 0.18 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 163 | B | 1 | |
| Lookout Point Way | LPW 4+00 | 0.08 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 04 | | B | 1 | E |
| Lookout Point Way | LPW 6+00 | 0.11 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 04 | | B | 3.8 | |
| Lookout Point Way | LPW 9+50 | 0.18 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 161 | B | 3 | E |
| Lookout Point Way | LPW 10+50 | 0.20 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 205 | B | 4 | E |
| McDonalds Farm Road | MCFR 0+50 | 0.01 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 11 | B | 1 | |
| McDonalds Farm Road | MCFR 1+25 | 0.02 | 12 | 15 | P | N | | | | | 04 | 191 | B | 1 | |
| McDonalds Farm Road | MCFR 3+25 | 0.06 | 12 | 15 | P | E | 30 | 12 | 1 | CMP | 04 | 94 | B | 1 | E |
| McDonalds Farm Road | MCFR 4+75 | 0.09 | 12 | 15 | R | P | 30 | 15 | 1 | HDPE | 04 | | B | 2 | E |
| McDonalds Farm Road | MCFR 6+75 | 0.13 | 12 | 15 | R | E | 40 | 18 | 1 | CMP | 04 | | B | 1.25 | |
| McDonalds Farm Road | MCFR 7+00 | 0.13 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 04 | 132 | B | 1 | |
| McDonalds Farm Road | MCFR 7+75 | 0.15 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 145 | B | 1 | |
| McDonalds Farm Road | MCFR 9+00 | 0.17 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 165 | B | 1 | |
| McDonalds Farm Road | MCFR 9+75 | 0.18 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 185 | B | 1 | |
| McDonalds Farm Road | MCFR 10+00 | 0.19 | 12 | 15 | P | E | 60 | 18 | 1 | CMP | 04 | 166 + | B | 3 | E |
| McDonalds Farm Road | MCFR 11+25 | 0.21 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 205 | B | 1 | E |
| McDonalds Farm Road | MCFR 11+50 | 0.22 | 18 | 2 X 18 | R | P | 30 | 18 | 1 | HDPE | 04 | | B | 16.37 | |
| McDonalds Farm Road | MCFR 12+00 | 0.23 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 238 | B | 1 | |
| McDonalds Farm Road | MCFR 12+50 | 0.24 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 04 | 225 | B | 1 | |
| Old Linden Road | OLR 2+00 | 0.04 | 18 | 3x18 | R | P | 30? | 24? | 2? | HDPE | 04 | | B | 30 | E |
| Old Linden Road | OLR 9+50 | 0.18 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 04 | | B | 7 | E |
| Old Linden Road | OLR 11+50 | 0.22 | 15 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 04 | | B | 11 | E |
| Old Linden Road | OLR 12+00 | 0.23 | 18 | 2 X 18 | R | P | 30? | 24? | 1 | HDPE | 04 | | B | 16.67 | |
| Old Linden Road | OLR 16+00 | 0.30 | 12 | 15 | R | E | 30 | 12 | 1 | CMP | 04 | | B | 2.18 | |
| Old Linden Road | OLR 21+50 | 0.41 | 15 | 18 | R | P | 30 | 24? | 1 | HDPE | 04 | | B | 7.21 | |
| Old Linden Road | OLR 31+25 | 0.59 | 18 | 2 X 18 | R | P | 30 | 24? | 2 | HDPE | 04 | | B | 25.72 | |
| Old Linden Road | OLR 43+50 | 0.82 | 18 | 3x18 | R | P | 30 | 24? | 2 | HDPE | 04 | | B | 37.35 | |
| Tomahawk Way | TW 5+40 | 0.90 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 04A | | B | 3.82 | |
| Tomahawk Way | TW 5+50 | 0.90 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 04A | | B | 3.8 | |
| Tomahawk Way | TW 9+50 | 0.18 | 15 | 2 X 18 | R | E | 25? | 18 | 1 | CMP | 04A | | B | 12.06 | |
| Tomahawk Way | TW 13+50 | 0.26 | 12 | 15 | P | N | 30 | 15? | 1 | HDPE | 04A | ? | B | 2.5 | E |
| Tomahawk Way | TW 15+25 | 0.29 | 15 | 18 | R | E | 25 | 24? | 1 | CMP | 04A | | B | 5.87 | |
| Tomahawk Way | TW 17+25 | 0.33 | 12 | 15 | R | N | 30 | 24 | 1 | HDPE | 04A | | B | 4.01 | |
| Tomahawk Way | TW 17+75 | 0.34 | 12 | 15 | P | N | 15 | 18 | 1 | HDPE | 04A | ? | B | 4 | |
| Tomahawk Way | TW 21+75 | 0.41 | 12 | 12 | P | E | 20 | 12 | 1 | CMP | 04A | ? | B | 1 | E |
| Tomahawk Way | TW 22+00 | 0.42 | 15 | 15 | R | E | 25? | ? | 1 | CMP | 04A | | B | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Tulip Poplar Drive | TPD 1+50 | 0.03 | 12 | 15 | P | E | 20 | 12 | 1 | HDPE | 04 | 1035 | B | 0.14 | |
| Tulip Poplar Drive | TPD 4+00 | 0.08 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 62 | B | 0.42 | |
| Tulip Poplar Drive | TPD 7+50 | 0.14 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 142 | B | 3 | E |
| Tulip Poplar Drive | TPD 8+50 | 0.16 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 04 | | B | 6.47 | |
| Tulip Poplar Drive | TPD 10+00 | 0.19 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 192 | B | 1 | E |
| Tulip Poplar Drive | TPD 11+00 | 0.21 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 220 | B | 2 | E |
| Tulip Poplar Drive | TPD 12+00 | 0.23 | 15 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 04 | | B | 12.34 | |
| Tulip Poplar Drive | TPD 13+25 | 0.25 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 04 | 250 | B | 8 | E |
| Tulip Poplar Drive | TPD 15+00 | 0.28 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 260 | B | 1 | E |
| Tulip Poplar Drive | TPD 16+00 | 0.30 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 04 | 284 | B | 3 | E |
| Cliffside Road | CR 11+75 | 0.22 | 18 | 2 X 18 | R | E | 30 | 18 | 1 | CMP | 05 | | B | 19.45 | |
| Heim Jones Road | NO CULVERTS MAPPED | | | | | | | | | | 05 | | B | | |
| Lookout Point Way | LPW 0+50 | 0.01 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 193 | B | 1 | |
| McDonalds Farm Road | MCFR 13+25 | 0.25 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 247 | B | 1 | |
| McDonalds Farm Road | MCFR 13+26 | 0.25 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 238 | B | 2 | |
| McDonalds Farm Road | MCFR 14+25 | 0.27 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 265 | B | 1 | |
| McDonalds Farm Road | MCFR 15+50 | 0.29 | 15 | 2 X 18 | P | E | 20 | 18 | 1 | CMP | 05 | 294 | B | 12.56 | |
| McDonalds Farm Road | MCFR 15+51 | 0.29 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 285 | B | 2 | |
| McDonalds Farm Road | MCFR 15+75 | 0.30 | 15 | 2 X 18 | R | E | 30 | 18 | 2 | CMP | 05 | | B | 12.56 | |
| McDonalds Farm Road | MCFR 16+50 | 0.31 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 331 | B | 1 | |
| McDonalds Farm Road | MCFR 16+51 | 0.31 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 326 | B | 1 | |
| McDonalds Farm Road | MCFR 17+00 | 0.32 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 05 | 327 | B | 1 | E |
| McDonalds Farm Road | MCFR 17+50 | 0.33 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 327 | B | 2 | |
| McDonalds Farm Road | MCFR 18+00 | 0.34 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 352 | B | 3 | E |
| McDonalds Farm Road | MCFR 18+50 | 0.35 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 345 | B | 2 | |
| McDonalds Farm Road | MCFR 19+50 | 0.37 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 05 | 363 | B | 2 | |
| McDonalds Farm Road | MCFR 20+50 | 0.39 | SD | SD | R | E | 30 | 36 | 1 | CMP | 05 | | B | 57 | |
| McDonalds Farm Road | MCFR 25+50 | 0.48 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 484 | B | 1 | |
| McDonalds Farm Road | MCFR 28+50 | 0.54 | 12 | 15 | P | N | 20 | 15 | 1 | CMP | 05 | 541 | B | 1 | |
| Tulip Poplar Drive | TPD 17+50 | 0.33 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 334 | B | 4 | E |
| Tulip Poplar Drive | TPD 19+50 | 0.37 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 05 | 364 | B | 7 | E |
| Tulip Poplar Drive | TPD 20+00 | 0.38 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 309 | B | 1 | |
| Tulip Poplar Drive | TPD 20+50 | 0.39 | 15 | 18 | R | P | 30 | 18 | 1 | HDPE | 05 | | B | 7.52 | |
| Tulip Poplar Drive | TPD 20+51 | 0.39 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 396 | B | 1 | |
| Tulip Poplar Drive | TPD 22+00 | 0.42 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 432 | B | 1 | E |
| Tulip Poplar Drive | TPD 24+00 | 0.45 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 5.6 | |
| Tulip Poplar Drive | TPD 25+50 | 0.48 | 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 40 | |
| Tulip Poplar Drive | TPD 26+50 | 0.50 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 438 | B | 3 | E |
| Tulip Poplar Drive | TPD 28+00 | 0.53 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 464 | B | 1 | E |
| Tulip Poplar Drive | TPD 29+75 | 0.56 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 484 | B | 0.38 | |
| Tulip Poplar Drive | TPD 30+75 | 0.58 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 506 | B | 0.86 | |
| Tulip Poplar Drive | TPD 32+00 | 0.61 | 12 | 15 | P | E | 40 | 12 | 1 | CMP | 05 | 518 + | B | 1.72 | |
| Tulip Poplar Drive | TPD 33+00 | 0.63 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 05 | 586 | B | 2.4 | E |
| Tulip Poplar Drive | TPD 36+50 | 0.69 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 05 | | B | 7.75 | |
| Tulip Poplar Drive | TPD 36+51 | 0.69 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 05 | 1535 | B | 1 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Elseas Farm Road | EFR 6+00 | 0.11 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 06 | | B | 2.4 | |
| Heim Jones Road | NO CULVERTS MAPPED | | | | | | | | | | 06 | | B | | |
| Reynolds Drive | RYD 6+00 | 0.11 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 2.11 | |
| Reynolds Drive | RYD 7+00 | 0.13 | SD | SD | R | E/N | 20 | 15 | 1 | CMP | 6 | | B | 377 | |
| Reynolds Drive | RYD 7+00 | 0.13 | SD | SD | R | E | 20 | 24 | 1 | CMP | 6 | | B | 377 | |
| Reynolds Drive | RYD 8+00 | 0.15 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 0.2 | |
| Reynolds Drive | RYD 12+00 | 0.23 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 6 | | B | 2.24 | |
| Reynolds Drive | RYD 17+00 | 0.32 | 18 | 3x18 | R | P | 20 | 18? | 1 | HDPE | 6 | | B | 29.6 | |
| Reynolds Drive | RYD 19+00 | 0.36 | 12 | 15 | P | E | 20 | 12 | 1 | HDPE | 6 | 1175 | B | 4 | E |
| Reynolds Drive | RYD 22+00 | 0.42 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 6 | 1175 | B | 8 | E |
| Reynolds Drive | RYD 25+50 | 0.48 | SD | SD | R | E/N | 20 | 12 | 1 | CMP | 6 | | B | 49.04 | |
| Bragg Drive | BGD 1+00 | 0.02 | 15 | 2 X 18 | P | E | 25 | 12 | 1 | CMP | 7 | | B | 15 | E |
| Bragg Drive | BGD 2+00 | 0.04 | 15 | 2 X 18 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 14 | E |
| Bragg Drive | BGD 4+75 | 0.09 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 3 | E |
| Bragg Drive | BGD 5+60 | 0.11 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 112 | B | 1 | E |
| Bragg Drive | BGD 6+50 | 0.12 | 12 | 15 | R | P | 30? | 15? | 1 | HDPE | 7 | | B | 3.03 | |
| Bragg Drive | BGD 7+00 | 0.13 | 12 | 15 | P | E | 50 | 15 | 1 | CMP | 7 | 126 | B | 3 | |
| Bragg Drive | BGD 9+00 | 0.17 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 7 | 167 | B | 1 | |
| Bragg Drive | BGD 12+50 | 0.24 | 12 | 15 | P | E | 30 | 18 | 1 | CMP | 7 | 217 | B | 2.1 | |
| Bragg Drive | BGD 13+50 | 0.26 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 217 | B | 1.5 | E |
| Bragg Drive | BGD 14+00 | 0.27 | 12 | 15 | P | E | 30 | 18 | 1 | CMP | 7 | 255 | B | 1.5 | E |
| Bragg Drive | BGD 15+50 | 0.29 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 282 | B | 1 | |
| Bragg Drive | BGD 21+50 | 0.41 | 12 | 15 | P | N | 30? | 18? | 1 | HDPE | 7 | 391 | B | 1 | |
| Bragg Drive | BGD 21+51 | 0.41 | 12 | 15 | P | E | 20 | 18 | 1 | CMP | 7 | 376 | B | 1 | E |
| Bragg Drive | BGD 22+50 | 0.43 | 12 | 15 | P | N | 20? | 18? | 1 | HDPE | 7 | 403 | B | 3.97 | |
| Bragg Drive | BGD 30+50 | 0.58 | 12 | 15 | P | E | 35 | 12 | 1 | CMP | 7 | 552 | B | 2 | E |
| Bragg Drive | BGD 31+50 | 0.60 | 12 | 15 | P | E | 20 | 15 | 1 | HDPE | 7 | 658 | B | 3 | E |
| Bragg Drive | BGD 33+00 | 0.63 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 7 | | B | 3.36 | |
| Bragg Drive | BGD 40+50 | 0.77 | 18 | 2 X 18 | R | P | 25? | 18? | 3 | HDPE | 7 | | B | 18.67 | |
| Ehlers Drive | ED 0+00 | 0.00 | 18 | 2 X 18 | R | P | 25 | 24? | 1 | HDPE | 7 | | B | 20.42 | |
| Ehlers Drive | ED 3+50 | 0.07 | 15 | 2 X 18 | P | E | 15 | 18 | 1 | HDPE | 7 | 65 | B | 15 | E |
| Ehlers Drive | ED 5+00 | 0.09 | 15 | 2 X 18 | P | N | 20 | 18? | 1 | HDPE | 7 | 101 | B | 15 | E |
| Ehlers Drive | ED 8+50 | 0.16 | 18 | 2 X 18 | R | P | 25 | 24? | 1 | HDPE | 7 | | B | 16.59 | |
| Reynolds Drive | RYD 27+50 | 0.52 | SD | SD | R | E/N | 20 | 12 | 1 | CMP | 7 | | B | 157.79 | |
| Reynolds Drive | RYD 31+50 | 0.60 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 7 | | B | 5.15 | |
| Reynolds Drive | RYD 35+75 | 0.68 | 18 | 2 X 18 | R | E/N | 30 | 12 | 1 | CMP | 7 | | B | 21 | |
| Reynolds Drive | RYD 36+00 | 0.68 | 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 7 | | B | 21 | |
| Reynolds Drive | RYD 37+00 | 0.70 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 7 | 821 | B | 1 | E |
| Reynolds Drive | RYD 46+50 | 0.88 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 7 | | B | 7.75 | |
| Reynolds Drive | RYD 48+50 | 0.92 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 7 | 671 | B | 2 | E |
| Reynolds Drive | RYD 51+50 | 0.98 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 7 | | B | 7.87 | |
| Reynolds Drive | RYD 56+25 | 1.07 | SD | SD | R | E | 30 | 24 | 1 | CMP | 7 | | B/D | 28B+38D | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Markham Farm Road | MFR 1+50 | 0.03 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 8 | ?? | D | 1 | E |
| Markham Farm Road | MFR 4+00 | 0.08 | 18 | 2 X 18 | P | E | 20 | 18 | 1 | CMP | 8 | 208 | D | 3.95 | |
| Markham Farm Road | MFR 11+50 | 0.22 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 8 | ?? | D | 1 | E |
| Markham Farm Road | MFR 14+50 | 0.27 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 8 | | D | 1 | E |
| Markham Place | MP 1+50 | 0.03 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 8 | ?? | D | 1 | E |
| Reynolds Drive | RYD 65+00 | 1.23 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 8 | | D | 5.74 | |
| Reynolds Drive | RYD 67+00 | 1.27 | 2x24 | SD | R | P | 25 | 15? | 1 | HDPE | 8 | | D | 31.99 | |
| Reynolds Drive | RYD 72+00 | 1.36 | 2 X 18 | 2 X 18 | R | P | 25 | 18? | 1 | HDPE | 8 | | D | 6.72 | |
| Reynolds Drive | RYD 74+00 | 1.40 | 2 X 18 | 3x18 | R | E | 40 | 12 | 1 | CMP | 8 | | D | 8.13 | |
| Wells Drive int. w/Markh | WD 4+00 | 0.08 | 3x18 | SD | P | E | 15 | 18 | 1 | CMP | 8 | 90 | D | 21 | E |
| Wells Drive int. w/Reyno | WD 0+50 | 0.01 | 15 | 18 | R | P | 25 | 18 | 1 | HDPE | 8 | | D | 2.43 | |
| Wells Drive int. w/Reyno | WD 8+50 | 0.16 | 15 | 15 | P | E | 20 | 12 | 1 | HDPE | 8 | 140 | D | 1 | E |
| Wells Drive int. w/Reyno | WD 9+50 | 0.18 | 15 | 15 | P | E | 12 | 12 | 1 | HDPE | 8 | 167 | D | 1 | |
| Wells Drive int. w/Reyno | WD 17+00 | 0.32 | 15 | 15 | P | E | 25 | 12 | 1 | CMP | 8 | 321 | D | 1 | |
| Wells Drive int. w/Reyno | WD 21+00 | 0.40 | 15 | 18 | R | E | 15 | 18 | 1 | CMP | 8 | | | 2.8 | |
| Farm View Road | FVR 10+50 | 0.20 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 9 | 196 | B | 2 | E |
| Farm View Road | FVR 12+00 | 0.23 | 12 | 15 | P | E | 20? | 12 | 1 | CMP | 9 | 234 | B | 3 | E |
| Farm View Road | FVR 14+75 | 0.28 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 9 | 275 | B | 0.35 | |
| Farm View Road | FVR 16+00 | 0.30 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 9 | 289 | B | 0.72 | |
| Farms River Road | FRRD 0+50 | 0.01 | 18 | 2 X 18 | R | E | 22 | 12 | 1 | CMP | 9 | | B | 25.04 | |
| Farms River Road | FRRD 3+50 | 0.07 | 15 | 2 X 18 | P | N | 20? | 18? | 1 | HDPE | 9 | 2989 | B | 12 | E |
| Farms River Road | FRRD 13+50 | 0.26 | 12 | 15 | P | E | 12 | 12 | 1 | PVC | 9 | 266 | B | 2 | E |
| Farms River Road | FRRD 18+00 | 0.34 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 9 | 342 | B | 6 | E |
| Farms River Road | FRRD 19+00 | 0.36 | 18 | 2 X 18 | R | P | 25? | 24 | 1 | HDPE | 9 | | B | 18.21 | |
| Farms River Road | FRRD 22+00 | 0.42 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 9 | 416 | B | 1 | E |
| Youngs Drive | YD(S) 5+00 | 0.09 | 15 | 18 | R | P | 20? | 18? | 1 | HDPE | 9 | | B | 8.39 | |
| Youngs Drive | YD(S) 6+50 | 0.12 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 9 | | B | 1 | E |
| Youngs Drive | YD(S) 7+50 | 0.14 | 12 | 15 | P | E | 12 | 12 | 1 | CMP | 9 | 481 | B | 1 | E |
| Youngs Drive | YD(S) 12+00 | 0.23 | 12 | 15 | R | P | 20? | 15? | 1 | HDPE | 9 | | B | 1.35 | |
| Youngs Drive | YD(S) 20+00 | 0.38 | 12 | 15 | R | E | 20? | 12 | 1 | CMP | 9 | | B | 0.36 | |
| Youngs Drive | YD(S) 20+01 | 0.38 | 12 | 15 | P | E | 12 | 12 | 2 | CMP | 9 | 712 | B | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Farms River Road | FRRD 27+50 | 0.52 | SD | SD | R | E | 23 | 24 | 1 | CMP | 10 | | B | 60.15 | |
| Farms River Road | FRRD 31+00 | 0.59 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 10 | 74 | B | 1 | E |
| Farms River Road | FRRD 32+25 | 0.61 | 18 | 2 X 18 | R | E | 23 | 15 | 1 | PVC | 10 | | B | 20.47 | |
| Farms River Road | FRRD 36+00 | 0.68 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 10 | 668 | B | 3 | E |
| Farms River Road | FRRD 38+00 | 0.72 | 15 | 18 | R | E | 25 | 18 | 1 | CMP | 10 | | B | 8.32 | |
| Farms River Road | FRRD 38+75 | 0.73 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 10 | 722 | B | 8.3 | |
| Fellows Drive | FD 5+00 | 0.09 | 12 | 15 | R | E | 25 | 18 | 1 | CMP | 10 | | B | 2 | E |
| Fellows Drive | FD 5+50 | 0.10 | 12 | 15 | R | E | 20 | 18 | 1 | CMP | 10 | | B | 1 | E |
| Fellows Drive | FD 12+75 | 0.24 | 12 | 15 | P | E | 15? | 15? | 1 | CMP? | 10 | 292 | B | 3 | E |
| Fellows Drive | FD 14+50 | 0.27 | 12 | 15 | P | E | 15? | 15? | 1 | HDPE | 10 | 255 | B | 1 | E |
| Fellows Drive | FD 14+51 | 0.27 | 12 | 15 | P | N | 15? | 15? | 1 | HDPE | 10 | 270 | B | 3 | E |
| Fellows Drive | FD 17+00 | 0.32 | 12 | 15 | P | E | 25 | 15 | 1 | CMP | 10 | 222 | B | 4 | E |
| Fellows Drive | FD 17+25 | 0.33 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 215 | B | 1 | E |
| Fellows Drive | FD 20+00 | 0.38 | 15 | 18 | R | E | 70 | 15 | 1 | CMP | 10 | | B | 5.75 | |
| Fellows Drive | FD 25+50 | 0.48 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 10 | 59 | B | 5 | E |
| Fellows Drive | FD 27+75 | 0.53 | 18 | 2 X 18 | R | E | 46 | 15 | 1 | CMP | 10 | | B | 16.18 | |
| Flynn Drive | FND 5+00 | 0.09 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 102 | B | 2 | E |
| Flynn Drive | FND 7+00 | 0.13 | 12 | 15 | P | E | 15 | 15 | 1 | CMP | 10 | 136 | B | 3 | E |
| Flynn Drive | FND 9+75 | 0.18 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 10 | | B | 11.53 | |
| Flynn Drive | FND 10+00 | 0.19 | 12 | 15 | P | E | 15? | 15? | 1 | CMP? | 10 | 194 | B | 4 | E |
| Flynn Drive | FND 12+75 | 0.24 | 12 | 15 | P | E | 15? | 15 | 1 | CMP | 10 | 242 | B | 2 | E |
| Flynn Drive | FND 18+75 | 0.36 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 10 | | B | 2.83 | |
| Flynn Drive | FND 23+60 | 0.45 | 12 | 15 | R | N | 20? | 15? | 1 | HDPE | 10 | | B | 1.3 | |
| Youngs Drive | YD(N) 11+50 | 0.23 | 15 | 2 X 18 | R | N | 25? | 24? | 1 | HDPE | 10 | | B | 12.29 | |
| Youngs Drive | YD(N) 15+00 | 0.28 | 12 | 15 | R | E | 18 | 12 | 1 | CMP | 10 | | B | 2 | E |
| Dillard Court | DC 0+50 | 0.01 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 11 | 132 | B | 1 | |
| Dillard Court | DC 3+00 | 0.06 | 12 | 15 | P | E | 12 | 15 | 1 | CMP | 11 | 185 | B | 1 | E |
| Dillard Court | DC 5+00 | 0.09 | 12 | 15 | R | N | 20? | 18? | 1 | HDPE | 11 | | B | 4.8 | |
| Dry Run Court | DRC 1+50 | 0.03 | SD | SD | R | E | 22 | 60 | 2 | RCP | 11 | | D + B | 620.66 | E |
| Dry Run Court | DRC 4+00 | 0.08 | 15 | 15 | P | E | 22 | 16 | 1 | CMP | 11 | 71 | D | 1 | E |
| Dry Run Court | DRC 4+01 | 0.08 | 15 | 15 | P | E | 15 | 16 | 1 | CMP | 11 | 74 | D | 1 | E |
| Dry Run Court | DRC 6+50 | 0.12 | 18 | 2 X 18 | R | E | 38' | 18 | 1 | CMP | 11 | | D | 4.06 | |
| Dry Run Court | DRC 10+50 | 0.20 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 11 | 209 | D | 1.15 | |
| Dry Run Court | DRC 11+50 | 0.22 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 11 | 218 | D | 1.1 | E |
| Dry Run Court | DRC 12+00 | 0.23 | 15 | 15 | P | E | 12 | 12 | 1 | PVC | 11 | 209 | D | 1 | E |
| Dry Run Court | DRC 14+50 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 266 | D | 1 | E |
| Dry Run Court | DRC 14+75 | 0.28 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 280 | D | 1 | E |
| Dry Run Court | DRC 15+75 | 0.30 | 15 | 15 | P | E | 12? | 12? | 1 | CMP? | 11 | 298 | D | 1 | E |
| Dry Run Court | DRC 18+00 | 0.34 | 2 X 18 | 2 X 18 | R | E | 20 | 18 | 1 | PVC | 11 | | D | 8 | |
| Dry Run Court | DRC 20+00 | 0.38 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 11 | 394 | D | 1 | E |
| Farm View Road | FVR 3+50 | 0.07 | 12 | 15 | P | E | ? | ? | 1 | CMP | 11 | 55 | B | 1 | E |
| Silver Fox Lane | SFL 1+25 | 0.03 | 15 | 18 | R | E | 15 | 24 | 1 | STEEL | 11 | | D | 1.13 | |
| Silver Fox Lane | SFL 4+50 | 0.09 | 15 | 15 | P | N | 15 | 15 | 1 | HDPE | 11 | 84 | D | 1 | E |
| Silver Fox Lane | SFL 7+50 | 0.14 | 15 | 15 | P | E | 30 | 12 | 1 | CMP | 11 | 84 | D | 1 | un be d |
| Youngs Drive | YD(N) 0.00 | 0.00 | 12 | 15 | R | E | 45 | 12 | 1 | CMP | 11 | | B | 0.76 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Youngs Drive | YD(S) 1+00 | 0.02 | 12 | 15 | P | E | 12 | 12 | 1 | CMP | 12 | 359 | B | 3 | E |
| Hobbs Knob Road | HKR 2+00 | 0.04 | 18 | 2 X 18 | R | E | 25 | 12 | 1 | CMP | 13 | | D | 4.45 | |
| Hobbs Knob Road | HKR 4+25 | 0.08 | 15 | 15 | P | E | 35 | 12 | 1 | CMP | 13 | 64 | D | 1 | E |
| Hobbs Knob Road | HKR 7+00 | 0.13 | 15 | 18 | R | E | 25 | 16 | 1 | CMP | 13 | | D | 1.91 | |
| Hobbs Knob Road | HKR 8+50 | 0.16 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 13 | | D | 1.91 | |
| Hobbs Knob Road | HKR 14+00 | 0.27 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 13 | | D | 3.65 | |
| Reynolds Drive | RYD 78+00 | 1.48 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 13 | | D | 3.15 | |
| Reynolds Drive | RYD 80+00 | 1.52 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 13 | | D | 1 | E |
| Cindy's Way | CW 2+50 | 0.05 | SD | SD | R | E | 20 | 24 | 1 | CMP | 14 | | D | 108.03 | |
| Cindy's Way | CW 4+50 | 0.09 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 14 | 40 | D | 2.5 | |
| Cindy's Way | CW 8+50 | 0.16 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 14 | | D | 2.51 | |
| Cindy's Way | CW 13+50 | 0.26 | SD | SD | R | E | 25 | 60 | 1 | CMP | 14 | | D | 74.27 | |
| Cindy's Way | CW 14+50 | 0.27 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 14 | 277 | D | 1 | |
| Cindy's Way | CW 16+25 | 0.31 | 15 | 15 | P | N. | 20? | 15? | 1 | HDPE | 14 | 317 | D | 1 | |
| Cindy's Way | CW 20+00 | 0.38 | 18 | 2 X 18 | R | E | 30 | 12 | 1 | HDPE | 14 | | D | 5.94 | |
| Cindy's Way | CW 21+50 | 0.41 | 15 | 15 | P | E | 40 | 12 | 1 | CMP | 14 | 408 | D | 1 | |
| Cindy's Way | CW 22+00 | 0.42 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 14 | 419 | D | 1 | |
| Hobbs Knob Road | HKR 16+50 | 0.31 | 2 X 18 | 2 X 18 | R | E | 20 | 24 | 1 | CMP | 14 | | D | 7.09 | |
| Hobbs Knob Road | HKR 25+00 | 0.47 | 15 | 15 | R | E | 25 | 12 | 1 | CMP | 14 | | D | 0.82 | |
| Western Lane | WL 23+00 | 0.44 | 2 X 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 14 | | D | 7.09 | |
| Western Lane | WL 23+01 | 0.44 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 14 | | D | 1 | E |
| Western Lane | WL 24+00 | 0.45 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 14 | 461 | D | 1 | E |
| Western Lane | WL 26+00 | 0.49 | 15 | 15 | P | N | 25? | 18? | 1 | HDPE | 14 | 497 | D | 1 | E |
| Western Lane | WL 26+50 | 0.50 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 14 | 488 | D | 1 | E |
| Farm Riverview Road | FRVR -10+00 | 0.20 | 18 | 3x18 | R | P | 25? | 24? | 1 | HDPE | 15 | | B | 31.36 | |
| Farm Riverview Road | FRVR -11+50 | 0.22 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -11+51 | 0.22 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -13+00 | 0.25 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | 49 | B | 1 | E |
| Farm Riverview Road | FRVR -13+01 | 0.25 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Farm Riverview Road | FRVR -14+50 | 0.27 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | 15 | B | 1 | E |
| Farm Riverview Road | FRVR -14+51 | 0.27 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 15 | ? | B | 1 | E |
| Walker Farm Drive | WFD 0+50 | 0.01 | 15 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 15 | | B | 10.31 | |
| Walker Farm Drive | WFD 1+25 | 0.02 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 15 | 29 | B | 9 | |
| Walker Farm Drive | WFD 2+25 | 0.04 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 15 | 4452 | B | 9 | |
| Walker Farm Drive | WFD 2+75 | 0.05 | 15 | 18 | P | E | 15 | 151 | 1 | CMP | 15 | 29 | B | 9 | |
| Walker Farm Drive | WFD 4+50 | 0.09 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 15 | ? | B | 9 | |
| Walker Farm Drive | WFD 6+00 | 0.11 | 15 | 15 | P | E | ? | ? | 1 | ? | 15 | 112 | D | 1 | E |
| Walker Farm Drive | WFD 6+75 | 0.13 | 2 X 18 | 3x18 | R | E | 20? | 12 | 1 | CMP | 15 | | D | 8.68 | |
| Walker Farm Drive | WFD 9+00 | 0.17 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 15 | | D | 2.95 | |
| Walker Farm Drive | WFD 11+00 | 0.21 | 18 | 2 X 18 | P | N | 15? | 12? | 1 | HDPE | 15 | 218 | D | 5 | E |
| Walker Farm Drive | WFD 12+01 | 0.23 | 18 | 2 X 18 | P | N | 15? | 12? | 1 | HDPE | 15 | 218 | D | 5 | E |
| Walker Farm Drive | WFD 13+00 | 0.24 | 2 X 18 | 3x18 | R | P | 25 | 18 | 2 | HDPE | 15 | | D | 10.11 | |
| Walker Farm Drive | WFD 16+25 | 0.31 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 15 | | D | 3.13 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Donna Court | DNC ? | 0.00 | 15 | 18 | P | N | 15? | 15? | 1 | HDPE | 16 | 17 | D | 1.2 | |
| Donna Court | DNC 1+40 | 0.03 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 3.27 | |
| Gary Lane | GL 0+25 | 0.00 | 18 | 2 X 18 | R | E | 18 | 15 | 1 | CMP | 16 | | D | 5.25 | |
| Gary Lane (western sectio | GLW 2+75 | 0.05 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 16 | | D | 6.47 | |
| Gary Lane (western sectio | GLW 3+00 | 0.06 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 16 | 370 | D | 1 | E |
| Gary Lane (western sectio | GLW 6+50 | 0.12 | 2 X 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 16 | | D | 8.79 | |
| Gary Lane (western sectio | GLW 7+75 | 0.15 | 18 | 2 X 18 | P | N | 20? | 15? | 1 | HDPE | 16 | 462 | D | 4 | |
| Goode Drive | GD 6+00 | 0.11 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 3 | |
| Goode Drive | GD 6+50 | 0.12 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 16 | 84 | D | 1 | E |
| Goode Drive | GD 7+50 | 0.14 | 15 | 18 | R | E | ? | ? | 1 | CMP | 16 | | D | 3 | |
| Goode Drive | GD 9+00 | 0.17 | 15 | 15 | P | E | 18 | 12 | 1 | CMP | 16 | 172 | D | 1 | E |
| Goode Drive | GD 11+00 | 0.21 | 15 | 18 | R | E | ? | ? | 1 | ? | 16 | | D | 2.23 | |
| Goode Drive | GD 11+01 | 0.21 | 15 | 15 | P | E | ? | ? | 1 | ? | 16 | 195 | D | 1 | E |
| Goode Drive | GD 11+50 | 0.22 | 15 | 18 | P | E | 12 | 12 | 1 | PVC | 16 | 221 | D | 1.1 | E |
| Goode Drive | GD 15+25 | 0.29 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 281 | D | 1 | E |
| Lake Drive | LD 20+50 | 0.41 | 15 | 15 | R | N | 25 | 15? | 1 | HDPE | 16 | | D | 1 | E |
| Lake Drive South | LDS 4+00 | 0.08 | 15 | 18 | P | N | 20? | 15? | 1 | HDPE | 16 | 79 | D | 1.8 | |
| Lake Drive South | LDS 5+50 | 0.10 | 2 X 18 | 3x18 | R | P | 25? | 18? | 1 | HDPE | 16 | | D | 11.28 | |
| Lake Drive South | LDS 7+50 | 0.14 | 2 X 18 | 3x18 | R | N | 25? | 15? | 1 | HDPE | 16 | | D | 11.28 | |
| Lake Drive South | LDS 11+75 | 0.22 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 16 | | D | 0.47 | |
| Martins Farm Road | MFRR 1+75 | 0.03 | 15 | 18 | R | N | 25? | 15 | 1 | HDPE | 16 | | D | 2.63 | |
| Pine Ridge Drive int. mtg | NO CULVERTS MAPPED | | | | | | | | | | 16 | | | | |
| Western Lane | WL 2+00 | 0.04 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 16 | 24 | D | 1 | E |
| Western Lane | WL 3+00 | 0.06 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 16 | 52 | D | 1 | E |
| Western Lane | WL 9+50 | 0.18 | 18 | 2 X 18 | R | P | 20? | 18? | 1 | HDPE | 16 | | D | 4.47 | |
| Western Lane | WL 10+00 | 0.19 | 2 X 18 | 3x18 | R | E | 20 | 18 | 2 | CMP | 16 | | D | 9.51 | |
| Western Lane | WL 10+50 | 0.20 | 2 X 18 | 3x18 | R | P | 20? | 18? | 1 | HDPE | 16 | | D | 8.89 | |
| Western Lane | WL 13+25 | 0.25 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 16 | | D | 1.79 | |
| Western Lane | WL 14+00 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 272 | D | 1 | E |
| Western Lane | WL 19+50 | 0.37 | 15 | 18 | P | E | 15 | 12 | 2 | CPM | 16 | 382 | D | 3 | E |
| Western Lane | WL 30+50 | 0.58 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 574 | D | 1 | E |
| Western Lane | WL 39+00 | 0.74 | 15 | 15 | P | N | 15? | 12? | 1 | HDPE | 16 | 724 | D | 1 | E |
| Western Lane | WL 39+10 | 0.74 | 15 | 18 | R | P | 25? | 24? | 2? | HDPE | 16 | | D | 2 | |
| Western Lane | WL 42+10 | 0.80 | 15 | 15 | R | P | 25? | 15? | 1 | HDPE | 16 | | D | 0.27 | |
| Western Lane | WL 45+50 | 0.85 | 15 | 18 | R | P | 30? | 15? | 1 | HDPE | 16 | | D | 1.03 | |
| Western Lane | WL 51+50 | 0.98 | 15 | 18 | P | N | 15 | 12? | 1 | HDPE | 16 | 978 | D | 2 | E |
| Western Lane | WL 52+00 | 0.98 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 978 | D | 1 | E |
| Western Lane | WL 52+50 | 0.99 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 16 | 978 | D | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Goode Drive | GD 2+75 | 0.05 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 17 | | D | 1 | E |
| Goode Drive | GD 17+50 | 0.33 | 18 | 2 X 18 | R | E | 18 | ? | 1 | CMP | 17 | | D | 4.38 | |
| Goode Drive | GD 22+50 | 0.43 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 17 | 421 | D | 1 | E |
| Goode Drive | GD 23+50 | 0.45 | 2 X 18 | 2 X 18 | R | E | 20 | 16 | 1 | CMP | 17 | | D | 7.34 | |
| Goode Drive | GD 23+51 | 0.45 | 18 | 2 X 18 | P | E | 12 | 12 | 2 | CMP | 17 | 467 | D | 5 | E |
| Huck Finn Drive | HFD 3+50 | 0.07 | 15 | 15 | P | E | 30 | 12 | 1 | CMP | 17 | 49 | D | 1 | |
| Huck Finn Drive | HFD 3+75 | 0.07 | 18 | 2X18 | R | N | 25? | 18? | 1 | HDPE | 17 | | B/D | 3.3B 1.25D | |
| Huck Finn Drive | HFD 6+00 | 0.11 | 15 | 15 | R | N | 25? | 18? | 1 | HDPE | 17 | | D | 1 | |
| Spring Road | SR 5+00 | 0.09 | 2x24 | SD | R | E | 15 | 18 | 1 | CMP | 17 | | D | 36.78 | |
| Spring Road | SR 7+00 | 0.13 | 2 X 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 17 | 136 | D | 7 | E |
| Spring Road | SR 7+50 | 0.14 | 18 | 2 X 18 | P | E | 12 | 12 | 1 | CP | 17 | 140 | D | 5 | E |
| Spring Road | SR 10+00 | 0.19 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 176 | D | 3 | E |
| Vaught Drive | VD 9+75 | 0.18 | 15 | 15 | R | E | ? | ? | 2 | ? | 17 | | D | 0.89 | |
| Vaught Drive | VD 10+50 | 0.20 | 15 | 18 | R | P | 20? | 15? | 2 | HDPE | 17 | | D | 2.72 | |
| Vaught Drive | VD 11+00 | 0.21 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 12 | D | 1.25 | E |
| Vaught Drive | VD 13+75 | 0.26 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 17 | 257 | D | 1 | E |
| Vaught Drive | VD 15+00 | 0.28 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 17 | 267 | D | 2 | E |
| Vaught Drive | VD 17+50 | 0.33 | 2x24 | SD | R | P | 30? | 18? | 1 | HDPE | 17 | | D | 32.02 | |
| Vaught Drive | VD 18+25 | 0.35 | 2x24 | SD | R | E | 20 | 24 | 1 | CMP | 17 | | D | 32.02 | |
| Vaught Drive | VD 19+50 | 0.37 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 17 | 371 | D | 1.2 | E |
| Vaught Drive | VD 21+50 | 0.41 | 18 | 2 X 18 | R | P | 25 | 18 | 1 | HDPE | 17 | | D | 3.22 | |
| Vaught Drive | VD 22+50 | 0.43 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 17 | 415 | D | 2.2 | E |
| Vaught Drive | VD 27+00 | 0.51 | 18 | 2 X 18 | R | E | 23 | 15 | 1 | CMP | 17 | | D | 3.76 | |
| Barbara Drive | BD 1+00 | 0.02 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 18 | 34 | D | 2 | E |
| Barbara Drive | BD 1+25 | 0.02 | 15 | 18 | P | N | 20? | 18? | 1 | HDPE | 18 | 34 | D | 2 | E |
| Barbara Drive | BD 3+00 | 0.06 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 54 | D | 1 | |
| Barbara Drive | BD 11+00 | 0.21 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 18 | | D | 2.64 | |
| Barbara Drive | BD 11+25 | 0.21 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 18 | 222 | D | 1 | E |
| Elinore Lane | EL 1+00 | 0.02 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 18 | | B | 8.56 | |
| Elinore Lane | EL 2+00 | 0.04 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 18 | 83 | B | 3.56 | |
| Elinore Lane | EL 4+00 | 0.08 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 121 | B | 1 | E |
| Elinore Lane | EL 4+50 | 0.09 | 12 | 15 | R | P | 30? | 18? | 1 | HDPE | 18 | | B | 4.74 | |
| Elinore Lane | EL 11+00 | 0.21 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 18 | | B | 5.39 | |
| Elinore Lane | EL 15+20 | 0.29 | 15 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 18 | | B | 13.23 | |
| Elinore Lane | EL 17+00 | 0.32 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 18 | | B | 2.1 | |
| Elinore Lane | EL 18+50 | 0.35 | 12 | 15 | R | P | 25? | 15? | | HDPE | 18 | | B | 0.5 | |
| Huck Finn Drive | HFD 13+00 | 0.25 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 18 | | B | 5 | |
| Huck Finn Drive | HFD 15+00 | 0.28 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 18 | 223 | B | 4 | E |
| Huck Finn Drive | HFD 17+50 | 0.33 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 277 | B | 1 | E |
| Huck Finn Drive | HFD 18+00 | 0.34 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 303 | B | 2.1 | |
| Huck Finn Drive | HFD 18+10 | 0.34 | 12 | 15 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 2.1 | |
| Huck Finn Drive | HFD 20+00 | 0.38 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 18 | 329 | B | 1 | |
| Joans Quadrangle Road | JQR 4+00 | 0.08 | 12 | 15 | P | E | 20 | 18 | 1 | HDPE | 18 | 188 | B | 2 | E |
| Joans Quadrangle Road | JQR 5+90 | 0.11 | 15 | 18 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 8.31 | |
| Joans Quadrangle Road | JQR 10+00 | 0.19 | 12 | 15 | R | P | 25? | 18? | 1 | HDPE | 18 | | B | 3.79 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Farm Riverview Road | FRVR 1+75 | 0.03 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 19 | 305 | B | 1 | E |
| Farm Riverview Road | FRVR 5+00 | 0.09 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 19 | 378 | B | 1 | E |
| Heavens Tree Trail | HTT 22+30 | 0.42 | 3x18 | SD | R | P | 25? | 18? | 1 | HDPE | 19 | | C | 19.35 | E |
| Lake Drive | LD 0+00 | 0.00 | 15 | 15 | R | E | 50 | 18 | 1 | CMP | 19 | | D | 1 | E |
| Lake Drive | LD 1+00 | 0.02 | 15 | 18 | R | E | 24 | 18 | 1 | CMP | 19 | | D | 1.77 | |
| Myers Drive | MD 5+00 | 0.09 | SD | SD | R | E | 20 | 18 | 2 | CMP | 19 | | B | 93.64 | |
| Myers Drive | MD 6+00 | 0.11 | 12 | 15 | P | N | 15? | 15? | 1 | HDPE | 19 | | B | 1 | E |
| Heavens Tree Trail | HTT 7+00 | 0.13 | 2 X 18 | 2x24 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 14.37 | |
| Heavens Tree Trail | HTT 8+50 | 0.16 | 18 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 4.92 | |
| Heavens Tree Trail | HTT 10+50 | 0.20 | 2 X 18 | 2 X 18 | R | P | 25? | 24? | 1 | HDPE | 20 | | C | 6.87 | |
| Heavens Tree Trail | HTT 14+50 | 0.27 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 20 | | C | 6.87 | |
| Heavens Tree Trail | HTT 14+50 | 0.27 | 2 X 18 | 3x18 | P | N | 15? | 15 | 1 | HDPE | 20 | 285 | C | 11.1 | |
| Heavens Tree Trail | HTT 17+50 | 0.33 | 2 X 18 | 3x18 | P | E | 15? | 15 | 1 | CMP | 20 | 108 | C | 11.1 | |
| Lake Drive | LD 4+50 | 0.09 | 15 | 15 | P | E | 18 | 15 | 1 | CMP | 20 | ? | D | 1 | E |
| Lake Drive | LD 5+50 | 0.10 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 20 | 602 | D | 1 | E |
| Lake Drive | LD 6+20 | 0.12 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 4.43 | |
| Lake Drive | LD 8+00 | 0.15 | 15 | 18 | P | E | 20 | 12 | 1 | PVC | 20 | 557 | D | 2 | |
| Lake Drive | LD 11+50 | 0.22 | 2 X 18 | 2x24 | R | P | 25? | 24 | 1 | HDPR | 20 | | D | 13.75 | |
| Marino Lane | ML 0+35 | 0.01 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 5.83 | |
| Marino Lane | ML 2+50 | 0.05 | 15 | 18 | R | E | 25 | 15 | 1 | CMP | 20 | | D | 2.59 | |
| Marino Lane | ML 4+50 | 0.09 | 15 | 15 | P | E | 28 | 12 | 1 | CMP | 20 | ? | D | 1 | E |
| Marino Lane | ML 5+50 | 0.10 | 2 X 18 | 3x18 | R | P | 25? | 24? | 1 | HDPE | 20 | | D | 10.02 | |
| Marino Lane | ML 10+50 | 0.20 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 1 | E |
| River Overlook Road | ROR 1+50 | 0.03 | 15 | 15 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 0.6 | |
| River Overlook Road | ROR 3+00 | 0.06 | 15 | 15 | R | P | 25? | 15? | 1 | HDPE | 20 | | D | 0.6 | |
| River Overlook Road | ROR 5+50 | 0.10 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 20 | | D | 1.55 | |
| River Overlook Road | ROR 8+50 | 0.16 | 15 | 18 | R | N | 20? | 15? | 1 | HDPE | 20 | | D | 1.16 | |
| River Overlook Road | ROR 9+50 | 0.18 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.16 | |
| River Overlook Road | ROR 14+00 | 0.27 | 15 | 18 | R | N | 20? | 15? | 1 | HDPE | 20 | | D | 1.88 | |
| River Overlook Road | ROR 18+50 | 0.35 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| River Overlook Road | ROR 21+00 | 0.40 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| Walker Farm Drive | WFD 18+00 | 0.34 | 15 | 15 | P | E | 15 | 12 | 1 | PVC | 20 | | D | 1 | E |
| Wendy Hill Road | WHR 2+50 | 0.05 | 15 | 15 | P | N | 15? | 15? | 1 | HDPE | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 10+00 | 0.19 | 15 | 15 | P | N | 15? | 15? | 1 | HDPE | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 11+00 | 0.21 | 15 | 15 | P | E | 24 | 12 | 2 | CMP | 20 | ? | D | 1 | E |
| Wendy Hill Road | WHR 11+75 | 0.22 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 1.67 | |
| Wendy Hill Road | WHR 17+00 | 0.32 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 20 | | D | 2.95 | |
| Wendy Hill Road | WHR 24+00 | 0.45 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 20 | 508 | D | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Benson Court | NO CULVERTS MAPPED | | | | | | | | | | 21 | | | | |
| Dogwood Farm Road | DFR 9+50 | 0.18 | 15 | 15 | P | E | 12 | 8 | 1 | PLAST | 21 | 181 | D | 1 | E |
| Dogwood Farm Road | DFR 11+00 | 0.21 | 2 X 18 | 2x24 | R | P | 20? | 15? | 1 | HDPE | 21 | | D | 13.89 | |
| Dogwood Farm Road | DFR 17+00 | 0.32 | 3x18 | 2x24 | R | E | 15 | 12 | 1 | HDPR | 21 | | D | 18.83 | |
| Dogwood Farm Road | DFR 17+25 | 0.33 | 2 X 18 | 2 X 18 | R | E | ? | ? | 1 | ? | 21 | | D | 6.16 | |
| Dogwood Farm Road | DFR 19+00 | 0.36 | 15 | 18 | P | N | 15? | 15 | 1 | HDPE | 21 | 361 | D | 1.75 | |
| Dogwood Farm Road | DFR 25+00 | 0.47 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 21 | 476 | D | 1 | E |
| Dogwood Farm Road | DFR 30+20 | 0.57 | 15 | 15 | P | N | 15? | 15 | 1 | HDPE | 21 | 884 | D | 1 | E |
| Dogwood Farm Road | DFR 32+70 | 0.62 | SD | SD | R | E | 35 | 24 | 2 | CMP | 21 | | D | 129.2 | |
| Dogwood Farm Road | DFR 27+75 | 0.53 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 21 | | D | 1.2 | |
| Gary Lane | GL 10+50 | 0.20 | 18 | 2 X 18 | R | E | 18 | 12 | 1 | CMP | 21 | | D | 5.93 | |
| Gary Lane | GL 14+50 | 0.27 | 15 | 18 | R | E | 20 | 12 | 1 | STEEL | 21 | | D | 2.64 | |
| Hopkins Bluff Road | NO CULVERTS MAPPED | | | | | | | | | | 21 | | | | |
| Martins Farm Road | MFRR 6+25 | 0.12 | 15 | 18 | P | E | 15 | 18 | 1 | PVC | 21 | 115 & | D | 3 | E |
| Martins Farm Road | MFRR 7+50 | 0.14 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 21 | 129 | D | 3.25 | E |
| Martins Farm Road | MFRR 8+75 | 0.17 | 18 | 2 X 18 | R | N | 25? | 18? | 1 | HDPE | 21 | | D | 5.43 | |
| McIlee Court | MC 0+50 | 0.01 | 2 X 18 | 3x18 | R | E | 24 | 24 | 1 | PVC | 21 | | D | 8.92 | |
| McIlee Court | MC 4+00 | 0.08 | 15 | 18 | P | E | 50 | 24 | 1 | CMP | 21 | 57 | D | 2.36 | E |
| McIlee Court | MC 7+25 | 0.14 | 2 X 18 | 2x24 | P | E | 18 | 24 | 1 | CMP | 21 | 122 | D | 14.88 | |
| McIlee Court | MC 7+25 | 0.14 | SD | SD | R | P | 25? | 18? | 1 | HDPE | 21 | | D | 54.2 | E |
| McIlee Court | MC 10+00 | 0.19 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 21 | ??? | D | 1 | E |
| McIlee Court | MC 10+50 | 0.20 | 18 | 2 X 18 | R | P | 25? | 18? | 1 | HDPE | 21 | | D | 5.07 | |
| McIlee Court | MC 11+00 | 0.21 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 21 | 191 | D | 1 | E |
| McIlee Court | MC 16+50 | 0.31 | 18 | 2 X 18 | R | P | 20? | 18? | 1 | HDPE | 21 | | D | 3.53 | |
| McIlee Court | MC 17+50 | 0.33 | 18 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 21 | | D | 3.53 | |
| Old Oak Lane | OOL 5+00 | 0.09 | 15 | 15 | P | E | 30 | 18 | 1 | CMP | 21 | 127 | D | 1 | E |
| Old Oak Lane | OOL 5+01 | 0.09 | 2 X 18 | 3x18 | R | E | 25 | 18 | 1 | CMP | 21 | | D | 9.14 | |
| Old Oak Lane | OOL 9+50 | 0.18 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 21 | 195 | D | 1 | E |
| Old Oak Lane | OOL 12+00 | 0.23 | 3x18 | SD | R | E | 20 | 24 | 1 | CMP | 21 | | D | 26.75 | |
| Old Oak Lane | OOL 12+25 | 0.23 | 15 | 15 | P | E | 15 | 18 | 1 | CMP | 21 | 241 | D | 1 | E |
| Old Oregon Road | OOR 10+50 | 0.20 | 2 X 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 21 | | C | 6.87 | |
| Old Oregon Road | OOR 13+25 | 0.25 | 15 | 18 | P | E | 30 | 15 | 1 | CMP | 21 | 242 | C | 2.54 | |
| Old Oregon Road | OOR 17+25 | 0.33 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 21 | | C | 2.95 | |
| Old Oregon Road | OOR 23+25 | 0.44 | 2 X 18 | 3x18 | R | E | 25 | 15 | 1 | CMP | 21 | | C | 9.27 | |
| Old Oregon Road | OOR 26+60 | 0.50 | 18 | 2 X 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 4.46 | |
| Old Oregon Road | OOR 27+50 | 0.52 | 15 | 18 | R | E | 25 | 15 | 1 | CMP | 21 | | D | 2.44 | |
| Old Oregon Road | OOR 28+50 | 0.54 | 15 | 15 | R | N | 25 | 15 | 1 | HDPE | 21 | | D | 0.5 | E |
| Old Oregon Road | OOR 28+75 | 0.54 | 15 | 15 | P | N | 15 | 15 | 1 | HDPE | 22 | | D | 0.5 | E |
| Wendy Hill Road | WHR 28+00 | 0.53 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 2.02 | |
| Wendy Hill Road | WHR 29+50 | 0.56 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 21 | 603 | D | 1 | E |
| Wendy Hill Road | WHR 30+00 | 0.57 | 15 | 18 | R | P | 25? | 15? | 1 | HDPE | 21 | | D | 2.02 | |
| Wendy Hill Road | WHR 33+00 | 0.63 | 15 | 15 | P | E | 21 | 12 | 1 | CMP | 21 | 672 | D | 1 | E |
| Wendy Hill Road | WHR 33+01 | 0.63 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 21 | 667 | D | 1 | E |
| Wendy Hill Road | WHR 34+00 | 0.64 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 21 | 684 | D | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | * |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Benson Court | NO CULVERTS MAPPED | | | | | | | | | | 22 | | | | |
| Copenhover Road | NO CULVERTS MAPPED | | | | | | | | | | 22 | | | | |
| Drummer Hill Road | DHR 37+00 | 0.70 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 22 | | D | 6.75 | |
| Goode Drive | GD 26+25 | 0.50 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 493 | D | 3 | E |
| Goode Drive | GD 32+00 | 0.61 | 18 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 22 | | D | 3.19 | |
| Goode Drive | GD 34+25 | 0.65 | 18 | 2 X 18 | R | E | 18 | 12 | 1 | CMP | 22 | | D | 3.19 | |
| Goode Drive | GD 36+75 | 0.70 | 18 | 2 X 18 | R | E | 18 | 18 | 1 | CMP | 22 | | D | 3.7 | |
| Goode Drive | GD 43+00 | 0.81 | 18 | 2 X 18 | P | E | 12 | 12 | 2 | CMP | 22 | 785 | D | 3.25 | |
| Goode Drive | GD 44+50 | 0.84 | 15 | 18 | R | N | 25? | 15? | 1 | HDPE | 22 | | D | 1.07 | |
| Goode Drive | GD 46+00 | 0.87 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 22 | | D | 2.82 | |
| Goode Drive | GD 48+25 | 0.91 | 15 | 18 | R | P | 20? | 15? | 1 | HDPE | 22 | | D | 2.14 | |
| Honey Farm Lane | HFL 2+75 | 0.05 | 2 X 18 | 2x24 | R | E | 25? | 15? | 1 | CMP | 22 | | D | 13.21 | |
| Honey Farm Lane | HFL 9+00 | 0.17 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 22 | 298 | D | 1 | E |
| Honey Farm Lane | HFL 10+50 | 0.20 | 15 | 15 | P | N | 15? | 12 | 1 | HDPE | 22 | 784 | D | 1 | E |
| Honey Farm Lane | HFL 12+00 | 0.23 | 15 | 18 | P | N | 15? | 12? | 1 | HDPE | 22 | 818 | D | 2 | E |
| Honey Farm Lane | HFL 13+50 | 0.26 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 383 | D | 2 | E |
| Honey Farm Lane | HFL 14+50 | 0.27 | 15 | 18 | R | E | 18 | 15 | 1 | CMP | 22 | | D | 2.22 | |
| Honey Farm lane | HFL 0+00 | 0.00 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 22 | | D | 2.08 | |
| Hopkins Bluff Road | NO CULVERTS MAPPED | | | | | | | | | | 22 | | | | |
| Mountain Lake Drive | MLD 3+00 | 0.06 | 15 | 15 | P | E | 12 | 15 | 1 | CMP | 22 | 545 | D | 1 | E |
| Mountain Lake Drive | MLD 7+00 | 0.13 | 15 | 15 | P | E | 24 | 15 | 1 | CMP | 22 | 369 | D | 1 | E |
| Mountain Lake Drive | MLD 8+75 | 0.17 | 15 | 18 | R | E | 35 | 15 | 1 | CMP | 22 | | D | 2.21 | |
| Mountain Lake Drive | MLD 15+00 | 0.28 | 15 | 15 | P | E | 15 | 15 | 1 | CMP | 22 | 208 | D | 1 | E |
| Old Oak Lane | OOL 1+50 | 0.03 | 15 | 15 | P | E | 22 | 15 | 1 | CMP | 22 | 31 | D | 1 | E |
| Otto Place | NO CULVERTS MAPPED | | | | | | | | | | 22 | | | | |
| Pine Ridge Drive int. w/B | PRD 4+00 | 0.08 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 435 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 5+00 | 0.09 | 15 | 15 | P | N | 12? | 12 | 1 | HDPE | 22 | 485 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 9+00 | 0.17 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 529 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 14+00 | 0.27 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 625 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 18+50 | 0.35 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 708 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 25+00 | 0.47 | 15 | 15 | P | E | 12 | 10 | 1 | CMP | 22 | nr 848 | D | 0.1 | E |
| Pine Ridge Drive int. w/B | PRD 25+50 | 0.48 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 848 | D | 1 | E |
| Pine Ridge Drive int. w/N | PRD NEGATIVE NUMBERS TO -19+00 NO CULVERTS LOCATED NEEDED OR PRPOSED | | | | | | | | | | 22 | | | | |
| Scott Farm Road | SFR 2+00 | 0.04 | 2 X 18 | 2x24 | R | E | 22 | 18 | 1 | CMP | 22 | | D | 13.5 | |
| Scott Farm Road | SFR 4+25 | 0.09 | 15 | 15 | R | E | 20? | ? | 1 | CMP | 22 | | D | | |
| Vaught Drive | VD 28+75 | 0.54 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 22 | 551 | D | 2.5 | E |
| Vaught Drive | VD 30+50 | 0.58 | 15 | 18 | P | E | 15 | 15 | 1 | CMP | 22 | 571 | D | 2 | E |
| Western Lane | WL 55+50 | 1.05 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1032 | D | 1 | E |
| Western Lane | WL 56+00 | 1.06 | 18 | 2 X 18 | R | P | 25? | 15 | 1 | HDPE | 22 | | D | 5.29 | |
| Western Lane | WL 57+50 | 1.09 | 15 | 15 | P | E | 12 | 15 | 1 | CMP | 22 | 1072 | D | 1 | E |
| Western Lane | WL 62+00 | 1.17 | 15 | 18 | P | E | 20 | 15 | 1 | CMP | 22 | 1170 | D | 2.2 | E |
| Western Lane | WL 63+75 | 1.21 | 2 X 18 | 3x18 | R | E | 25 | 18 | 1 | CMP | 22 | | D | 8.75 | |
| Western Lane | WL 65+00 | 1.23 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1238 | D | 1 | E |
| Western Lane | WL 66+00 | 1.25 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1238 | D | 1 | E |
| Western Lane | WL 67+00 | 1.27 | 15 | 18 | P | E | ? | ? | 1 | ? | 22 | 1266 | D | 1.1 | E |
| Western Lane | WL 69+00 | 1.31 | 15 | 18 | P | E | 12 | 12 | 1 | CMP | 22 | 1300 | D | 2.7 | E |
| Western Lane | WL 70+00 | 1.33 | 18 | 2 X 18 | P | E | 12 | ? | 1 | CMP | 22 | 1324 | D | 3.8 | E |
| Western Lane | WL 71+00 | 1.34 | 15 | 15 | P | E | 12 | 12 | 1 | CMP | 22 | 1342 | D | 1 | E |
| Western Lane | WL 71+00 | 1.34 | 18 | 2 X 18 | R | P | 25? | 18? | 1 | HDPE | 22 | | D | 5.02 | |
| Western Lane | WL 72+00 | 1.36 | 15 | 15 | P | E | 12 | 12 | 1 | PVC | 22 | 1360 | D | 1 | E |
| Western Lane | WL 74+50 | 1.41 | 18 | 2 X 18 | P | E | 20 | 15 | 1 | CMP | 22 | 1408 | D | 3.35 | E |
| Western Lane | WL 75+00 | 1.42 | 2 X 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 22 | | D | 6.77 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Drummer Hill Road | DHR 1+50 | 0.03 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 2.13 | |
| Drummer Hill Road | DHR 2+50 | 0.05 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 38 | D | 1 | E |
| Drummer Hill Road | DHR 4+00 | 0.08 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 100 | D | 1 | E |
| Drummer Hill Road | DHR 4+50 | 0.09 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 100 | D | 1 | E |
| Drummer Hill Road | DHR 8+50 | 0.16 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 1.85 | |
| Drummer Hill Road | DHR 12+00 | 0.23 | 3x18 | SD | R | E | 30 | 18 | 1 | CMP | 23 | | D | 20.31 | |
| Drummer Hill Road | DHR 15+50 | 0.29 | SD | SD | R | E | 30 | 60 | 2 | CMP | 23 | | D | 1203.43 | |
| Drummer Hill Road | DHR 24+00 | 0.45 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 23 | | D | 1.51 | |
| Drummer Hill Road | DHR 24+01 | 0.45 | 15 | 15 | P | N | 20? | 12? | 1 | HDPE | 23 | 474 | D | 1 | E |
| Drummer Hill Road | DHR 27+50 | 0.52 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 23 | | D | 3.37 | |
| Drummer Hill Road | DHR 31+50 | 0.60 | 2 X 18 | 3x18 | R | E | 20 | 15 | 1 | CMP | 23 | | D | 10.57 | |
| Drummer Hill Road | DHR 34+50 | 0.65 | 15 | 18 | P | E | 20 | 18 | 1 | CMP | 23 | 628 | D | 1.5 | E |
| Drummer Hill Road | DHR 61+50 | 1.16 | 15 | 18 | R | P | 20? | 18? | 1 | HDPE2 | 23 | | D | 2.72 | |
| Drummer Hill Road | DHR 66+50 | 1.26 | 15 | 15 | R | E | 20 | 18 | 1 | CMP | 23 | | D | 0.48 | |
| Fern Court | FC 1+00 | 0.02 | 15 | 15 | P | N | 20 | 15 | 1 | HDPE | 23 | 30 | D | 1 | E |
| Huck Finn Drive | HFD 7+00 | 0.13 | 15 | 15 | P | N | 20? | 18? | 1 | HDPE | 23 | 92 | D | 1 | |
| Huck Finn Drive | HFD 9+50 | 0.18 | 12 | 15 | R | N | 25? | 18? | 1 | HDPE | 23 | | B | 3.3 | |
| Huck Finn Drive | HFD 10+00 | 0.19 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | ??? | B | 3 | |
| Huck Finn Drive | HFD 12+00 | 0.23 | 12 | 15 | P | E | 20 | 15 | 1 | CMP | 23 | 175 | B | 1 | E |
| Jennings Farm Court | JFC 1+00 | 0.02 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 27 | D | 1 | E |
| Jennings Farm Court | JFC 2+50 | 0.05 | 15 | 18 | P | N | 30 | 12 | 1 | CMP | 23 | 50 | D | 3 | E |
| Jennings Farm Court | JFC 3+00 | 0.06 | 15 | 15 | P | N | 20? | 18? | 1 | HDPE | 23 | 83 | D | 1 | E |
| Jennings Farm Court | JFC 3+50 | 0.07 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 23 | 76 | D | 1 | E |
| Kits Court | KC 9+00 | 0.17 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 23 | | D | 1.33 | |
| Little Place | NO CULVERTS MAPPED | | | | | | | | | | 23 | | | | |
| Mountain Lake Drive | MLD 16+00 | 0.30 | 15 | 18 | R | P | 25 | 15 | 1 | HDPE | 23 | | D | 2.08 | |
| Mountain Lake Drive | MLD 18+50 | 0.35 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 23 | 114 | D | 2 | E |
| Mountain Lake Drive | MLD 19+00 | 0.36 | 15 | 18 | R | E | 30 | 18 | 1 | CMP | 23 | | D | 3 | E |
| Mountain Lake Drive | MLD 20+50 | 0.39 | 15 | 18 | P | E | 15 | 15 | 1 | CMP | 23 | 100 | D | 3 | E |
| Mountain Lake Drive | MLD 21+00 | 0.40 | 18 | 2 X 18 | R | P | 30? | 18? | 1 | HDPE | 23 | | D | 5.17 | |
| Mountain Lake Drive | MLD 21+25 | 0.40 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 23 | 80 | D | 3 | E |
| Drummer Hill Road | DHR 97+75 | 1.85 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 24 | 1859 | D | 1 | E |
| Drummer Hill Road | DHR 100+00 | 1.89 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | 1872 | D | 1 | E |
| Drummer Hill Road | DHR 100+50 | 1.90 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | 1872 | D | 1 | E |
| Drummer Hill Road | DHR 101+00 | 1.91 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | | D | 1 | E |
| Drummer Hill Road | DHR 105+00 | 1.99 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 24 | 61 | B | 8.54 | |
| Drummer Hill Road | DHR 114+00 | 2.16 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 24 | | B | 4.7 | |
| Peggys Court | PGC 0+00 | 0.00 | 12 | 15 | R | R | 30 | 15 | 1 | CMP | 24 | | B | 3.28 | |
| Peggys Court | PGC 2+70 | 0.05 | 12 | 15 | P | E | 20 | 8 | 1 | CMP | 24 | 53 | B | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Thompson Mill Road | TMR 1+00 | 0.02 | SD | SD | R | E | 32 | 60 | 5 | CMP | 26 | | B + C | 3482.24 | |
| Thompson Mill Road | TMR 2+50 | 0.05 | 12 | 15 | P | N | 20? | 15? | 1 | HDPR | 26 | 545 | B | 1 | E |
| Thompson Mill Road | TMR 6+90 | 0.13 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 26 | | B | 6.43 | |
| Thompson Mill Road | TMR 8+60 | 0.16 | 12 | 15 | P | N | 20? | 15? | 1 | HDPR | 26 | 167 | B | 3 | E |
| Thompson Mill Road | TMR 11+00 | 0.21 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 26 | | B | 11.07 | |
| Thompson Mill Road | TMR 14+50 | 0.27 | 12 | 15 | R | E | 30 | 12 | 1 | CMP | 26 | | B | 2.61 | |
| Thompson Mill Road | TMR 22+00 | 0.42 | 15 | 2 X 18 | R | P | 35 | 18? | 1 | HDPE | 26 | | B | 9.76 | |
| Thompson Mill Road | TMR 24+90 | 0.47 | 12 | 15 | R | E | 25 | 15 | 1 | CMP | 26 | | B | 0.89 | |
| Thompson Mill Road | TMR 27+00 | 0.51 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 26 | 502 | B | 1 | E |
| Thompson Mill Road | TMR 29+31 | 0.56 | 12 | 15 | R | P | 31 | 15? | 2 | HDPE | 26 | | B | 4.41 | |
| Eagles Crag Road | NO CULVERTS MAPPED | | | | | | | | | | 27 | | | | |
| Heavens Tree Trail | HTT 3+00 | 0.06 | 18 | 2 X 18 | R | P | 25? | 18 | 1 | HDPE | 27 | | C | 5 | E |
| Old Oak Lane | OOL 33+80 | 0.64 | 2 X 18 | 3x18 | R | P | 30 | 24? | 1 | HDPE | 27 | | C | 9.43 | |
| Old Oak Lane | OOL 38+50 | 0.73 | 18 | 2 X 18 | R | E | 30 | 24 | 1 | CMP | 27 | | C | 5.1 | |
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 24 | 1 | CMP | 27 | | D | 234.72 | |
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 30 | 1 | CMP | 27 | | D | 234.72 | |
| Old Oak Lane | OOL 41+50 | 0.79 | SD | SD | R | E | 30 | 48 | 1 | STEEL | 27 | | D | 234.72 | |
| Old Oak Lane | OOL 43+00 | 0.81 | SD | SD | R | E | 25 | 60 | 2 | CMP | 27 | | D | 1951.7 | |
| Old Oak Lane | OOL 44+50 | 0.84 | 15 | 15 | R | E | 25 | 48 | 1 | CMP | 27 | | D | 0.6 | |
| Old Oak Lane | OOL 53+00 | 1.00 | SD | SD | R | E | 30 | 48 | 2 | CMP | 27 | | B +D | 1402.28 | |
| Old Oak Lane | OOL 53+00 | 1.00 | SD | SD | R | E | 30 | 52 | 1 | CMP | 27 | | B +D | 1402.28 | |
| Old Oak Lane | OOL 55+00 | 1.04 | 2 X 18 | 3x18 | R | E | 30 | 15 | 1 | CMP | 27 | | C | 12.07 | |
| Old Oak Lane | OOL 57+00 | 1.08 | 15 | 15 | R | E | 18 | 15 | 1 | CMP | 27 | | C | 1 | E |
| Old Oregon Road | OOR 0+50 | 0.01 | 18 | 2 X 18 | R | N | 25? | 18? | 1 | HDPE | 27 | | C | 3.32 | |
| Old Oregon Road | OOR 1+00 | 0.02 | 15 | 18 | P | E | 20? | 12 | 1 | CMP | 27 | ?? | C | 2.36 | |
| Old Oregon Road | OOR 4+00 | 0.08 | 15 | 18 | P | E | 30 | 18 | 1 | CMP | 27 | 98 | C | 1.1 | |
| Timberline Ridge Road | TRR 0+00 | 0.00 | 3x18 | 2x24 | R | E | 40 | 12 | 1 | CMP | 27 | | C | 16.58 | |
| Timberline Ridge Road | TRR 3+50 | 0.07 | 18 | 2 X 18 | P | E | 20 | 12 | 1 | CMP | 27 | ?? | C | 4.5 | E |
| Timberline Ridge Road | TRR 8+50 | 0.16 | 15 | 15 | R | P | 30 | 15? | 1 | HDPE | 27 | | C | 0.72 | |
| Timberline Ridge Road | TRR 9+50 | 0.18 | 15 | 15 | P | E | 25? | 15 | 1 | DIP | 27 | 188 | C | 0.78 | |
| Timberline Ridge Road | TRR 14+00 | 0.27 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 27 | | C | 2.92 | |
| Timberline Ridge Road | TRR 15+30 | 0.29 | 2 X 18 | 2 X 18 | R | P | 25 | 15? | 1 | HDPE | 27 | | C | 7.57 | |
| Timberline Ridge Road | TRR 23+50 | 0.45 | 15 | 15 | R | E | 20 | 12 | 1 | CMP | 27 | | C | 1 | |
| Venus Branch Road | VBR 78+00 | 1.48 | 2 X 18 | 2x24 | R | P | 30 | 24? | 2 | HDPE | 27 | | D | 13.7 | |
| Venus Branch Road | VBR 83+00 | 1.57 | SD | SD | R | E | 25 | 60 | 3 | CMP | 27 | | C | 1386 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Brook View Road | NO CULVERTS MAPPED | | | | | | | | | | 28 | | | | |
| Brookview Lane | NO CULVERTS MAPPED | | | | | | | | | | 28 | | | | |
| Drummer Hill Road | DHR 43+50 | 0.82 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 5.74 | |
| Drummer Hill Road | DHR 45+50 | 0.86 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 28 | 836 | D | 1 | E |
| Drummer Hill Road | DHR 47+50 | 0.90 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 2.48 | |
| Drummer Hill Road | DHR 51+00 | 0.97 | 15 | 15 | P | N | 20 | 12? | 1 | HDPE | 28 | 912 | D | 1 | E |
| Drummer Hill Road | DHR 54+50 | 1.03 | 15 | 18 | R | E | 20 | 15 | 1 | CMP | 28 | | D | 2.05 | |
| Goode Drive | GD 58+00 | 1.10 | 2 X 18 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 28 | | D | 7.86 | |
| Hopkins Bluff Road | NO CULVERTS MAPPED | | | | | | | | | | 28 | | | | |
| Old Oak Lane | OOL 19+50 | 0.37 | 2 X 18 | 2 X 18 | R | E | 24 | 15 | 1 | CMP | 28 | | D | 7.75 | |
| Old Oak Lane | OOL 24+50 | 0.46 | 18 | 2 X 18 | R | E | 20 | 24 | 1 | HDPE | 28 | | D | 4.37 | |
| Old Oak Lane | OOL 26+00 | 0.49 | SD | SD | R | E | 25 | 36 | 2 | CMP | 28 | | D | 190.35 | |
| Old Oak Lane | OOL 26+01 | 0.49 | 15 | 15 | P | E | 15 | 30 | 1 | CMP | 28 | 517 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 32+00 | 0.61 | 15 | 15 | P | E | 12? | 12? | 1 | CMP | 28 | 958 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 33+50 | 0.63 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 995 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 39+00 | 0.74 | 15 | 18 | R | P | 25? | 18? | 1 | HDPE | 28 | | D | 1.81 | |
| Pine Ridge Drive int. w/B | PRD 41+50 | 0.79 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1150 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 41+51 | 0.79 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1163 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 43+60 | 0.83 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1212 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 43+80 | 0.83 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1077 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 54+50 | 1.03 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1337 | D | 1 | E |
| Pine Ridge Drive int. w/B | PRD 45+55 | 0.86 | 15 | 15 | P | N | 12? | 12? | 1 | HDPE | 28 | 1338 | D | 1 | |
| Pine Ridge Drive int. w/B | PRD 46+00 | 0.87 | 15 | 18 | R | N | 25? | 18? | 1 | HDPE | 28 | | D | 1.63 | |
| Western Lane | WL 88+50 | 1.68 | 15 | 15 | P | E | 12 | 15 | 2 | CMP | 28 | 1679 | D | 1 | E |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Bobbie Court | BCT 2+0 | 0.04 | SD | SD | R | E | 25 | 30 | 1 | RCP | 29 | | D | 347.01 | |
| Bobbie Court | BCT 4+50 | 0.09 | 2 X 18 | 2x24 | R | E | 25 | 18 | 1 | CMP | 29 | | D | 13.18 | |
| Bobbie Court | BCT 5+00 | 0.10 | 15 | 15 | P | E | 25 | 30 | 1 | RCP | 29 | 85 | D | 1 | E |
| Bobbie Court | BCT 8+75 | 0.17 | 2 X 18 | 2 X 18 | R | P | 25 | 18? | 1 | HDPE | 29 | | D | 7.68 | |
| Bobbie Court | BCT 14+00 | 0.27 | 18 | 2 X 18 | R | E | 25 | 30 | 1 | CMP | 29 | | D | 5.11 | |
| Bobbie Court | BCT 15+00 | 0.28 | 18 | 2 X 18 | P | E | 25 | 30 | 1 | RCP | 29 | 85 | D | 6 | |
| Brook View Road | NO CULVERTS MAPPED | | | | | | | | | | 29 | | | | |
| Drummer Hill Road | DHR 74+50 | 1.41 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 29 | | D | 1.43 | |
| Drummer Hill Road | DHR 75+50 | 1.43 | 15 | 15 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 0.65 | |
| Drummer Hill Road | DHR 78+00 | 1.48 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 29 | 1447 | D | 1.18 | |
| Drummer Hill Road | DHR 78+25 | 1.48 | 15 | 15 | P | E | 20 | 18 | 1 | CMP | 29 | | D | 1 | E |
| Drummer Hill Road | DHR 79+00 | 1.50 | 2 X 18 | 2 X 18 | R | E | 20 | 18 | 1 | CMP | 29 | 1550 | D | 7.33 | |
| Drummer Hill Road | DHR 83+00 | 1.57 | 15 | 18 | P | E | 30 | 12 | 1 | HDPE | 29 | | D | 1.5 | |
| Drummer Hill Road | DHR 85+50 | 1.62 | 15 | 18 | R | P | 30 | 18? | 1 | HDPE | 29 | | D | 1.69 | |
| Drummer Hill Road | DHR 89+50 | 1.70 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 29 | ???? | D | 4.61 | |
| Kits Court | KC 4+60 | 0.09 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 29 | | D | 1.39 | |
| Parker Circle | PC 0+00 | 0.00 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 29 | | D | 1.65 | |
| Parker Circle | PC 1+50 | 0.03 | 15 | 15 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 0.92 | |
| Parker Circle | PC 2+50 | 0.05 | 15 | 15 | P | E | 20 | 15 | 1 | CMP | 29 | | D | 1 | E |
| Venus Branch Road | VBR 1+50 | 0.03 | 15 | 18 | P | N | 20 | 15? | 1 | HDPE | 29 | 36 | D | 2 | |
| Venus Branch Road | VBR 2+25 | 0.04 | 15 | 18 | R | E | 22 | 15 | 1 | STEEL | 29 | | D | 2.2 | |
| Venus Branch Road | VBR 3+00 | 0.06 | 2 X 18 | 3x18 | R | E | 18 | 12 | 1 | CMP | 29 | | D | 11.78 | |
| Venus Branch Road | VBR 3+50 | 0.07 | 15 | 18 | P | E | 20 | 12 | 1 | CMP | 29 | 62 | D | 1.35 | |
| Venus Branch Road | VBR 6+50 | 0.12 | 15 | 18 | R | E | 18 | 12 | 1 | CMP | 29 | | D | 1.54 | |
| Venus Branch Road | VBR 8+50 | 0.16 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 29 | | D | 3.24 | |
| Venus Branch Road | VBR 9+50 | 0.18 | 2x24 | SD | R | E | 20 | 15 | 1 | CMP | 29 | | D | 35.39 | |
| Venus Branch Road | VBR 13+50 | 0.26 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 29 | | D | 3.07 | |
| Venus Branch Road | VBR 16+75 | 0.32 | 18 | 2 X 18 | R | E | 20? | 15 | 1 | CMP? | 29 | | D | 3.95 | |
| Venus Branch Road | VBR 22+75 | 0.43 | SD | SD | R | E | 30 | 48 | 1 | CMP | 29 | | D | 244.74 | |
| Venus Branch Road | VBR 24+00 | 0.45 | 15 | 15 | R | E | 25 | 12 | 1 | CMP | 29 | | D | 0.55 | |
| Venus Branch Road | VBR 26+00 | 0.49 | 15 | 18 | R | P | 30 | 15? | 1 | HDPE | 29 | | D | 2.25 | |
| Venus Branch Road | VBR 27+50 | 0.52 | 15 | 18 | R | E | 25 | 18 | 1 | CMP | 29 | | D | 3 | |
| Venus Branch Road | VBR 29+75 | 0.56 | 18 | 2 X 18 | R | E | 20 | 24 | 1 | RCP | 29 | | D | 3.12 | |
| Venus Branch Road | VBR 35+00 | 0.66 | 15 | 18 | P | E | 20? | 12? | 1 | CMP? | 29 | | D | 2 | |
| Venus Branch Road | VBR 36+75 | 0.70 | 18 | 2 X 18 | R | E | 30? | 15? | 1 | CMP? | 29 | | D | 3.96 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES** | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Briar Lane | BL 0+00 | 0.00 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 30 | | B | 4.69 | |
| Briar Lane | BL 5+00 | 0.09 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 92 | B | 1 | E |
| Briar Lane | BL 7+00 | 0.13 | 15 | 2 X 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 10.82 | |
| Briar Lane | BL 8+00 | 0.15 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.01 | |
| Briar Lane | BL 11+50 | 0.22 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 1.99 | |
| Briar Lane | BL 12+00 | 0.23 | 12 | 15 | P | N | 20 | 12? | 1 | HDPE | 30 | 232 | B | 1 | E |
| Briar Lane | BL 16+00 | 0.30 | 15 | 18 | R | E | 20 | 18 | 1 | CMP | 30 | | B | 6.79 | |
| Pickford Court | PFC 0+50 | 0.01 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 0.42 | |
| Pickford Court | PFC 3+00 | 0.06 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 30 | | B | 6.8 | |
| Pickford Court | PFC 6+00 | 0.11 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | | B | 3 | E |
| Reid Drive | RD 5+50 | 0.10 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 90 | B | 1 | E |
| Reid Drive | RD 7+50 | 0.14 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 30 | | B | 1 | |
| Reid Drive | RD 7+60 | 0.14 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 141 | B | 1 | |
| Reid Drive | RD 13+50 | 0.26 | 12 | 15 | R | N | 40 | 18? | 1 | HDPE | 30 | | B | 1.57 | |
| Reid Drive | RD 18+50 | 0.35 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 4.87 | |
| Reid Drive | RD 37+50 | 0.71 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 3.04 | |
| Reid Drive | RD 38+00 | 0.72 | 12 | 15 | P | E | 20 | 12 | 1 | CMP | 30 | 712 | B | 1 | E |
| Reid Drive | RD 39+50 | 0.75 | 12 | 15 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 3.59 | |
| Reid Drive | RD 44+50 | 0.84 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 9.21 | |
| Riley Court | RC 4+60 | 0.09 | 12 | 15 | P | N | 20 | 15? | 1 | HDPE | 30 | 82 | B | 3 | E |
| Riley Court | RC 6+00 | 0.11 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 6 | |
| Riley Court | RC 7+50 | 0.14 | 12 | 15 | P | N | 20 | 12? | 1 | HDPE | 30 | 150 | B | 1 | E |
| Riley Court | RC 9+50 | 0.18 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.67 | |
| Riley Court | RC 12+50 | 0.24 | 18 | 2 X 18 | R | E | 20 | 12 | 1 | RCP | 30 | | B | 15.63 | |
| Riley Court | RC 14+00 | | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 4.37 | |
| Riley Court | RC 15+50 | | 12 | 15 | R | P | 20 | 12 | 1 | CMP | 30 | | B | 3.52 | |
| Riley Court | RC 16+00 | | 12 | 15 | P | N | 20 | 15? | 1 | HDPE | 30 | 280 | B | 1.25 | E |
| Riley Court | RC 19+50 | | 12 | 15 | R | P | 35 | 15? | 1 | HDPE | 30 | | B | 1.51 | |
| Susans Court | SC 0+00 | 0.00 | 12 | 15 | R | E | 30 | 18 | 1 | CMP | 30 | | B | 0.99 | |
| Susans Court | SC 3+00 | 0.06 | 15 | 18 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 8.7 | |
| Susans Court | SC 7+50 | 0.14 | 12 | 15 | R | E | 20 | 12 | 1 | CMP | 30 | | B | 2.44 | |
| Susans Court | SC 9+50 | 0.18 | 12 | 15 | R | P | 30 | 24? | 1 | HDPE | 30 | | B | 3.05 | |
| Susans Court | SC 12+50 | 0.24 | 18 | 2 X 18 | R | N | 30 | 18? | 1 | HDPE | 30 | | B | 25.88 | |
| Susans Court | SC 13+50 | 0.26 | 18 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 30 | | B | 25.88 | |
| Susans Court | SC 15+40 | 0.29 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 30 | | B | 2.43 | |
| Susans Court | SC 20+50 | 0.38 | 12 | 15 | R | P | 45 | 15? | 1 | HDPE | 30 | | B | 1.66 | |
| Wambach Court | WC 0+50 | 0.01 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 0.95 | |
| Wambach Court | WC 2+00 | 0.04 | 12 | 15 | P | N | 20? | 15 | 1 | HDPE | 30 | 34 | B | 0.8 | E |
| Wambach Court | WC 3+50 | 0.07 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 30 | 62 | B | 5.07 | E |
| Wambach Court | WC 5+00 | 0.09 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 30 | 88 | B | 6.4 | E |
| Wambach Court | WC 7+50 | 0.14 | 15 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 30 | | B | 13.51 | |
| Wambach Court | WC 12+00 | 0.23 | 15 | 2 X 18 | R | P | 20? | 15? | 1 | HDPE | 30 | | B | 11.55 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Gayles Lane | GYL 3+00 | 0.06 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 31 | 90 | B | 2 | E |
| Gayles Lane | GYL 5+50 | 0.10 | 12 | 15 | R | P | 40 | 18? | 1 | HDPE | 31 | | B | 2.93 | |
| Gayles Lane | GYL 7+00 | 0.13 | 12 | 15 | P | N | 20? | 15? | 1 | HDPE | 31 | 125 | B | 4 | E |
| Gayles Lane | GYL 9+00 | 0.17 | 15 | 18 | R | N | 30 | 15 | 1 | HDPE | 31 | | B | 5.16 | |
| Judy Lane | JL 7+60 | 0.14 | 12 | 15 | R | P | 30 | 15? | 1 | HDPE | 31 | | B | 2.48 | |
| Reid Drive | RD 23+00 | 0.44 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 31 | | B | 3.28 | |
| Reid Drive | RD 34+00 | 0.64 | 12 | 15 | R | E | 20 | 15 | 1 | CMP | 31 | | B | 4.35 | |
| Sharon Lane | SL 3+60 | 0.07 | 12 | 15 | R | P | 35 | 15 | 1 | HDPE | 31 | | B | 3.84 | |
| Sharon Lane | SL 7+00 | 0.13 | 12 | 15 | R | E | 30 | 15 | 1 | CMP | 31 | | B | 0.66 | |
| Sharon Lane | SL 9+00 | 0.17 | 15 | 2 X 18 | R | P | 30 | 18? | 1 | HDPE | 31 | | B | 9.06 | |
| Mosbys Meadow Lane | MML 8+00 | 0.15 | 12 | 15 | R | E | 15 | 12 | 1 | CMP | 32 | | B | 0.42 | |
| Mosbys Meadow Lane | MML 1+00 | 0.02 | 18 | 2 X 18 | R | N | 30? | 15 | 1 | HDPE | 32 | | B | 24 | |
| Mountain Laurel Lane | MLL 0+00 | 0.00 | 3x18 | SD | R | E | 12 | 12 | 1 | CMP | 32 | | C + B | 23.9 | |
| Old Oak Lane | OOL 61+25 | 1.16 | SD | SD | R | E | 30 | 15 | 1 | CMP | 32 | | C | 42.81 | |
| Old Oak Lane | OOL 61+50 | 1.16 | 15 | 15 | P | E | 20 | 12 | 1 | CMP | 32 | 1196 | C | 1 | |
| Old Oak Lane | OOL 62+75 | 1.19 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 32 | 1196 | C | 1 | E |
| Old Oak Lane | OOL 64+50 | 1.22 | 2 X 18 | 3x18 | R | P | 30 | 18? | 1 | HDPE | 32 | | C | 8.53 | |
| Old Oak Lane | OOL 72+50 | 1.37 | 15 | 18 | R | E | 30 | 12 | 1 | CMP | 32 | | C | 2.33 | |
| Old Oak Lane | OOL 78+50 | 1.49 | 2 X 18 | 3x18 | R | E | 20 | 12 | 1 | CMP | 32 | | C | 8.39 | |
| Old Oak Lane | OOL 79+75 | 1.51 | 18 | 2 X 18 | R | E | 25 | 15 | 1 | CMP | 32 | | C | 4.93 | |
| Old Oak Lane | OOL 80+25 | 1.52 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 32 | 1522 | C | 2 | E |
| Old Oak Lane | OOL 81+25 | 1.54 | 15 | 15 | P | E | 25 | 12 | 1 | HDPE | 32 | 64 | C | 1 | E |
| Vesey Drive | VSD 0+50 | 0.01 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 38 | C | 5.25 | |
| Vesey Drive | VSD 4+00 | 0.08 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 74 | C | 4 | E |
| Vesey Drive | VSD 5+00 | 0.09 | 18 | 2 X 18 | P | E | 15 | 12 | 1 | CMP | 32 | 92 | C | 3.5 | E |
| Vesey Drive | VSD 8+00 | 0.15 | 15 | 18 | P | E | 15 | 12 | 1 | CMP | 32 | 276 | C | 1.5 | E |
| Vesey Drive | VSD 9+00 | 0.17 | 15 | 15 | R | E | 25 | 15 | 1 | CMP | 32 | | C | 1 | |

| Shenandoah Farms Sanitary District APPENDIX E SECTION A CULVERT TABLES by Map Panel | | | | | | | | | | | | | | 43560 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | CULVERT NAME | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR CULVERT SIZE IN INCHES* | RECOMMENDED 10-YEAR CULVERT SIZE IN INCHES* | R = ROAD P = PRIVATE | E =EXISTING N = NEEDED P = POSSIBLE DETERMINED FROM DA MAPPING | LENGTH FEET | CULVERT DIAMETER INCHES | NUMBER OF CULVERTS | CULVERT MATERIAL | MAP PANEL NUMBER | LOT NUMBER | HYDROLOGIC SOILS GROUP | DRAINAGE AREA TO CULVERT IN ACRES | E = DRAINAGE AREA WAS ESTIMATED |
| Farms Ridge Road | FRR 2+50 | 0.05 | 15 | 15 | P | N | 20? | 15 | 2 | HDPE | 33 | 163 | C | 1 | E |
| Farms Ridge Road | FRR 4+00 | 0.08 | 15 | 15 | P | N | 20? | 15 | 1 | HDPE | 33 | 193 | C | 1 | E |
| Nancy Court | NC 0+00 | 0.00 | 18 | 2 X 18 | R | E | 30 | 15 | 1 | CMP | 33 | | C | 3.37 | E |
| Nancy Court | NC 3+50 | 0.07 | 15 | 15 | R | N | 30? | 15? | 1 | HDPE | 33 | | C | 0.83 | |
| Nancy Court | NC 6+00 | 0.11 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 33 | | C | 2.89 | |
| Roaches Run Road | RRR 2+25 | 0.04 | 2 X 18 | 2 X 18 | R | E | 30 | 12 | 1 | CMP | 33 | | C | 7.25 | |
| Spring Hollow Road | SHR 7+00 | 0.13 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 33 | 97 | C | 1 | E |
| Spring Hollow Road | SHR 10+25 | 0.19 | 2 X 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 33 | | C | 7.19 | |
| Vesey Drive | VSD 10+50 | 0.20 | 15 | 15 | P | E | 15 | 12 | 1 | CMP | 33 | 180 | C | 1 | E |
| Vesey Drive | VSD 21+00 | 0.40 | 18 | 2 X 18 | P | E | 15 | 15 | 1 | HDPE | 33 | 402 | C | 4 | E |
| Vesey Drive | VSD 22+75 | 0.43 | 15 | 18 | R | N | 30? | 18? | 1 | HDPE | 33 | | C | 2.23 | E |
| Vesey Drive | VSD 28+30 | 0.54 | 15 | 18 | R | P | 30 | 15 | 1 | HDPE | 33 | | C | 1.98 | |
| Mountain Laurel Lane | MLL 11+25 | 0.21 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 34 | | C + B | 5.9 | |
| Mountain Laurel Lane | MLL 13+25 | 0.25 | SD | SD | R | E | 20 | 15 | 1 | CMP | 34 | | C + B | 92.97 | |
| Old Oak Lane | OOL 82+00 | 1.55 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 34 | | C | 2 | E |
| Old Oak Lane | OOL 83+00 | 1.57 | 15 | 15 | R | E | 30 | 15 | 1 | CMP | 34 | | C | 1 | E |
| Old Oak Lane | OOL 85+25 | 1.61 | SD | SD | R | E | 30 | 24 | 1 | CMP | 34 | | C | 73.82 | |
| Old Oak Lane | OOL 87+50 | 1.66 | 15 | 15 | R | E | 25 | 18 | 1 | HDPE | 34 | | C | 0.61 | |
| Old Oak Lane | OOL 89+50 | 1.70 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 34 | | C | 5.11 | |
| Old Oak Lane | OOL 92+00 | 1.74 | 15 | 18 | R | E | 22 | 12 | 1 | CMP | 34 | | C | 2.62 | |
| Ridgewood Lane | RL 0+00 | 0.00 | 18 | 2 X 18 | R | E/N | 30? | 15? | 1 | HDPE | 34 | CUL 1 | C | 3.5 | E |
| Ridgewood Lane | RL 6+25 | 0.12 | 2x24 | SD | R | E | 25 | 15 | 1 | CMP | 34 | | C | 31.1 | |
| Ridgewood Lane | RL 6+50 | 0.12 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 34 | 145 | C | 1.66 | |
| Ridgewood Lane | RL 10+00 | 0.19 | 15 | 18 | R | P | 25 | 18? | 1 | HDPE | 34 | | C | 2.24 | |
| Ridgewood Lane | RL 11+50 | 0.22 | 3x18 | SD | R | E | 25 | 24 | 1 | CMP | 34 | | C | 25.42 | |
| Valley Farms Road | VFR 0+00 | 0.00 | 18 | 2 X 18 | R | E | 30 | 13X1 | 1 | ECMP | 34 | | C | 3.62 | |
| Valley Farms Road | VFR 0+25 | 0.00 | 18 | 2 X 18 | P | N | 20? | 15? | 1 | HDPE | 34 | 1668 | C | 3.6 | |
| Valley Farms Road | VFR 10+25 | 0.19 | 15 | 15 | R | N | 25? | 15 | 1 | HDPE | 34 | | C | 0.36 | |
| Yarnell Court | YC 2+00 | 0.04 | 15 | 18 | P | N | 20? | 15 | 1 | HDPE | 34 | 64? | C | 3 | E |
| Yarnell Court | YC 4+00 | 0.08 | 15 | 15 | P | N | 20? | 15? | 1 | HDPE | 34 | 67 | C | 1 | E |
| Yarnell Court | YC 7+50 | 0.14 | 3x18 | SD | R | E | 25? | 24 | 1 | CMP | 34 | | C | 27.61 | |
| Farms Ridge Road | FRR 0+25 | 0.00 | 15 | 18 | R | P | 25? | 15 | 1 | HDPE | 35 | | C | 1.65 | |
| Yarnell Court | YC 13+00 | 0.25 | 15 | 18 | R | P | 30 | 15? | 1 | HDPE | 35 | ON SI | C | 1.24 | |
| Yarnell Court | YC 13+70 | 0.26 | 15 | 15 | R | P | 30 | 15? | 1 | HDPE | 35 | | C | 0.62 | |
| Yarnell Court | YC 21+50 | 0.41 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 35 | 402 | C | 1 | E |
| Yarnell Court | YC 22+50 | 0.43 | 15 | 15 | P | N | 20 | 15? | 1 | HDPE | 35 | 418 | C | 1 | E |
| Venus Branch Road | VBR 42+25 | 0.80 | 2 X 18 | 2x24 | R | E | 20 | 15 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 42+25 | 0.80 | 2 X 18 | 2x24 | R | E | 20 | 12 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 48+00 | 0.91 | 2 X 18 | 2x24 | R | E | 18 | 12 | 1 | CMP | 36 | | D | 16 | |
| Venus Branch Road | VBR 52+25 | 0.99 | 15 | 15 | R | E | 25 | 15 | 1 | CMP | 36 | | D | 0.25 | |
| Venus Branch Road | VBR 56+40 | 1.07 | 15 | 18 | R | P | 30 | 24? | 1 | HDPE | 36 | | D | 2.29 | |
| Venus Branch Road | VBR 62+00 | 1.17 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 36 | | D | 1.48 | |
| Venus Branch Road | VBR 66+50 | 1.26 | 15 | 18 | R | E | 30 | 15 | 1 | CMP | 36 | | D | 1.84 | |
| Venus Branch Road | VBR 72+50 | 1.37 | 18 | 2 X 18 | R | P | 30 | 15? | 1 | HDPE | 36 | | D | 3.13 | |
| Venus Branch Road | VBR 76+50 | 1.45 | 18 | 2 X 18 | R | E | 20 | 15 | 1 | CMP | 36 | | D | 4.08 | |

# APPENDIX E-3

## Ditch Tables by Road Name

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Barbara Drive | BD 11+25 L | 0.21 | 0.8 | 1.1 | EC-2 | 3.8 | 3.6 | 671 | 3.0 | 18 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 5+00 | 0.09 | 0.4 | 0.7 | EC-2 | 4.0 | 9.1 | 433 | 4.0 | 14 | B | 1.9 | 6.3 |
| Blue Mountain Road | BMR 7+00 L | 0.13 | 0.9 | 1.1 | EC-3-A | 4.7 | 8.3 | 818 | 4.5 | 14 | D | 10.7 | 19.7 |
| Blue Mountain Road | BMR 15+75 D | 0.30 | SD | SD | SD | SD | 39.5 | 153 | 7.7 | 17 | D | 15.6 | 28.8 |
| Blue Mountain Road | BMR 15+75 L | 0.30 | 1.0 | 1.2 | EC-3-A | 5.6 | 9.5 | 758 | 7.7 | 17 | D | 15.6 | 28.8 |
| Blue Mountain Road | BMR 18+50 L | 0.35 | 0.9 | 1.2 | EC-3-A | 4.2 | 5.9 | 350 | 4.8 | 17 | D | 10.7 | 19.7 |
| Blue Mountain Road | BMR 18+50 R | 0.35 | 0.7 | 0.9 | EC-3-A | 4.6 | 10.8 | 252 | 3.0 | 17 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 22+75 D | 0.43 | SD | SD | SD | SD | 33.7 | 146 | 1.5 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 22+75 L | 0.43 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.3 | 343 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 30+50 L | 0.58 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.5 | 724 | 4.0 | 17 | D | 8.7 | 15.9 |
| Blue Mountain Road | BMR 31+25 L | 0.59 | 0.6 | 0.7 | EC-3-A | 5.0 | 17.2 | 238 | 2.0 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 35+00 D | 0.66 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.5 | 166 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 35+00 L | 0.66 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.9 | 353 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 44+00 D | 0.83 | 0.7 | 0.9 | EC-2 | 3.5 | 3.5 | 598 | 2.0 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 67+50 D | 1.28 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.8 | 612 | 2.5 | 14 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 69+00 D | 1.31 | 0.5 | 0.6 | EC-3-A | 4.8 | 19.7 | 289 | 1.0 | 14 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 72+50 R | 1.37 | 0.8 | 1.1 | EC-2 | 3.8 | 3.2 | 469 | 2.8 | 41 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 82+00 L | 1.55 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.1 | 201 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 82+00 R | 1.55 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.6 | 187 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 87+00 L | 1.65 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.9 | 159 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 87+00 R | 1.65 | 0.5 | 0.7 | EC-2 | 3.6 | 6.0 | 183 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 89+50 L | 1.70 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 71 | 0.5 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 89+50 R | 1.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.6 | 361 | 2.0 | 13 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 96+50 L | 1.83 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.9 | 149 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 96+50 R | 1.83 | 0.7 | 0.9 | EC-2 | 3.5 | 3.7 | 219 | 1.5 | 13 | D | 4.5 | 8.3 |
| Bobbie Court | BCT 4+50 R | 0.09 | 0.7 | 0.9 | EC-2 | 3.5 | 4.6 | 241 | 2.0 | 29 | D | 4.5 | 8.3 |
| Bobbie Court | BCT 8+50 D | 0.16 | 1.2 | 1.5 | EC-3-A | 4.1 | 4.8 | 74 | 8.8 | 29 | D | 17.3 | 31.9 |
| Bobbie Court | BCT 8+50 L | 0.16 | SD | SD | SD | SD | 28.7 | 339 | 3.0 | 29 | D | 6.6 | 12.1 |
| Bobbie Court | BCT 8+50 R | 0.16 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.4 | 392 | 5.6 | 29 | D | 12.4 | 22.8 |
| Bobbie Court | BCT 13+00 D | 0.25 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.2 | 395 | 1.2 | 29 | D | 4.5 | 8.3 |
| Bobbie Court | BCT 13+00 L | 0.25 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.5 | 311 | 5.0 | 29 | D | 10.7 | 19.7 |
| Bobbie Court | BCT 13+00 R | 0.25 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.4 | 389 | 3.0 | 29 | D | 6.6 | 12.1 |
| Bragg Drive | BGD 6+50 D | 0.12 | SD | SD | SD | SD | 41.7 | 73 | 3.0 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 6+50 R | 0.12 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.4 | 506 | 3.0 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 12+50 D | 0.24 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.0 | 416 | 2.1 | 7 | B | 1.5 | 4.9 |
| Bragg Drive | BGD 17+50 D | 0.33 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.0 | 573 | 1.7 | 7 | B | 1.1 | 3.5 |
| Bragg Drive | BGD 22+00 D | 0.42 | 0.6 | 0.9 | EC-3-A | 4.3 | 12.6 | 990 | 8.0 | 7 | B | 3.2 | 11.1 |
| Bragg Drive | BGD 30+00 D | 0.57 | 0.5 | 0.6 | EC-2 | 3.3 | 5.5 | 288 | 2.0 | 7 | B | 1.1 | 3.5 |
| Bragg Drive | BGD 33+00 R | 0.63 | 0.4 | 0.8 | EC-2 | 3.6 | 8.4 | 446 | 3.6 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 40+50 L | 0.77 | 0.5 | 0.8 | EC-2 | 3.6 | 6.5 | 236 | 4.7 | 7 | B | 2.3 | 7.8 |
| Bragg Drive | BGD 40+50 R | 0.77 | 0.6 | 1.0 | EC-3-A | 4.2 | 10.7 | 476 | 12.0 | 7 | B | 4.2 | 15.2 |
| Briar Lane | BL 0+00 L | 0.00 | 0.4 | 0.5 | EC-3-A | 4.0 | 15.2 | 591 | 2.0 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 0+00 R | 0.00 | 0.5 | 0.7 | EC-2 | 3.3 | 6.6 | 396 | 2.7 | 12 | B | 1.5 | 4.9 |
| Briar Lane | BMR 1+00 R | 0.02 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 95 | 1.0 | 12 | D | 2.5 | 4.5 |
| Briar Lane | BL 6+50 D | 0.12 | 0.5 | 0.7 | EC-2 | 2.5 | 2.8 | 123 | 1.5 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 7+00 L | 0.13 | 0.6 | 0.9 | EC-3-A | 3.7 | 7.1 | 36 | 8.3 | 12 | B | 3.5 | 12.2 |
| Briar Lane | BL 8+00 D | 0.15 | 0.5 | 0.9 | EC-3-A | 5.8 | 24.0 | 472 | 14.0 | 12 | B | 4.7 | 17.1 |
| Briar Lane | BL 8+00 R | 0.15 | 0.5 | 0.7 | EC-2 | 2.5 | 2.0 | 99 | 1.5 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 11+50 L | 0.22 | 0.6 | 0.7 | Grass | 2.1 | 0.9 | 167 | 2.0 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 16+00 D | 0.30 | 0.5 | 0.8 | EC-3-A | 5.2 | 20.2 | 429 | 7.5 | 18 | B | 3.2 | 11.1 |
| Briar Lane | BL 16+00 L | 0.30 | 0.5 | 0.8 | EC-2 | 2.8 | 3.4 | 426 | 4.0 | 18 | B | 1.9 | 6.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Briar Lane | BL 16+00 R | 0.30 | 0.4 | 0.7 | EC-3-A | 3.6 | 13.0 | 485 | 3.8 | 18 | B | 1.9 | 6.3 |
| Brookview Lane | BVL 6+50 D | 0.12 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.2 | 450 | 1.5 | 29 | D | 4.5 | 8.3 |
| Brookview Lane | BVL 10+00 D | 0.19 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.7 | 320 | 1.0 | 28 | D | 2.5 | 4.5 |
| Brookview Lane | BVL 12+00 D | 0.23 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.8 | 176 | 1.0 | 29 | D | 2.5 | 4.5 |
| Brookview Road | BVR 5+00 D | 0.09 | 0.5 | 0.7 | EC-2 | 3.6 | 6.1 | 459 | 0.6 | 29 | D | 2.5 | 4.5 |
| Cindy's Way | CW 2+50 L | 0.05 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.6 | 98 | 0.5 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 2+50 R | 0.05 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.8 | 370 | 1.0 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 8+50 D | 0.16 | 0.8 | 1.0 | EC-3-A | 4.9 | 10.4 | 184 | 3.5 | 14 | D | 8.7 | 15.9 |
| Cindy's Way | CW 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.4 | 178 | 1.0 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.5 | 91 | 0.5 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 13+50 L | 0.26 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.0 | 457 | 1.3 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 13+50 L | 0.26 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.0 | 33 | 1.3 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 13+50 R | 0.26 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.8 | 342 | 2.0 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 20+00 L | 0.38 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.6 | 220 | 1.5 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 20+00 R | 0.38 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.6 | 248 | 1.0 | 14 | D | 2.5 | 4.5 |
| Cliffside Road | CR 0+50 D | 0.01 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.3 | 205 | 7.6 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 0+50 R | 0.01 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.1 | 536 | 7.1 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 3+50 D | 0.07 | 0.8 | 1.4 | EC-3-A | 4.5 | 7.1 | 301 | 38.0 | 4 | B | 8.9 | 33.5 |
| Cliffside Road | CR 3+50 L | 0.07 | 0.7 | 1.0 | EC-2 | 3.0 | 2.1 | 322 | 7.5 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 3+50 R | 0.07 | 0.8 | 1.3 | EC-3-A | 4.9 | 9.1 | 270 | 30.6 | 4 | B | 8.1 | 30.3 |
| Cliffside Road | CR 4+00 D | 0.08 | 0.6 | 0.9 | EC-3-A | 6.1 | 26.8 | 270 | 15.0 | 4 | B | 5.2 | 19.0 |
| Cliffside Road | CR 4+00 L | 0.08 | 0.3 | 0.5 | EC-2 | 3.6 | 13.7 | 87 | 0.6 | 4 | B | 0.8 | 2.1 |
| Cliffside Road | CR 4+00 R | 0.08 | 0.4 | 0.7 | Grass | 1.7 | 0.2 | 94 | 0.6 | 4 | B | 0.8 | 2.1 |
| Cliffside Road | CR 8+00 D | 0.15 | 0.4 | 0.5 | EC-3-A | 4.3 | 22.6 | 307 | 2.0 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 8+00 L | 0.15 | 0.5 | 0.6 | EC-2 | 2.8 | 3.8 | 148 | 1.5 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 11+75 L | 0.22 | 0.4 | 0.6 | EC-2 | 4.0 | 9.5 | 138 | 1.4 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 11+75 U | 0.22 | 0.5 | 0.8 | EC-3-A | 4.0 | 13.7 | 415 | 5.2 | 4 | B | 2.6 | 8.9 |
| Cliffside Road | CR 17+00 D | 0.32 | 0.7 | 1.2 | EC-3-A | 3.6 | 6.7 | 627 | 16.3 | 4 | B | 5.5 | 20.0 |
| Crossway Lane | CL 4+00 U | 0.08 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.5 | 802 | 1.9 | 2 | B | 1.1 | 3.5 |
| Crossway Lane | CL 8+80 L | 0.17 | 0.4 | 0.6 | EC-2 | 4.0 | 10.6 | 302 | 1.4 | 2 | B | 1.1 | 3.5 |
| Crossway Lane | CL 8+80 U | 0.17 | 0.6 | 0.9 | EC-2 | 2.8 | 2.6 | 544 | 6.4 | 2 | B | 2.9 | 10.0 |
| Dillard Court | DC 5+00 D | 0.09 | 0.3 | 0.5 | EC-2 | 3.1 | 7.5 | 431 | 0.6 | 11 | B | 0.8 | 2.1 |
| Dillard Court | DC 9+00 D | 0.17 | 0.6 | 1.0 | EC-2 | 3.1 | 5.0 | 1141 | 7.0 | 11 | B | 2.9 | 10.0 |
| Dillard Court | DC 9+00 D1 | 0.17 | 0.3 | 0.5 | EC-2 | 3.1 | 8.2 | 270 | 1.0 | 11 | B | 0.8 | 2.1 |
| Dogwood Farm Road | DFR 19+00 L | 0.36 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.7 | 412 | 2.0 | 21 | D | 4.5 | 8.3 |
| Dogwood Farm Road | DFR 30+00 U | 0.57 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.4 | 65 | 0.1 | 21 | D | 2.5 | 4.5 |
| Dogwood Farm Road | DFR 32+50 D | 0.62 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.7 | 178 | 1.0 | 21 | D | 2.5 | 4.5 |
| Donna Court | DNC 1+50 D | 0.03 | 0.7 | 0.9 | EC-3-A | 6.3 | 20.5 | 300 | 3.3 | 16 | D | 8.7 | 15.9 |
| Donna Court | DNC 1+50 L | 0.03 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.9 | 582 | 2.0 | 16 | D | 4.5 | 8.3 |
| Donna Court | DNC 1+50 R | 0.03 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 122 | 1.0 | 16 | D | 2.5 | 4.5 |
| Donna Court | DNC 6+50 D | 0.12 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.6 | 162 | 1.0 | 16 | D | 2.5 | 4.5 |
| Donna Court | DNC 13+00 D | 0.25 | 0.5 | 0.7 | EC-3-A | 5.8 | 23.4 | 1156 | 2.0 | 16 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 1+50 D | 0.03 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.4 | 319 | 2.2 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 1+50 R | 0.03 | 0.9 | 1.3 | Grass | 2.8 | 1.0 | 354 | 2.2 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 8+50 L | 0.16 | 0.7 | 0.9 | EC-2 | 3.5 | 3.7 | 241 | 1.9 | 23 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 12+00 L | 0.23 | 1.3 | SD | EC-3-B | 7.3 | 11.5 | 332 | 20.3 | 23 | D | 34.2 | 63.5 |
| Drummer Hill Road | DHR 14+00 D | 0.27 | 1.3 | SD | EC-3-A | 6.8 | 10.3 | 196 | 21.0 | 23 | D | 34.2 | 63.5 |
| Drummer Hill Road | DHR 15+50 L | 0.29 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.7 | 362 | 1.5 | 23 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 17+00 D | 0.32 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.2 | 486 | 10.5 | 23 | D | 20.3 | 37.6 |
| Drummer Hill Road | DHR 27+50 D | 0.52 | SD | SD | SD | SD | 31.2 | 297 | 12.0 | 23 | D | 21.8 | 40.2 |
| Drummer Hill Road | DHR 27+50 D1 | 0.52 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.5 | 289 | 1.7 | 23 | D | 4.5 | 8.3 |

**Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name**

| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drummer Hill Road | DHR 27+50 L | 0.52 | 1.1 | 1.4 | EC-3-A | 5.4 | 8.9 | 239 | 10.0 | 23 | D | 18.9 | 34.9 |
| Drummer Hill Road | DHR 31+00 D | 0.59 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.4 | 251 | 2.7 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 31+50 D | 0.60 | 0.7 | 0.8 | EC-3-A | 6.8 | 24.1 | 284 | 3.2 | 23 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 31+50 L | 0.60 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.5 | 28 | 3.2 | 23 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 37+00 L | 0.70 | 0.9 | 1.2 | EC-3-A | 4.2 | 6.0 | 495 | 4.7 | 23 | D | 10.7 | 19.7 |
| Drummer Hill Road | DHR 37+00 R | 0.70 | 0.7 | 0.8 | Grass | 2.3 | 0.9 | 93 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 43+50 L | 0.82 | 0.9 | 1.2 | EC-3-A | 3.5 | 3.6 | 494 | 3.7 | 28 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 43+50 D | 0.82 | SD | SD | SD | SD | 35.1 | 187 | 5.7 | 28 | D | 12.4 | 22.8 |
| Drummer Hill Road | DHR 47+50 D | 0.90 | SD | SD | SD | SD | 45.0 | 129 | 2.5 | 28 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 47+50 L | 0.90 | 0.8 | 1.0 | Grass | 2.6 | 0.4 | 172 | 1.5 | 28 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 47+50 R | 0.90 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 94 | 1.0 | 28 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 51+00 D | 0.97 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 230 | 0.5 | 28 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 54+50 D | 1.03 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.5 | 241 | 2.0 | 28 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 61+50 D | 1.16 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.8 | 375 | 2.8 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 61+50 R | 1.16 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.3 | 377 | 2.8 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 66+50 D | 1.26 | 0.5 | 0.6 | EC-3-A | 4.4 | 18.8 | 330 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 66+50 L | 1.26 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.0 | 286 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 67+50 D | 1.28 | 1.0 | 1.3 | EC-3-A | 5.2 | 8.7 | 623 | 7.5 | 23 | D | 15.6 | 28.8 |
| Drummer Hill Road | DHR 74+50 D | 1.41 | 0.6 | 0.7 | EC-3-A | 5.0 | 17.2 | 497 | 1.5 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 74+50 L | 1.41 | 0.8 | 1.0 | EC-2 | 2.7 | 1.9 | 260 | 1.4 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 74+50 R | 1.41 | 0.5 | 0.7 | EC-2 | 3.6 | 5.8 | 40 | 0.3 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 75+50 R | 1.43 | 0.5 | 0.7 | EC-2 | 3.6 | 5.3 | 95 | 0.7 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 75+75 D | 1.43 | 0.5 | 0.6 | EC-3-A | 4.8 | 22.9 | 374 | 0.8 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 77+00 D | 1.46 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.4 | 92 | 0.3 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 78+00 D | 1.48 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 62 | 1.2 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 78+00 L | 1.48 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.8 | 100 | 1.2 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 79+00 D | 1.50 | 0.9 | 1.1 | EC-3-B | 7.5 | 22.4 | 644 | 8.5 | 29 | D | 17.3 | 31.9 |
| Drummer Hill Road | DHR 79+00 L | 1.50 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.7 | 465 | 3.0 | 29 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 79+00 R | 1.50 | 0.8 | 1.0 | EC-3-A | 5.5 | 13.5 | 564 | 4.4 | 29 | D | 10.7 | 19.7 |
| Drummer Hill Road | DHR 85+50 D | 1.62 | SD | SD | SD | SD | 41.6 | 70 | 1.7 | 24 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 89+50 D | 1.70 | 0.7 | 0.9 | EC-3-B | 7.1 | 23.6 | 455 | 4.7 | 24 | D | 10.7 | 19.7 |
| Drummer Hill Road | DHR 89+50 L | 1.70 | 0.5 | 0.7 | EC-2 | 3.6 | 6.2 | 112 | 0.6 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 89+50 R | 1.70 | 0.9 | 1.1 | EC-3-A | 4.0 | 6.7 | 418 | 4.0 | 24 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 97+50 D | 1.85 | 0.6 | 0.7 | EC-2 | 3.1 | 4.5 | 109 | 0.5 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 97+75 D | 1.85 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.4 | 469 | 1.0 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 105+00 D | 1.99 | 0.5 | 0.8 | EC-3-A | 4.7 | 16.9 | 102 | 8.7 | 24 | B | 3.5 | 12.2 |
| Drummer Hill Road | DHR 105+00 L | 1.99 | 0.6 | 0.9 | EC-3-A | 4.3 | 12.2 | 361 | 7.4 | 24 | B | 3.2 | 11.1 |
| Drummer Hill Road | DHR 105+00 R | 1.99 | 0.4 | 0.6 | EC-2 | 4.0 | 10.7 | 161 | 1.2 | 24 | B | 1.1 | 3.5 |
| Dry Run Court | DRC 6+50 D | 0.12 | 0.8 | 1.0 | EC-3-A | 6.1 | 15.3 | 81 | 4.1 | 11 | D | 10.7 | 19.7 |
| Dry Run Court | DRC 6+50 L | 0.12 | 0.9 | 1.1 | EC-3-A | 5.1 | 9.3 | 469 | 4.1 | 11 | D | 10.7 | 19.7 |
| Dry Run Court | DRC 9+00 D | 0.17 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 696 | 1.2 | 11 | D | 4.5 | 8.3 |
| Dry Run Court | DRC 18+60 L | 0.35 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 211 | 1.0 | 11 | D | 2.5 | 4.5 |
| Dry Run Court | DRC 18+60 R | 0.35 | 0.6 | 0.7 | EC-2 | 3.1 | 4.9 | 138 | 1.0 | 11 | D | 2.5 | 4.5 |
| Eagles Crag Road | ECR 0+00 D | 0.00 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.8 | 730 | 2.0 | 27 | D | 4.5 | 8.3 |
| Ehlers Drive | ED 0+00 L | 0.00 | 0.7 | 1.1 | EC-3-A | 4.4 | 10.6 | 844 | 17.0 | 7 | B | 5.5 | 20.0 |
| Ehlers Drive | ED 0+00 R | 0.00 | 0.7 | 0.9 | EC-3-A | 4.9 | 13.4 | 491 | 3.0 | 7 | D | 6.6 | 12.1 |
| Ehlers Drive | ED 0+50 D | 0.01 | 0.7 | 1.1 | EC-3-A | 4.9 | 11.9 | 726 | 21.3 | 7 | B | 6.6 | 24.3 |
| Ehlers Drive | ED 8+50 L | 0.16 | 0.7 | 1.0 | EC-3-A | 4.7 | 12.0 | 382 | 16.7 | 7 | B | 5.5 | 20.0 |
| Elinore Lane | EL 1+00 D | 0.02 | 1.2 | SD | EC-3-B | 7.1 | 12.4 | 278 | 18.0 | 18 | D | 30.3 | 56.1 |
| Elinore Lane | EL 1+00 L | 0.02 | 0.9 | 1.1 | EC-3-A | 6.6 | 16.3 | 347 | 6.6 | 18 | D | 14.0 | 25.8 |
| Elinore Lane | EL 1+00 R | 0.02 | 0.6 | 0.7 | EC-2 | 2.8 | 2.8 | 85 | 1.0 | 18 | D | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Elinore Lane | EL 3+50 L | 0.07 | 0.4 | 0.7 | EC-2 | 3.6 | 7.8 | 352 | 2.7 | 18 | B | 1.5 | 4.9 |
| Elinore Lane | EL 3+75 R | 0.07 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 132 | 1.3 | 18 | D | 4.5 | 8.3 |
| Elinore Lane | EL 5+00 L | 0.09 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.6 | 402 | 2.6 | 18 | D | 6.6 | 12.1 |
| Elinore Lane | EL 11+00 L | 0.21 | 0.5 | 0.7 | EC-2 | 3.3 | 6.2 | 320 | 2.4 | 18 | B | 1.5 | 4.9 |
| Elinore Lane | EL 11+00 R | 0.21 | 0.9 | 1.1 | EC-2 | 3.0 | 1.6 | 168 | 2.9 | 18 | D | 6.6 | 12.1 |
| Elinore Lane | EL 15+25 L | 0.29 | 0.4 | 0.6 | EC-2 | 2.4 | 4.1 | 40 | 1.0 | 18 | B | 0.8 | 2.1 |
| Elinore Lane | EL 15+25 R | 0.29 | 0.5 | 0.7 | Grass | 2.7 | 1.7 | 46 | 2.0 | 18 | B | 1.1 | 3.5 |
| Elinore Lane | EL 17+00 L | 0.32 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.4 | 68 | 1.1 | 18 | B | 1.1 | 3.5 |
| Elinore Lane | EL 17+00 R | 0.32 | 0.3 | 0.5 | EC-2 | 3.1 | 8.9 | 117 | 1.0 | 18 | B | 0.8 | 2.1 |
| Elinore Lane | EL 20+00 D | 0.38 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.2 | 109 | 1.0 | 18 | D | 2.5 | 4.5 |
| Elseas Farm Road | EFR 6+00 R | 0.11 | 0.5 | 0.7 | EC-2 | 2.8 | 3.2 | 464 | 2.4 | 6 | B | 1.5 | 4.9 |
| Elseas Farm Road | EFR 15+00 D | 0.28 | 0.5 | 0.7 | EC-3-A | 4.0 | 14.2 | 890 | 5.0 | 6 | B | 2.3 | 7.8 |
| Farm View Road | FVR 16+00 D | 0.30 | 0.4 | 0.6 | Grass | 2.6 | 2.9 | 459 | 0.8 | 9 | B | 0.8 | 2.1 |
| Farms Ridge Road | FRR 0+00 L | 0.00 | 0.6 | 0.7 | EC-2 | 2.8 | 2.3 | 394 | 1.0 | 35 | C | 2.5 | 4.5 |
| Farms Ridge Road | FRR 0+00 R | 0.00 | 0.6 | 0.7 | EC-2 | 3.1 | 3.1 | 247 | 0.6 | 35 | C | 2.5 | 4.5 |
| Farms River Road | FRRD 0+50 L | 0.01 | 0.5 | 0.7 | EC-2 | 2.8 | 4.2 | 382 | 3.0 | 9 | B | 1.5 | 4.9 |
| Farms River Road | FRRD 0+50 R | 0.01 | 1.8 | SD | EC-2 | 3.4 | 0.5 | 812 | 20.0 | 9 | C | 33.1 | 61.4 |
| Farms River Road | FRRD 19+00 D | 0.36 | 1.7 | SD | EC-3-A | 3.7 | 1.4 | 88 | 18.5 | 9 | C | 31.7 | 58.8 |
| Farms River Road | FRRD 19+00 L | 0.36 | 1.4 | 1.7 | EC-2 | 2.8 | 1.0 | 763 | 8.0 | 9 | C | 15.6 | 28.8 |
| Farms River Road | FRRD 19+00 R | 0.36 | 1.4 | 1.7 | EC-2 | 2.8 | 0.1 | 367 | 8.0 | 9 | C | 15.6 | 28.8 |
| Farms River Road | FRRD 19+00 U | 0.36 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.8 | 759 | 1.0 | 9 | C | 2.5 | 4.5 |
| Farms River Road | FRRD 27+75 D | 0.53 | SD | SD | SD | SD | 1.2 | 259 | 60.1 | 10 | C | 52.8 | 98.6 |
| Farms River Road | FRRD 27+75 L | 0.53 | 1.2 | 1.5 | EC-2 | 2.6 | 0.6 | 431 | 5.0 | 10 | C | 10.7 | 19.7 |
| Farms River Road | FRRD 27+75 R | 0.53 | 1.3 | 1.6 | EC-2 | 2.7 | 0.4 | 359 | 6.0 | 10 | C | 12.4 | 22.8 |
| Farms River Road | FRRD 32+25 D | 0.61 | 1.8 | SD | EC-3-A | 3.7 | 1.7 | 269 | 20.5 | 10 | C | 34.2 | 63.5 |
| Farms River Road | FRRD 32+25 R | 0.61 | 1.8 | SD | EC-2 | 3.4 | 0.1 | 129 | 19.3 | 10 | C | 33.1 | 61.4 |
| Farms River Road | FRRD 38+00 R | 0.72 | 0.7 | 1.1 | EC-2 | 2.6 | 1.9 | 384 | 7.0 | 10 | B | 3.2 | 11.1 |
| Farms Riverview Road | FRVR -10+00 D | -0.19 | 1.0 | 1.5 | EC-3-A | 3.5 | 3.4 | 170 | 40.0 | 15 | B | 9.0 | 33.9 |
| Farms Riverview Road | FRVR -10+00 DL | -0.19 | 0.4 | 0.7 | Grass | 1.7 | 0.2 | 411 | 1.0 | 15 | B | 0.8 | 2.1 |
| Farms Riverview Road | FRVR -10+00 L | -0.19 | 0.8 | 1.5 | Grass | 2.6 | 0.3 | 435 | 15.0 | 15 | B | 5.0 | 18.1 |
| Flynn Drive | FND 3+50 D | 0.07 | 0.7 | 1.1 | EC-2 | 2.6 | 1.1 | 944 | 8.3 | 10 | B | 3.5 | 12.2 |
| Flynn Drive | FND 5+00 U | 0.09 | 0.6 | 0.7 | Grass | 2.1 | 0.1 | 109 | 2.0 | 10 | B | 1.1 | 3.5 |
| Flynn Drive | FND 9+75 L | 0.18 | 0.5 | 0.9 | EC-2 | 3.6 | 5.4 | 871 | 5.3 | 10 | B | 2.6 | 8.9 |
| Flynn Drive | FND 11+00 D1 | 0.21 | 0.7 | 1.2 | EC-2 | 3.5 | 4.7 | 191 | 11.5 | 10 | B | 4.2 | 15.2 |
| Flynn Drive | FND 11+00 D2 | 0.21 | 0.6 | 1.0 | Grass | 3.0 | 1.8 | 93 | 5.4 | 10 | B | 2.6 | 8.9 |
| Flynn Drive | FND 11+00 L | 0.21 | 0.4 | 0.6 | Grass | 2.6 | 2.6 | 87 | 0.5 | 10 | B | 0.8 | 2.1 |
| Flynn Drive | FND 11+00 R | 0.21 | 0.6 | 0.8 | EC-2 | 3.1 | 3.2 | 368 | 5.0 | 10 | B | 2.3 | 7.8 |
| Flynn Drive | FND 18+75 R | 0.36 | 0.5 | 0.7 | EC-2 | 2.8 | 3.8 | 136 | 2.8 | 10 | B | 1.5 | 4.9 |
| Flynn Drive | FND 20+00 L | 0.38 | 0.6 | 1.0 | EC-2 | 3.9 | 6.8 | 210 | 8.0 | 10 | B | 3.2 | 11.1 |
| Flynn Drive | FND 20+00 R | 0.38 | 0.6 | 0.8 | EC-2 | 3.1 | 4.2 | 1204 | 5.0 | 10 | B | 2.3 | 7.8 |
| Flynn Drive | FND 23+50 D | 0.45 | 0.3 | 0.5 | EC-2 | 3.3 | 10.7 | 395 | 1.0 | 10 | B | 0.8 | 2.1 |
| Flynn Drive | FND 26+00 D | 0.49 | 0.5 | 0.7 | Grass | 2.7 | 1.1 | 349 | 1.3 | 10 | B | 1.1 | 3.5 |
| Flynn Drive | FND 27+75 L | 0.53 | 1.0 | 1.3 | EC-3-A | 5.9 | 10.4 | 639 | 10.0 | 10 | C | 18.9 | 34.9 |
| Flynn Drive | FND 27+75 R | 0.53 | 1.2 | 1.5 | EC-2 | 2.6 | 0.3 | 370 | 5.0 | 10 | C | 10.7 | 19.7 |
| Freeze Road | FR 4+00 D | 0.08 | 0.5 | 0.8 | EC-3-A | 3.7 | 10.3 | 366 | 5.0 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 4+00 L | 0.08 | 0.4 | 0.7 | EC-3-A | 4.0 | 17.3 | 364 | 3.2 | 2 | B | 1.9 | 6.3 |
| Freeze Road | FR 10+50 D | 0.20 | 0.5 | 0.8 | EC-3-A | 4.4 | 15.7 | 160 | 6.1 | 2 | B | 2.9 | 10.0 |
| Freeze Road | FR 10+50 L | 0.20 | 0.5 | 0.7 | EC-3-A | 4.0 | 14.2 | 604 | 4.1 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 20+50 D | 0.39 | 0.6 | 0.9 | EC-3-A | 5.0 | 17.2 | 514 | 13.5 | 2 | B | 4.7 | 17.1 |
| Freeze Road | FR 20+50 L | 0.39 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.9 | 693 | 4.1 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 20+50 R | 0.39 | 0.5 | 0.8 | Grass | 2.7 | 1.3 | 200 | 2.0 | 2 | B | 1.5 | 4.9 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Freeze Road | FR 23+25 D | 0.44 | 0.5 | 0.8 | EC-3-A | 5.2 | 20.8 | 474 | 8.5 | 2 | B | 3.5 | 12.2 |
| Freeze Road | FR 23+25 L | 0.44 | 0.6 | 0.9 | EC-2 | 3.1 | 4.8 | 322 | 5.7 | 2 | B | 2.6 | 8.9 |
| Freeze Road | FR 23+25 R | 0.44 | 0.5 | 0.8 | Grass | 2.7 | 1.6 | 224 | 2.8 | 2 | B | 1.5 | 4.9 |
| Gary Lane | GL 0+50 L | 0.01 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.4 | 295 | 1.0 | 16 | D | 2.5 | 4.5 |
| Gary Lane | GL 0+50 L | 0.01 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.2 | 307 | 4.3 | 16 | D | 10.7 | 19.7 |
| Gary Lane | GL 10+50 D | 0.20 | 0.8 | 1.0 | EC-3-B | 7.2 | 21.8 | 89 | 6.4 | 16 | D | 14.0 | 25.8 |
| Gary Lane | GL 10+50 L | 0.20 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.6 | 116 | 3.0 | 16 | D | 6.6 | 12.1 |
| Gary Lane | GL 10+50 R | 0.20 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.4 | 332 | 3.5 | 16 | D | 8.7 | 15.9 |
| Gary Lane (western) | GLW 3+00 L | 0.06 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.3 | 184 | 1.5 | 16 | D | 4.5 | 8.3 |
| Gary Lane (western) | GLW 3+00 R | 0.06 | 0.7 | 0.9 | EC-2 | 3.5 | 3.3 | 221 | 2.0 | 16 | D | 4.5 | 8.3 |
| Gary Lane (western) | GLW 5+00 D | 0.09 | 1.0 | 1.2 | EC-3-A | 6.2 | 13.5 | 179 | 8.8 | 16 | D | 17.3 | 31.9 |
| Gary Lane (western) | GLW 5+00 R | 0.09 | 1.1 | 1.3 | EC-3-A | 5.3 | 8.9 | 280 | 8.8 | 16 | D | 17.3 | 31.9 |
| Gary Lane (western) | GLW 8+00 D | 0.15 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.5 | 207 | 2.0 | 16 | D | 4.5 | 8.3 |
| Gayles Lane | GYL 5+50 D | 0.10 | 0.4 | 0.6 | EC-3-A | 5.4 | 27.6 | 247 | 4.4 | 31 | B | 2.3 | 7.8 |
| Gayles Lane | GYL 5+50 L | 0.10 | 0.5 | 0.9 | Grass | 2.7 | 1.9 | 262 | 3.5 | 31 | B | 1.9 | 6.3 |
| Gayles Lane | GYL 9+00 D | 0.17 | 0.4 | 0.6 | EC-3-A | 4.0 | 17.3 | 416 | 2.7 | 31 | B | 1.5 | 4.9 |
| Gayles Lane | GYL 9+00 L | 0.17 | 0.5 | 0.8 | Grass | 2.7 | 1.4 | 234 | 2.7 | 31 | B | 1.5 | 4.9 |
| Gayles Lane | GYL 9+00 R | 0.17 | 0.5 | 0.7 | Grass | 2.7 | 1.2 | 25 | 1.5 | 31 | B | 1.1 | 3.5 |
| Gayles Lane | GYL 11+00 D | 0.21 | 0.4 | 0.7 | EC-3-A | 4.0 | 15.9 | 217 | 3.3 | 31 | B | 1.9 | 6.3 |
| Gayles Lane | GYL 11+01 D | 0.21 | 0.3 | 0.5 | EC-2 | 3.6 | 12.8 | 291 | 1.0 | 31 | B | 0.8 | 2.1 |
| Goode Drive | GD 1+00 D1 | 0.02 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.5 | 58 | 0.9 | 17 | D | 2.5 | 4.5 |
| Goode Drive | GD 6+00 D | 0.11 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.8 | 212 | 3.0 | 17 | D | 6.6 | 12.1 |
| Goode Drive | GD 6+00 L | 0.11 | 0.7 | 0.9 | EC-2 | 3.5 | 3.6 | 277 | 2.0 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 6+00 R | 0.11 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 298 | 1.0 | 17 | D | 2.5 | 4.5 |
| Goode Drive | GD 11+00 D | 0.21 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.9 | 305 | 1.0 | 16 | D | 2.5 | 4.5 |
| Goode Drive | GD 11+00 L | 0.21 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 58 | 1.0 | 16 | D | 2.5 | 4.5 |
| Goode Drive | GD 17+50 D | 0.33 | 0.7 | 0.8 | EC-3-A | 6.8 | 25.4 | 59 | 3.3 | 17 | D | 8.7 | 15.9 |
| Goode Drive | GD 17+50 L | 0.33 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.4 | 401 | 2.0 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 17+50 R | 0.33 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.2 | 255 | 1.3 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 23+50 D | 0.45 | 0.9 | 1.2 | EC-3-A | 6.0 | 13.9 | 133 | 7.3 | 17 | D | 15.6 | 28.8 |
| Goode Drive | GD 23+50 L | 0.45 | 1.0 | 1.3 | EC-3-A | 3.6 | 4.2 | 476 | 5.0 | 17 | D | 10.7 | 19.7 |
| Goode Drive | GD 23+50 R | 0.45 | 0.6 | 0.8 | Grass | 3.0 | 1.7 | 159 | 1.0 | 17 | D | 2.5 | 4.5 |
| Goode Drive | GD 36+75 D | 0.70 | 0.8 | 1.0 | EC-3-A | 4.5 | 7.3 | 371 | 4.0 | 22 | D | 8.7 | 15.9 |
| Goode Drive | GD 36+75 L | 0.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.3 | 123 | 1.7 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 36+75 R | 0.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 207 | 1.5 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 43+00 R | 0.81 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.1 | 301 | 3.3 | 22 | D | 8.7 | 15.9 |
| Goode Drive | GD 48+25 D | 0.91 | 0.6 | 0.8 | EC-3-A | 6.3 | 23.2 | 238 | 2.3 | 22 | D | 6.6 | 12.1 |
| Goode Drive | GD 48+25 L | 0.91 | 0.8 | 1.0 | EC-2 | 2.7 | 1.8 | 320 | 1.2 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 48+25 R | 0.91 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.2 | 97 | 1.0 | 22 | D | 2.5 | 4.5 |
| Goode Drive | GD 58+00 D | 1.10 | 0.9 | 1.1 | EC-3-A | 6.7 | 18.5 | 118 | 7.9 | 28 | D | 15.6 | 28.8 |
| Goode Drive | GD 58+00 L | 1.10 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.2 | 325 | 2.9 | 28 | D | 6.6 | 12.1 |
| Goode Drive | GD 58+00 R | 1.10 | 0.8 | 1.0 | EC-3-A | 5.5 | 14.5 | 523 | 5.0 | 28 | D | 10.7 | 19.7 |
| Heavens Tree Trail | HTT 3+00 D | 0.06 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.9 | 247 | 2.0 | 20 | C | 4.5 | 8.3 |
| Heavens Tree Trail | HTT 3+00 R | 0.06 | 0.8 | 1.0 | EC-3-A | 4.9 | 10.5 | 178 | 4.0 | 20 | C | 8.7 | 15.9 |
| Heavens Tree Trail | HTT 7+00 D | 0.13 | 0.9 | 1.1 | EC-3-A | 5.9 | 13.9 | 372 | 7.0 | 20 | C | 14.0 | 25.8 |
| Heavens Tree Trail | HTT 7+00 D1 | 0.13 | 1.0 | 1.2 | EC-3-B | 7.0 | 16.7 | 366 | 10.0 | 20 | C | 18.9 | 34.9 |
| Heavens Tree Trail | HTT 11+00 R | 0.21 | 1.2 | SD | EC-3-A | 6.3 | 9.7 | 266 | 14.0 | 20 | C | 24.6 | 45.5 |
| Heavens Tree Trail | HTT 14+50 R | 0.27 | 0.9 | 1.2 | EC-3-A | 6.0 | 14.1 | 385 | 7.2 | 20 | C | 15.6 | 28.8 |
| Heavens Tree Trail | HTT 17+50 R | 0.33 | 1.1 | 1.4 | EC-3-A | 5.5 | 7.8 | 249 | 11.0 | 20 | C | 20.3 | 37.6 |
| Heavens Tree Trail | HTT 22+00 D | 0.42 | SD | SD | SD | SD | 13.4 | 226 | 66.0 | 19 | C | 52.8 | 98.6 |
| Heavens Tree Trail | HTT 22+50 D | 0.43 | SD | SD | SD | SD | 7.6 | 59 | 71.0 | 19 | C | 52.8 | 98.6 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Heavens Tree Trail | HTT 22+50 R | 0.43 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.4 | 487 | 5.0 | 19 | C | 10.7 | 19.7 |
| Heim Jones Road | HJR 3+50 D | 0.07 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.5 | 598 | 2.5 | 5 | B | 1.5 | 4.9 |
| Heim Jones Road | HJR 6+25 D | 0.12 | 0.3 | 0.5 | EC-2 | 3.6 | 13.1 | 224 | 1.0 | 5 | B | 0.8 | 2.1 |
| Heim Jones Road | HJR 14+00 D | 0.27 | 0.3 | 0.5 | EC-2 | 4.0 | 16.0 | 858 | 1.0 | 6 | B | 0.8 | 2.1 |
| Heim Jones Road | HJR 20+00 D | 0.38 | 0.5 | 0.8 | EC-3-A | 3.7 | 9.3 | 529 | 4.4 | 6 | B | 2.3 | 7.8 |
| High Top Road | HTR 10+00 D | 0.19 | 0.5 | 0.9 | EC-3-A | 5.8 | 26.7 | 937 | 12.1 | 1 | B | 4.5 | 16.1 |
| High Top Road | HTR 12+00 R | 0.23 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.9 | 479 | 1.5 | 1 | B | 1.1 | 3.5 |
| High Top Road | HTR 15+50 L | 0.29 | 0.9 | 1.4 | EC-3-A | 4.6 | 7.1 | 358 | 41.0 | 2 | B | 9.0 | 33.9 |
| High Top Road | HTR 15+50 R | 0.29 | 0.8 | 1.3 | EC-3-A | 5.4 | 14.0 | 353 | 41.0 | 2 | B | 9.0 | 33.9 |
| High Top Road | HTR 19+00 L | 0.36 | 0.5 | 0.9 | EC-3-A | 3.4 | 7.6 | 371 | 6.1 | 2 | B | 2.9 | 10.0 |
| High Top Road | HTR 23+00 L | 0.44 | 0.6 | 0.9 | EC-2 | 2.8 | 2.4 | 322 | 4.1 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 27+75 D | 0.53 | 0.4 | 0.5 | EC-3-A | 4.6 | 23.8 | 90 | 2.7 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 27+75 R | 0.53 | 0.5 | 0.8 | Grass | 2.7 | 1.7 | 103 | 2.7 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 33+75 D | 0.64 | 0.5 | 0.8 | EC-3-A | 4.4 | 15.9 | 162 | 6.4 | 2 | B | 2.9 | 10.0 |
| High Top Road | HTR 40+00 L | 0.76 | 0.4 | 0.6 | Grass | 2.3 | 1.9 | 274 | 0.6 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 40+00 R | 0.76 | 0.4 | 0.7 | EC-3-A | 3.6 | 11.4 | 597 | 3.8 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 49+00 L | 0.93 | 0.4 | 0.7 | Grass | 1.7 | 0.7 | 121 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 49+00 R | 0.93 | 0.5 | 0.6 | EC-2 | 3.3 | 6.2 | 610 | 1.7 | 2 | B | 1.1 | 3.5 |
| High Top Road | HTR 51+75 D | 0.98 | 0.3 | 0.5 | EC-2 | 3.6 | 13.6 | 206 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 51+75 L | 0.98 | 0.4 | 0.7 | Grass | 1.7 | 0.5 | 84 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 52+00 L | 0.98 | 0.4 | 0.7 | Grass | 1.7 | 0.6 | 106 | 0.3 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 68+00 R | 1.29 | 0.5 | 0.6 | EC-2 | 3.3 | 6.2 | 595 | 1.6 | 3 | B | 1.1 | 3.5 |
| High Top Road | HTR 68+00 R | 1.29 | 0.4 | 0.5 | EC-3-A | 4.3 | 21.1 | 165 | 1.6 | 3 | B | 1.1 | 3.5 |
| High Top Road | HTR 69+50 D | 1.32 | 0.3 | 0.5 | EC-2 | 4.0 | 15.0 | 214 | 0.6 | 3 | B | 0.8 | 2.1 |
| High Top Road | HTR 81+00 D | 1.53 | 0.5 | 0.8 | EC-3-A | 5.5 | 25.1 | 312 | 10.2 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 81+00 R | 1.53 | 0.6 | 1.0 | EC-3-A | 4.0 | 10.8 | 970 | 10.2 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 85+00 D | 1.61 | 0.6 | 0.9 | EC-3-A | 5.7 | 21.9 | 223 | 16.3 | 2 | B | 5.5 | 20.0 |
| High Top Road | HTR 85+00 L | 1.61 | 0.4 | 0.8 | EC-2 | 3.6 | 8.1 | 289 | 3.9 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 85+00 L | 1.61 | 0.8 | 1.2 | EC-2 | 2.7 | 2.0 | 60 | 12.3 | 2 | B | 4.5 | 16.1 |
| High Top Road | HTR 85+00 R | 1.61 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.8 | 357 | 4.0 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 89+50 D | 1.70 | 0.6 | 1.0 | EC-3-A | 5.7 | 19.5 | 242 | 18.5 | 2 | B | 6.0 | 21.9 |
| High Top Road | HTR 89+50 L | 1.70 | 0.5 | 0.7 | EC-3-A | 4.0 | 13.7 | 756 | 4.9 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 97+50 D | 1.85 | 0.6 | 1.1 | EC-2 | 3.3 | 4.9 | 255 | 10.6 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 97+50 L | 1.85 | 0.4 | 0.7 | EC-3-A | 4.0 | 15.9 | 173 | 3.3 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 97+50 L | 1.85 | 0.6 | 0.9 | EC-3-A | 4.3 | 13.3 | 142 | 7.3 | 2 | B | 3.2 | 11.1 |
| High Top Road | HTR 99+50 L | 1.88 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.8 | 369 | 3.1 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 103+00 D | 1.95 | 0.6 | 0.9 | EC-3-A | 4.3 | 13.2 | 142 | 8.5 | 2 | B | 3.5 | 12.2 |
| High Top Road | HTR 103+00 L | 1.95 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.5 | 415 | 7.5 | 2 | B | 3.2 | 11.1 |
| High Top Road | HTR 103+00 L | 1.95 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.2 | 109 | 8.1 | 2 | B | 3.5 | 12.2 |
| High Top Road | HTR 109+50 D | 2.07 | SD | SD | SD | SD | 29.1 | 394 | 4.9 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 109+50 L | 2.07 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.8 | 234 | 2.2 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 109+50 U | 2.07 | 0.4 | 0.6 | EC-2 | 4.0 | 10.8 | 367 | 2.2 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 115+00 D | 2.18 | 0.4 | 0.7 | EC-3-A | 5.1 | 24.2 | 356 | 6.0 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 115+00 L | 2.18 | 0.6 | 0.9 | Grass | 2.1 | 0.4 | 326 | 3.9 | 1 | B | 1.9 | 6.3 |
| High Top Road | HTR 115+00 R | 2.18 | 0.5 | 0.6 | EC-2 | 3.3 | 5.7 | 284 | 2.0 | 1 | B | 1.1 | 3.5 |
| High Top Road | HTR 118+50 D | 2.24 | 0.4 | 0.7 | EC-3-A | 5.1 | 25.8 | 391 | 6.7 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 118+50 L | 2.24 | 0.6 | 1.0 | Grass | 3.0 | 1.5 | 257 | 6.7 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 121+50 D | 2.30 | 0.5 | 0.7 | EC-3-A | 4.8 | 19.1 | 299 | 6.8 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 121+50 L | 2.30 | 0.5 | 0.8 | EC-3-A | 3.7 | 9.1 | 342 | 6.8 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 132+00 D | 2.50 | 0.4 | 0.6 | EC-3-A | 4.3 | 20.6 | 383 | 2.3 | 1 | B | 1.5 | 4.9 |
| High Top Road | HTR 132+00 R | 2.50 | 0.5 | 0.7 | EC-2 | 2.8 | 3.8 | 454 | 2.3 | 1 | B | 1.5 | 4.9 |

Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name

| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Hobbs Knob Road | HKR 2+00 L | 0.04 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 101 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 2+00 R | 0.04 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.4 | 452 | 3.5 | 13 | D | 8.7 | 15.9 |
| Hobbs Knob Road | HKR 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 116 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 130 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 14+00 L | 0.27 | 0.5 | 0.7 | EC-2 | 3.6 | 5.9 | 191 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 14+00 R | 0.27 | 0.6 | 0.7 | EC-2 | 3.1 | 3.7 | 97 | 0.5 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 16+50 D | 0.31 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.4 | 181 | 3.1 | 14 | D | 8.7 | 15.9 |
| Hobbs Knob Road | HKR 16+50 L | 0.31 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.1 | 141 | 2.0 | 14 | D | 4.5 | 8.3 |
| Hobbs Knob Road | HKR 16+50 R | 0.31 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.8 | 300 | 5.0 | 14 | D | 10.7 | 19.7 |
| Hobbs Knob Road | HKR 25+00 L | 0.47 | 0.5 | 0.7 | EC-2 | 3.6 | 5.3 | 315 | 0.8 | 14 | D | 2.5 | 4.5 |
| Honey Farm Lane | HFL -6+50 D | -0.12 | 0.8 | 0.9 | EC-3-A | 5.2 | 11.7 | 146 | 4.0 | 22 | D | 8.7 | 15.9 |
| Honey Farm Lane | HFL -6+50 D1 | -0.12 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.0 | 298 | 3.0 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL -5+50 D | -0.10 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 392 | 0.8 | 22 | D | 2.5 | 4.5 |
| Honey Farm Lane | HLF 2+75 L | 0.05 | 1.2 | 1.5 | EC-3-A | 4.0 | 4.7 | 40 | 7.5 | 22 | D | 15.6 | 28.8 |
| Honey Farm Lane | HLF 2+75 R | 0.05 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.5 | 486 | 6.0 | 22 | D | 12.4 | 22.8 |
| Honey Farm Lane | HLF 4+00 D | 0.08 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.2 | 326 | 2.0 | 22 | D | 4.5 | 8.3 |
| Honey Farm Lane | HFL 14+50 D | 0.27 | 0.6 | 0.8 | EC-3-A | 6.3 | 26.5 | 118 | 2.3 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL 14+50 R | 0.27 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.7 | 509 | 2.2 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL 15+00 D | 0.28 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.1 | 148 | 0.2 | 22 | D | 2.5 | 4.5 |
| Honey Farm Road | HFR 0+00 U | 0.00 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.7 | 375 | 2.1 | 22 | D | 6.6 | 12.1 |
| Howellsville Road | HR 1+50 D | 0.03 | 0.6 | 1.0 | EC-2 | 3.9 | 5.4 | 203 | 8.0 | 9 | B | 3.2 | 11.1 |
| Howellsville Road | HR 4+00 D | 0.08 | 0.5 | 0.7 | EC-2 | 2.8 | 3.9 | 535 | 2.5 | 9 | B | 1.5 | 4.9 |
| Howellsville Road | HR 4+00 L | 0.08 | 0.6 | 1.0 | EC-2 | 3.9 | 5.3 | 571 | 7.3 | 9 | B | 3.2 | 11.1 |
| Howellsville Road | HR 11+00 L | 0.21 | 0.4 | 0.7 | EC-2 | 3.6 | 8.2 | 372 | 2.4 | 12 | B | 1.5 | 4.9 |
| Howellsville Road | HR 15+00 L | 0.28 | 0.4 | 0.6 | EC-2 | 4.0 | 9.0 | 349 | 1.5 | 12 | B | 1.1 | 3.5 |
| Howellsville Road | HR 17+00 D | 0.32 | 0.5 | 0.8 | EC-2 | 2.8 | 4.3 | 294 | 4.0 | 12 | B | 1.9 | 6.3 |
| Howellsville Road | HR 17+50 D | 0.33 | 0.6 | 0.9 | EC-3-A | 4.0 | 9.2 | 411 | 8.8 | 12 | B | 3.5 | 12.2 |
| Howellsville Road | HR 46+50 D | 0.88 | 0.6 | 1.0 | EC-3-A | 3.7 | 7.6 | 912 | 9.9 | 11 | B | 3.7 | 13.3 |
| Howellsville Road | HR 87+00 L | 1.65 | 0.7 | 1.3 | EC-2 | 3.2 | 2.5 | 515 | 13.2 | 15 | B | 4.7 | 17.1 |
| Howellsville Road | HR 87+00 R | 1.65 | 0.5 | 0.6 | EC-2 | 2.8 | 4.0 | 106 | 1.5 | 15 | B | 1.1 | 3.5 |
| Howellsville Road | HR 90+50 D | 1.71 | 0.6 | 1.1 | EC-2 | 3.3 | 3.9 | 300 | 9.0 | 19 | B | 3.5 | 12.2 |
| Howellsville Road | HR 90+50 D | 1.71 | 1.0 | 1.5 | EC-3-A | 3.5 | 3.9 | 400 | 58.6 | 19 | B | 9.0 | 33.9 |
| Howellsville Road | HR 90+50 L | 1.71 | 0.6 | 0.8 | EC-2 | 3.1 | 3.1 | 99 | 5.0 | 19 | B | 2.3 | 7.8 |
| Howellsville Road | HR 90+50 R | 1.71 | 0.5 | 0.9 | Grass | 2.7 | 1.1 | 182 | 4.0 | 19 | B | 1.9 | 6.3 |
| Huck Finn Drive | HFD 8+25 D | 0.16 | 0.9 | 1.2 | EC-3-A | 3.5 | 3.8 | 523 | 3.4 | 23 | D | 8.7 | 15.9 |
| Huck Finn Drive | HFD 13+00 D | 0.25 | 0.8 | 1.0 | EC-3-A | 6.1 | 17.0 | 222 | 5.0 | 18 | D | 10.7 | 19.7 |
| Huck Finn Drive | HFD 13+00 L | 0.25 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.9 | 440 | 5.0 | 18 | B | 2.3 | 7.8 |
| Huck Finn Drive | HFD 18+00 D | 0.34 | 0.4 | 0.5 | EC-3-A | 4.6 | 26.2 | 183 | 2.0 | 18 | B | 1.1 | 3.5 |
| Huck Finn Drive | HFD 18+00 L | 0.34 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.0 | 421 | 2.0 | 18 | B | 1.1 | 3.5 |
| Jennings Farm Court | JFC 0+50 L | 0.01 | 1.0 | 1.3 | EC-3-A | 3.6 | 5.0 | 353 | 5.0 | 23 | D | 10.7 | 19.7 |
| Jennings Farm Court | JFC 0+50 R | 0.01 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.5 | 373 | 1.1 | 23 | D | 4.5 | 8.3 |
| Jennings Farm Court | JFC 9+00 D | 0.17 | 0.9 | 1.1 | EC-3-A | 5.1 | 9.9 | 530 | 4.2 | 23 | D | 10.7 | 19.7 |
| Joans Quadrangle Road | JQR 5+75 D | 0.11 | SD | SD | SD | SD | 30.6 | 214 | 8.1 | 18 | B | 3.5 | 12.2 |
| Joans Quadrangle Road | JQR 5+75 L | 0.11 | 0.4 | 0.6 | EC-3-A | 4.0 | 15.5 | 479 | 2.5 | 18 | B | 1.5 | 4.9 |
| Joans Quadrangle Road | JQR 5+75 R | 0.11 | 0.5 | 0.8 | EC-3-A | 4.0 | 12.9 | 391 | 6.0 | 18 | B | 2.6 | 8.9 |
| Joans Quadrangle Road | JQR 10+00 R | 0.19 | 0.4 | 0.7 | EC-3-A | 4.0 | 17.6 | 696 | 3.8 | 18 | B | 1.9 | 6.3 |
| Joans Quadrangle Road | JQR 24+00 D | 0.45 | 0.5 | 0.8 | EC-2 | 3.3 | 6.3 | 785 | 4.0 | 18 | B | 1.9 | 6.3 |
| Joans Quadrangle Road | JQR 35+00 D | 0.66 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.2 | 342 | 1.2 | 18 | B | 1.1 | 3.5 |
| Joans Quadrangle Road | JQR 35+00 R | 0.66 | 0.4 | 0.6 | EC-2 | 3.6 | 8.0 | 500 | 1.2 | 18 | B | 1.1 | 3.5 |
| Judy Lane | JL 7+50 D | 0.14 | 0.4 | 0.5 | EC-3-A | 4.3 | 20.4 | 366 | 1.5 | 31 | B | 1.1 | 3.5 |
| Judy Lane | JL 7+50 L | 0.14 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.1 | 189 | 1.5 | 31 | B | 1.1 | 3.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Judy Lane | JL 10+00 D | 0.19 | 0.3 | 0.5 | EC-3-A | 3.6 | 22.6 | 563 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 10+00 L | 0.19 | 0.3 | 0.4 | EC-3-A | 3.9 | 24.7 | 155 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 11+50 D | 0.22 | 0.4 | 0.7 | EC-3-A | 5.1 | 26.8 | 370 | 5.5 | 31 | B | 2.6 | 8.9 |
| Judy Lane | JL 11+50 D1 | 0.22 | 0.4 | 0.8 | EC-2 | 3.6 | 8.4 | 713 | 4.0 | 31 | B | 1.9 | 6.3 |
| Judy Lane | JL 12+00 DA S | 0.23 | 0.9 | 1.4 | EC-3-A | 4.6 | 9.0 | 1000 | 50.0 | 31 | B | 9.0 | 33.9 |
| Judy Lane | JL 21+00 D | 0.40 | 0.3 | 0.5 | EC-2 | 3.6 | 11.8 | 501 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 21+10 DA N | 0.40 | 0.4 | 0.7 | EC-2 | 3.6 | 7.1 | 348 | 3.0 | 31 | B | 1.5 | 4.9 |
| Kits Court | KC 4+50 D | 0.09 | 0.6 | 0.7 | EC-3-A | 5.0 | 16.5 | 383 | 1.4 | 29 | D | 4.5 | 8.3 |
| Kits Court | KC 4+50 L | 0.09 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.7 | 237 | 1.4 | 29 | D | 4.5 | 8.3 |
| Kits Court | KC 9+00 D | 0.17 | SD | SD | SD | SD | 30.3 | 615 | 2.0 | 23 | D | 4.5 | 8.3 |
| Kits Court | KC 9+00 R | 0.17 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 85 | 0.5 | 23 | D | 2.5 | 4.5 |
| Lake Drive | LD 0+00 D | 0.00 | 0.4 | 0.6 | Grass | 2.3 | 1.3 | 182 | 0.6 | 19 | B | 0.8 | 2.1 |
| Lake Drive | LDS 5+50 D | 0.10 | 1.3 | SD | EC-3-A | 5.2 | 6.1 | 201 | 14.0 | 20 | D | 24.6 | 45.5 |
| Lake Drive | LDS 5+50 D1 | 0.10 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.9 | 496 | 3.8 | 20 | D | 8.7 | 15.9 |
| Lake Drive | LDS 5+50 D2 | 0.10 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.9 | 180 | 5.3 | 20 | D | 12.4 | 22.8 |
| Lake Drive | LDS 5+50 L | 0.10 | 0.8 | 1.1 | EC-2 | 3.4 | 2.8 | 242 | 3.0 | 20 | D | 6.6 | 12.1 |
| Lake Drive | LDS 5+50 R | 0.10 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 158 | 1.0 | 20 | D | 2.5 | 4.5 |
| Lake Drive | LD 6+50 R | 0.12 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.0 | 491 | 2.4 | 20 | D | 6.6 | 12.1 |
| Lake Drive | LD 6+50 U | 0.12 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.1 | 287 | 2.0 | 20 | D | 4.5 | 8.3 |
| Lake Drive | LD 11+75 R | 0.22 | 0.9 | 1.1 | EC-3-A | 5.7 | 13.3 | 230 | 6.0 | 20 | D | 12.4 | 22.8 |
| Lake Drive | LD 11+75 U | 0.22 | 0.5 | 0.6 | EC-3-A | 4.4 | 18.3 | 150 | 0.5 | 20 | D | 2.5 | 4.5 |
| Lake Drive | LD 15+50 D1 | 0.29 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.9 | 578 | 3.0 | 20 | D | 6.6 | 12.1 |
| Lake Drive | LD 20+50 R | 0.39 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.6 | 112 | 1.0 | 16 | D | 2.5 | 4.5 |
| Lookout Point Way | LPW 4+00 R | 0.08 | 0.4 | 0.6 | EC-2 | 4.0 | 10.0 | 289 | 1.2 | 4 | B | 1.1 | 3.5 |
| Lookout Point Way | LPW 6+00 D | 0.11 | 0.4 | 0.5 | EC-3-A | 4.6 | 26.9 | 270 | 1.2 | 4 | B | 1.1 | 3.5 |
| Lookout Point Way | LPW 6+00 L | 0.11 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.3 | 743 | 6.4 | 4 | B | 2.9 | 10.0 |
| Lookout Point Way | LPW 6+00 R | 0.11 | 0.5 | 0.7 | EC-2 | 2.5 | 2.0 | 168 | 1.2 | 4 | B | 1.1 | 3.5 |
| Marino Lane | ML 0+35 L | 0.01 | 0.7 | 0.9 | EC-3-A | 6.6 | 21.8 | 611 | 4.8 | 20 | D | 10.7 | 19.7 |
| Marino Lane | ML 0+35 R | 0.01 | 0.7 | 0.9 | EC-2 | 3.5 | 4.2 | 91 | 1.8 | 20 | D | 4.5 | 8.3 |
| Marino Lane | ML 2+50 D | 0.05 | 0.9 | 1.2 | EC-3-B | 7.6 | 19.8 | 203 | 9.5 | 20 | D | 18.9 | 34.9 |
| Marino Lane | ML 2+50 R | 0.05 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.4 | 173 | 2.6 | 20 | D | 6.6 | 12.1 |
| Marino Lane | ML 5+50 R | 0.10 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.5 | 178 | 2.1 | 20 | D | 6.6 | 12.1 |
| Marino Lane | ML 7+00 D1 | 0.13 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 140 | 0.7 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 7+00 D2 | 0.13 | SD | SD | SD | SD | 32.4 | 338 | 0.5 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 10+50 L | 0.20 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.9 | 100 | 0.2 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 16+70 D | 0.32 | 1.1 | SD | EC-3-A | 6.2 | 9.2 | 757 | 12.8 | 20 | D | 23.2 | 42.9 |
| Markham Farm Road | MFR 4+00 D | 0.08 | 0.8 | 0.9 | EC-3-A | 5.2 | 13.6 | 786 | 4.0 | 8 | D | 8.7 | 15.9 |
| Markham Farm Road | MFR 8+75 D | 0.17 | 0.9 | 1.1 | EC-3-A | 5.7 | 14.0 | 93 | 5.4 | 8 | D | 12.4 | 22.8 |
| Markham Farm Road | MFR 8+75 R | 0.17 | 1.0 | 1.3 | EC-2 | 3.9 | 2.1 | 457 | 5.0 | 8 | D | 10.7 | 19.7 |
| Markham Place | MP 2+50 D | 0.05 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.9 | 396 | 1.0 | 8 | D | 4.5 | 8.3 |
| Markham Place | MP 10+00 D | 0.19 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.3 | 671 | 1.8 | 8 | D | 4.5 | 8.3 |
| Martin Farms Road | MFRR 1+75 L | 0.03 | 0.8 | 1.0 | Grass | 2.6 | 0.4 | 128 | 1.5 | 16 | D | 4.5 | 8.3 |
| Martin Farms Road | MFRR 1+75 R | 0.03 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 39 | 1.0 | 16 | D | 2.5 | 4.5 |
| McDonalds Farm Road | MCFR 4+75 D | 0.09 | 0.4 | 0.5 | EC-3-A | 4.0 | 18.3 | 116 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 4+75 L | 0.09 | 0.4 | 0.5 | EC-3-A | 4.0 | 15.5 | 310 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 6+75 D | 0.13 | 0.6 | 1.0 | EC-3-A | 4.5 | 13.5 | 383 | 13.8 | 4 | B | 4.7 | 17.1 |
| McDonalds Farm Road | MCFR 6+75 L | 0.13 | 0.4 | 0.6 | EC-2 | 3.6 | 8.3 | 158 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 6+75 U | 0.13 | 0.6 | 0.9 | EC-3-A | 5.0 | 15.0 | 457 | 12.5 | 4 | B | 4.5 | 16.1 |
| McDonalds Farm Road | MCFR 11+50 L | 0.22 | 0.5 | 0.8 | EC-2 | 3.6 | 6.0 | 383 | 4.2 | 4 | B | 2.3 | 7.8 |
| McDonalds Farm Road | MCFR 15+00 U | 0.28 | 0.6 | 0.8 | EC-2 | 3.1 | 4.8 | 284 | 5.0 | 5 | B | 2.3 | 7.8 |
| McDonalds Farm Road | MCFR 15+75 L | 0.30 | 0.7 | 1.0 | EC-3-A | 3.9 | 7.0 | 44 | 12.0 | 5 | B | 4.2 | 15.2 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| McDonalds Farm Road | MCFR 20+50 L | 0.39 | 0.5 | 0.7 | EC-2 | 3.3 | 5.3 | 117 | 2.9 | 5 | B | 1.5 | 4.9 |
| McDonalds Farm Road | MCFR 20+50 R | 0.39 | 0.5 | 0.7 | EC-3-A | 4.0 | 11.2 | 434 | 4.5 | 5 | B | 2.3 | 7.8 |
| McDonalds Farm Road | MDFR 20+50 L | 0.39 | 0.6 | 0.9 | EC-3-A | 4.5 | 12.0 | 195 | 11.2 | 5 | B | 4.2 | 15.2 |
| McDonalds Farm Road | MCFR 30+50 D | 0.58 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.5 | 559 | 5.7 | 5 | B | 2.6 | 8.9 |
| McIlee Court | MC 0+50 L | 0.01 | 1.2 | 1.5 | EC-3-A | 4.0 | 3.1 | 532 | 8.0 | 21 | D | 15.6 | 28.8 |
| McIlee Court | MC 0+50 R | 0.01 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.1 | 292 | 1.0 | 21 | D | 2.5 | 4.5 |
| McIlee Court | MC 6+75 L | 0.13 | 1.5 | SD | EC-3-A | 4.6 | 4.6 | 273 | 17.0 | 21 | D | 28.9 | 53.5 |
| McIlee Court | MC 10+50 L | 0.20 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.4 | 313 | 1.5 | 21 | D | 4.5 | 8.3 |
| McIlee Court | MC 16+50 D | 0.31 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.7 | 188 | 3.5 | 21 | D | 8.7 | 15.9 |
| McIlee Court | MC 16+50 L | 0.31 | 0.7 | 0.8 | EC-3-A | 5.5 | 15.3 | 116 | 3.0 | 21 | D | 6.6 | 12.1 |
| McIlee Court | MC 16+50 R | 0.31 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.3 | 89 | 0.5 | 21 | D | 2.5 | 4.5 |
| Mosbys Meadow Lane | MML 8+00 D | 0.15 | 0.8 | 1.4 | EC-2 | 3.8 | 4.0 | 334 | 24.0 | 32 | B | 6.9 | 25.7 |
| Mountain Lake Drive | MLD 8+50 D | 0.16 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.2 | 163 | 2.5 | 22 | D | 6.6 | 12.1 |
| Mountain Lake Drive | MLD 8+50 L | 0.16 | 0.7 | 0.9 | EC-2 | 3.5 | 4.8 | 299 | 2.0 | 22 | D | 4.5 | 8.3 |
| Mountain Lake Drive | MLD 8+50 R | 0.16 | 0.5 | 0.7 | EC-2 | 3.6 | 6.2 | 126 | 0.2 | 22 | D | 2.5 | 4.5 |
| Mountain Lake Drive | MLD 16+00 D | 0.30 | 1.0 | 1.2 | EC-3-A | 5.1 | 8.8 | 469 | 7.0 | 23 | D | 14.0 | 25.8 |
| Mountain Lake Drive | MLD 16+00 L | 0.30 | 1.2 | 1.6 | EC-2 | 3.6 | 1.2 | 84 | 6.2 | 23 | D | 14.0 | 25.8 |
| Mountain Lake Drive | MLD 17+00 L | 0.32 | 0.8 | 1.0 | EC-2 | 2.7 | 1.3 | 184 | 2.0 | 23 | D | 4.5 | 8.3 |
| Mountain Lake Drive | MLD 17+00 U | 0.32 | 0.9 | 1.1 | EC-3-A | 4.7 | 7.7 | 346 | 4.2 | 23 | D | 10.7 | 19.7 |
| Mountain Lake Drive | MLD 21+00 D | 0.40 | 0.9 | 1.1 | EC-3-A | 5.7 | 14.9 | 254 | 5.1 | 23 | D | 12.4 | 22.8 |
| Mountain Lake Drive | MLD 21+00 L | 0.40 | 0.8 | 1.1 | EC-2 | 3.8 | 3.2 | 360 | 3.0 | 23 | D | 6.6 | 12.1 |
| Mountain Lake Drive | MLD 21+00 R | 0.40 | 0.8 | 1.0 | EC-2 | 2.7 | 1.3 | 179 | 2.0 | 23 | D | 4.5 | 8.3 |
| Mountain Lake Drive | MLD 24+50 D | 0.46 | 1.0 | 1.2 | EC-3-B | 7.0 | 16.0 | 253 | 9.4 | 23 | D | 18.9 | 34.9 |
| Mountain Laurel Lane | MLL 0+50 L | 0.01 | 0.4 | 0.6 | EC-2 | 2.4 | 4.4 | 593 | 1.0 | 32 | B | 0.8 | 2.1 |
| Mountain Laurel Lane | MLL 0+50 R | 0.01 | 0.8 | 1.2 | EC-3-A | 3.8 | 5.5 | 248 | 20.0 | 32 | B | 6.2 | 22.9 |
| Mountain Laurel Lane | MLL 11+25 D | 0.21 | 0.7 | 1.1 | EC-2 | 2.6 | 1.7 | 49 | 7.2 | 34 | B | 3.2 | 11.1 |
| Mountain Laurel Lane | MLL 11+25 L | 0.21 | 0.7 | 1.2 | Grass | 2.5 | 0.2 | 309 | 7.1 | 34 | B | 3.2 | 11.1 |
| Mountain Laurel Lane | MLL 13+25 D | 0.25 | 0.9 | 1.5 | Grass | 2.7 | 0.1 | 77 | 16.0 | 34 | B | 5.2 | 19.0 |
| Mountain Laurel Lane | MLL 13+25 L | 0.25 | 0.4 | 0.6 | Grass | 2.3 | 1.7 | 165 | 1.0 | 34 | B | 0.8 | 2.1 |
| Mountain Laurel Lane | MLL 13+25 R | 0.25 | 0.7 | 1.3 | EC-2 | 3.7 | 3.1 | 782 | 15.2 | 34 | B | 5.2 | 19.0 |
| Mountain Laurel Lane | MLL 14+00 D | 0.27 | 0.6 | 0.9 | EC-2 | 2.8 | 2.0 | 257 | 6.2 | 34 | B | 2.9 | 10.0 |
| Mountain Laurel Lane | MLL 18+56 D | 0.35 | 0.5 | 0.7 | Grass | 2.7 | 1.3 | 316 | 1.9 | 34 | B | 1.1 | 3.5 |
| Nancy Court | NC 0+00 L | 0.00 | 0.6 | 0.7 | EC-3-A | 5.0 | 16.9 | 69 | 1.4 | 33 | C | 4.5 | 8.3 |
| Nancy Court | NC 0+00 R | 0.00 | 0.7 | 0.9 | EC-2 | 3.5 | 3.0 | 294 | 2.0 | 33 | C | 4.5 | 8.3 |
| Nancy Court | NC 3+50 D | 0.07 | 0.4 | 0.5 | EC-3-A | 5.1 | 24.9 | 167 | 0.9 | 33 | C | 2.5 | 4.5 |
| Nancy Court | NC 6+00 D | 0.11 | 0.7 | 0.8 | EC-3-A | 5.5 | 15.0 | 168 | 3.0 | 33 | C | 6.6 | 12.1 |
| Nancy Court | NC 6+00 L | 0.11 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.6 | 163 | 2.9 | 33 | C | 6.6 | 12.1 |
| Nancy Court | NC 6+95 D | 0.13 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.5 | 483 | 3.5 | 33 | C | 8.7 | 15.9 |
| Old Linden Road | OLR 2+00 D | 0.04 | 0.6 | 1.0 | EC-3-A | 6.6 | 25.6 | 328 | 26.4 | 4 | B | 7.4 | 27.8 |
| Old Linden Road | OLR 2+00 L | 0.04 | 0.6 | 0.9 | EC-2 | 2.8 | 2.6 | 98 | 5.3 | 4 | B | 2.6 | 8.9 |
| Old Linden Road | OLR 2+00 R | 0.04 | 0.8 | 1.4 | EC-2 | 3.4 | 2.8 | 530 | 21.1 | 4 | B | 6.6 | 24.3 |
| Old Linden Road | OLR 7+21 L | 0.14 | 0.7 | 1.1 | EC-2 | 2.6 | 1.6 | 498 | 7.2 | 4 | B | 3.2 | 11.1 |
| Old Linden Road | OLR 9+50 D | 0.18 | 0.7 | 1.3 | EC-2 | 3.2 | 2.6 | 150 | 12.3 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 9+50 L | 0.18 | 0.7 | 1.2 | EC-2 | 3.5 | 3.4 | 153 | 12.1 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 11+50 L | 0.22 | 0.8 | 1.2 | EC-2 | 2.7 | 1.5 | 193 | 12.3 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 12+00 D | 0.23 | 0.8 | 1.2 | EC-3-A | 6.0 | 15.8 | 131 | 41.2 | 4 | B | 9.0 | 33.9 |
| Old Linden Road | OLR 16+00 L | 0.30 | 0.5 | 0.7 | EC-2 | 3.3 | 6.6 | 333 | 2.2 | 4 | B | 1.5 | 4.9 |
| Old Linden Road | OLR 16+00 U | 0.30 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.9 | 374 | 3.8 | 4 | B | 1.9 | 6.3 |
| Old Linden Road | OLR 31+75 D | 0.60 | 0.7 | 1.1 | EC-3-A | 6.1 | 21.2 | 504 | 26.3 | 4 | B | 7.4 | 27.8 |
| Old Linden Road | OLR 31+75 L | 0.60 | 0.8 | 1.3 | EC-3-A | 4.3 | 8.0 | 813 | 25.7 | 4 | B | 7.3 | 27.1 |
| Old Linden Road | OLR 43+50 L | 0.82 | 0.8 | 1.3 | EC-3-A | 4.9 | 9.0 | 1094 | 37.4 | 4 | B | 8.8 | 33.1 |

**Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name**

| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Old Linden Road | OLR 54+00 D | 1.02 | 0.9 | 1.4 | EC-3-A | 4.6 | 7.9 | 1087 | 47.0 | 4 | B | 9.0 | 33.9 |
| Old Oak Lane | OOL 12+00 L | 0.23 | SD | SD | SD | SD | 0.1 | 197 | 27.0 | 21 | D | 40.6 | 75.6 |
| Old Oak Lane | OOL 19+50 L | 0.37 | 1.2 | 1.5 | EC-3-A | 3.6 | 2.2 | 575 | 7.8 | 21 | D | 15.6 | 28.8 |
| Old Oak Lane | OOL 24+50 L | 0.46 | 1.0 | 1.3 | EC-3-A | 3.6 | 4.5 | 444 | 4.4 | 28 | D | 10.7 | 19.7 |
| Old Oak Lane | OOL 26+00 L | 0.49 | 0.9 | 1.1 | EC-3-A | 4.7 | 8.7 | 96 | 5.0 | 28 | D | 10.7 | 19.7 |
| Old Oak Lane | OOL 34+00 R | 0.64 | 1.6 | SD | EC-3-A | 4.3 | 2.9 | 325 | 19.8 | 27 | C | 33.1 | 61.4 |
| Old Oak Lane | OOL 38+50 R | 0.73 | 1.1 | 1.4 | EC-3-A | 3.4 | 2.5 | 401 | 5.1 | 27 | C | 12.4 | 22.8 |
| Old Oak Lane | OOL 41+50 D | 0.79 | 1.6 | SD | EC-3-A | 5.0 | 5.0 | 336 | 26.0 | 27 | C | 39.5 | 73.6 |
| Old Oak Lane | OOL 53+00 L | 1.00 | 0.9 | 1.2 | EC-2 | 3.7 | 2.8 | 745 | 4.0 | 27 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 61+25 L | 1.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 219 | 0.5 | 32 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 61+25 R | 1.16 | 0.6 | 0.7 | EC-2 | 3.1 | 3.5 | 144 | 0.1 | 32 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 64+50 R | 1.22 | 1.0 | 1.2 | EC-3-A | 5.6 | 9.8 | 373 | 8.0 | 32 | C | 15.6 | 28.8 |
| Old Oak Lane | OOL 72+50 R | 1.37 | 0.5 | 0.8 | Grass | 2.7 | 1.7 | 336 | 2.3 | 32 | B | 1.5 | 4.9 |
| Old Oak Lane | OOL 76+75 U | 1.45 | 0.7 | 0.9 | EC-3-A | 5.8 | 15.7 | 601 | 3.1 | 32 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 78+50 D | 1.49 | 0.7 | 1.3 | Grass | 2.5 | 0.7 | 87 | 8.3 | 32 | B | 3.5 | 12.2 |
| Old Oak Lane | OOL 78+50 L | 1.49 | 0.6 | 0.9 | EC-2 | 2.8 | 2.7 | 138 | 4.3 | 32 | B | 2.3 | 7.8 |
| Old Oak Lane | OOL 78+50 R | 1.49 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.5 | 949 | 4.0 | 32 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 79+75 D | 1.51 | 0.7 | 1.3 | EC-2 | 3.2 | 2.6 | 542 | 15.0 | 32 | B | 5.0 | 18.1 |
| Old Oak Lane | OOL 79+75 L | 1.51 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.3 | 493 | 1.5 | 32 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 79+75 R | 1.51 | 0.8 | 1.0 | Grass | 2.6 | 0.7 | 192 | 2.0 | 32 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 82+00 R | 1.55 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.2 | 138 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 85+25 L | 1.61 | 0.8 | 1.0 | Grass | 2.6 | 0.3 | 215 | 2.0 | 34 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 85+25 R | 1.61 | 1.0 | 1.4 | Grass | 3.0 | 0.4 | 58 | 3.7 | 34 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 87+50 D | 1.66 | 0.6 | 1.1 | EC-2 | 3.3 | 3.1 | 782 | 9.0 | 34 | B | 3.5 | 12.2 |
| Old Oak Lane | OOL 88+50 D | 1.68 | 0.6 | 0.9 | Grass | 3.0 | 1.9 | 362 | 5.0 | 34 | B | 2.3 | 7.8 |
| Old Oak Lane | OOL 88+50 U1 | 1.68 | SD | SD | SD | SD | 28.3 | 366 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 88+50 U2 | 1.68 | 0.7 | 0.8 | Grass | 2.3 | 0.8 | 309 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 89+50 L | 1.70 | 0.8 | 1.0 | EC-2 | 2.7 | 1.1 | 87 | 1.4 | 34 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 89+50 R | 1.70 | 1.0 | 1.4 | Grass | 3.0 | 0.8 | 192 | 3.8 | 34 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 92+00 R | 1.74 | 0.7 | 0.9 | EC-2 | 3.2 | 2.3 | 85 | 2.0 | 34 | C | 4.5 | 8.3 |
| Old Oregon Road | OOR 0+50 R | 0.01 | 0.9 | 1.2 | EC-2 | 3.7 | 2.3 | 196 | 3.4 | 27 | C | 8.7 | 15.9 |
| Old Oregon Road | OOR 0+50 R | 0.01 | 1.0 | SD | EC-3-B | 7.4 | 16.6 | 604 | 12.6 | 27 | C | 23.2 | 42.9 |
| Old Oregon Road | OOR 10+50 D | 0.20 | 0.9 | 1.1 | EC-3-A | 6.7 | 17.0 | 296 | 8.0 | 21 | C | 15.6 | 28.8 |
| Old Oregon Road | OOR 10+50 R | 0.20 | 1.0 | 1.2 | EC-3-A | 5.5 | 10.0 | 519 | 7.0 | 21 | C | 14.0 | 25.8 |
| Old Oregon Road | OOR 17+25 R | 0.33 | 0.7 | 0.9 | EC-3-A | 4.6 | 10.4 | 203 | 2.9 | 21 | C | 6.6 | 12.1 |
| Old Oregon Road | OOR 23+25 L | 0.44 | 1.2 | 1.5 | EC-3-A | 4.0 | 4.1 | 405 | 8.0 | 21 | C | 15.6 | 28.8 |
| Old Oregon Road | OOR 26+60 D | 0.50 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.4 | 175 | 3.0 | 21 | D | 6.6 | 12.1 |
| Old Oregon Road | OOR 26+60 L | 0.50 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.6 | 115 | 2.0 | 21 | D | 4.5 | 8.3 |
| Old Oregon Road | OOR 32+50 D | 0.62 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 293 | 1.0 | 22 | D | 2.5 | 4.5 |
| Otto Place | OP 2+00 D | 0.04 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.7 | 234 | 0.2 | 22 | D | 2.5 | 4.5 |
| Parker Circle | PC 0+50 L | 0.01 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.2 | 359 | 1.8 | 29 | D | 4.5 | 8.3 |
| Parker Circle | PC 1+50 D | 0.03 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 369 | 1.0 | 29 | D | 2.5 | 4.5 |
| Parker Circle | PC 1+50 R | 0.03 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 209 | 1.0 | 29 | D | 2.5 | 4.5 |
| Parker Circle | PC 3+00 D | 0.06 | 0.4 | 0.7 | EC-3-A | 5.1 | 25.2 | 416 | 6.8 | 29 | B | 2.9 | 10.0 |
| Peggys Court | PGC 0+00 D | 0.00 | 0.4 | 0.7 | EC-3-A | 4.0 | 16.3 | 202 | 3.5 | 24 | B | 1.9 | 6.3 |
| Peggys Court | PGC 0+00 L | 0.00 | 0.5 | 0.6 | EC-2 | 2.8 | 3.9 | 280 | 1.5 | 24 | B | 1.1 | 3.5 |
| Peggys Court | PGC 0+00 R | 0.00 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.2 | 348 | 1.7 | 24 | B | 1.1 | 3.5 |
| Peggys Court | PGC 4+90 D | 0.09 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.3 | 296 | 2.0 | 24 | B | 1.1 | 3.5 |
| Pickford Court | PFC 0+50 L | 0.01 | 0.3 | 0.5 | EC-2 | 3.6 | 14.5 | 251 | 0.4 | 30 | B | 0.8 | 2.1 |
| Pickford Court | PFC 3+00 L | 0.06 | 0.5 | 0.7 | EC-2 | 2.8 | 4.8 | 213 | 2.8 | 30 | B | 1.5 | 4.9 |
| Pickford Court | PFC 3+00 R | 0.06 | 0.5 | 0.8 | EC-2 | 2.8 | 3.3 | 598 | 4.0 | 30 | B | 1.9 | 6.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Pine Ridge Drive | PRD 11+00 D | 0.21 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.5 | 274 | 1.0 | 22 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 25+00 D | 0.47 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.8 | 776 | 2.4 | 22 | D | 6.6 | 12.1 |
| Pine Ridge Drive | PRD 39+00 D | 0.74 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.5 | 66 | 1.8 | 28 | D | 4.5 | 8.3 |
| Pine Ridge Drive | PRD 39+00 L | 0.74 | 0.7 | 0.8 | Grass | 2.3 | 0.2 | 269 | 0.8 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 39+00 R | 0.74 | 0.6 | 0.7 | EC-2 | 3.1 | 4.9 | 510 | 1.0 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 46+00 D | 0.87 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.1 | 78 | 1.7 | 28 | D | 4.5 | 8.3 |
| Pine Ridge Drive | PRD 46+00 L | 0.87 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 172 | 0.7 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 46+00 R | 0.87 | 0.6 | 0.7 | EC-2 | 3.1 | 4.5 | 364 | 1.0 | 28 | D | 2.5 | 4.5 |
| Reid Drive | RD 5+00 D | 0.09 | 0.3 | 0.5 | EC-2 | 4.0 | 18.4 | 210 | 1.0 | 30 | B | 0.8 | 2.1 |
| Reid Drive | RD 13+00 D | 0.25 | 0.4 | 0.5 | EC-3-A | 4.3 | 22.4 | 301 | 1.5 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 13+00 L | 0.25 | 0.4 | 0.6 | EC-2 | 3.6 | 8.7 | 254 | 1.5 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 18+50 D | 0.35 | 0.4 | 0.5 | EC-3-A | 4.0 | 16.4 | 344 | 2.0 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 18+50 L | 0.35 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.4 | 231 | 1.4 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 23+00 D | 0.44 | 0.4 | 0.5 | EC-3-A | 4.9 | 27.4 | 194 | 2.2 | 31 | B | 1.5 | 4.9 |
| Reid Drive | RD 23+00 L | 0.44 | 0.3 | 0.5 | EC-2 | 3.6 | 14.5 | 366 | 1.0 | 31 | B | 0.8 | 2.1 |
| Reid Drive | RD 23+00 R | 0.44 | 0.5 | 0.8 | Grass | 2.7 | 1.3 | 398 | 2.3 | 31 | B | 1.5 | 4.9 |
| Reid Drive | RD 28+00 D | 0.53 | 0.6 | 1.0 | EC-3-A | 4.2 | 10.2 | 303 | 13.1 | 31 | B | 4.7 | 17.1 |
| Reid Drive | RD 29+00 D | 0.55 | 0.6 | 1.0 | EC-2 | 3.9 | 6.9 | 371 | 8.5 | 31 | B | 3.5 | 12.2 |
| Reid Drive | RD 34+00 L | 0.64 | 0.5 | 0.7 | EC-2 | 2.5 | 3.0 | 135 | 1.4 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 37+50 L | 0.71 | 0.5 | 0.9 | Grass | 2.7 | 1.7 | 308 | 3.0 | 30 | B | 1.9 | 6.3 |
| Reid Drive | RD 39+50 D | 0.75 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.2 | 375 | 4.5 | 30 | B | 2.3 | 7.8 |
| Reid Drive | RD 39+50 L | 0.75 | 0.5 | 0.7 | Grass | 2.7 | 1.1 | 170 | 2.0 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 39+50 R | 0.75 | 0.5 | 0.6 | EC-2 | 3.3 | 6.6 | 375 | 1.7 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 44+50 L | 0.84 | 0.4 | 0.6 | EC-3-A | 4.0 | 16.7 | 231 | 2.7 | 30 | B | 1.5 | 4.9 |
| Reid Drive | RD 44+50 R | 0.84 | 0.4 | 0.6 | EC-2 | 3.6 | 7.2 | 295 | 2.0 | 30 | B | 1.1 | 3.5 |
| Reynolds Drive | RYD 6+00 L | 0.11 | 0.5 | 0.7 | EC-2 | 2.8 | 3.7 | 533 | 2.1 | 6 | B | 1.5 | 4.9 |
| Reynolds Drive | RYD 7+00 L | 0.13 | 0.5 | 0.7 | Grass | 2.7 | 1.6 | 93 | 2.0 | 6 | B | 1.1 | 3.5 |
| Reynolds Drive | RYD 7+00 R | 0.13 | 0.4 | 0.6 | Grass | 2.6 | 2.3 | 35 | 1.0 | 6 | B | 0.8 | 2.1 |
| Reynolds Drive | RYD 12+00 L | 0.23 | 0.4 | 0.7 | EC-2 | 3.6 | 8.9 | 302 | 2.2 | 6 | B | 1.5 | 4.9 |
| Reynolds Drive | RYD 17+00 L | 0.32 | 0.8 | 1.5 | EC-2 | 4.0 | 4.3 | 474 | 29.6 | 6 | B | 8.0 | 29.9 |
| Reynolds Drive | RYD 25+50 L | 0.48 | 1.0 | 1.5 | EC-3-A | 3.5 | 4.8 | 805 | 49.0 | 6 | B | 9.0 | 33.9 |
| Reynolds Drive | RYD 31+50 L | 0.60 | 0.5 | 0.9 | EC-2 | 3.6 | 5.5 | 346 | 5.2 | 7 | B | 2.6 | 8.9 |
| Reynolds Drive | RYD 35+75 L | 0.68 | 0.6 | 1.0 | EC-2 | 3.9 | 5.5 | 419 | 8.0 | 7 | B | 3.2 | 11.1 |
| Reynolds Drive | RYD 36+00 R | 0.68 | 0.7 | 1.1 | EC-3-A | 4.4 | 10.0 | 591 | 16.0 | 7 | B | 5.2 | 19.0 |
| Reynolds Drive | RYD 46+50 L | 0.88 | 0.6 | 1.0 | EC-2 | 3.3 | 4.4 | 861 | 7.7 | 7 | B | 3.2 | 11.1 |
| Reynolds Drive | RYD 51+50 L | 0.98 | 0.6 | 1.1 | EC-2 | 3.3 | 4.1 | 460 | 8.7 | 7 | B | 3.5 | 12.2 |
| Reynolds Drive | RYD 56+25 L | 1.07 | 0.5 | 0.7 | EC-2 | 2.8 | 5.0 | 384 | 3.0 | 7 | B | 1.5 | 4.9 |
| Reynolds Drive | RYD 65+00 L | 1.23 | 1.0 | 1.2 | EC-3-A | 4.4 | 5.4 | 580 | 5.7 | 8 | D | 12.4 | 22.8 |
| Reynolds Drive | RYD 67+00 L | 1.27 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.2 | 132 | 1.0 | 8 | D | 2.5 | 4.5 |
| Reynolds Drive | RYD 67+00 R | 1.27 | 0.6 | 0.8 | Grass | 3.0 | 1.2 | 99 | 1.0 | 8 | D | 2.5 | 4.5 |
| Reynolds Drive | RYD 72+00 L | 1.36 | 1.1 | 1.4 | EC-3-A | 3.9 | 4.1 | 333 | 6.7 | 8 | D | 14.0 | 25.8 |
| Reynolds Drive | RYD 74+00 L | 1.40 | 0.9 | 1.1 | EC-2 | 3.0 | 1.1 | 142 | 3.0 | 8 | D | 6.6 | 12.1 |
| Reynolds Drive | RYD 74+00 R | 1.40 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.1 | 322 | 3.0 | 8 | D | 6.6 | 12.1 |
| Reynolds Drive | RYD 78+00 D | 1.48 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.0 | 181 | 1.5 | 13 | D | 4.5 | 8.3 |
| Reynolds Drive | RYD 79+00 R | 1.50 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.2 | 416 | 3.2 | 13 | D | 8.7 | 15.9 |
| Ridgewood Lane | RL 6+25 D | 0.12 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.6 | 56 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 6+25 L | 0.12 | 1.0 | 1.4 | Grass | 3.0 | 0.4 | 20 | 3.7 | 34 | C | 8.7 | 15.9 |
| Ridgewood Lane | RL 6+25 R | 0.12 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 309 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 7+50 D | 0.14 | 0.8 | 1.1 | EC-2 | 3.8 | 4.6 | 281 | 2.7 | 34 | C | 6.6 | 12.1 |
| Ridgewood Lane | RL 7+50 U | 0.14 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 163 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 10+00 D | 0.19 | SD | SD | SD | SD | 8.0 | 329 | 27.0 | 34 | C | 40.6 | 75.6 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Ridgewood Lane | RL 10+00 L | 0.19 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.6 | 274 | 1.4 | 34 | C | 4.5 | 8.3 |
| Ridgewood Lane | RL 11+50 D | 0.22 | 1.5 | SD | EC-3-A | 5.8 | 6.6 | 114 | 25.1 | 34 | C | 39.5 | 73.6 |
| Ridgewood Lane | RL 11+50 L | 0.22 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.7 | 179 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 11+50 R | 0.22 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.6 | 64 | 0.5 | 34 | C | 2.5 | 4.5 |
| Riley Court | RC 6+00 D | 0.11 | 0.5 | 0.7 | EC-3-A | 4.4 | 16.7 | 203 | 6.0 | 30 | B | 2.6 | 8.9 |
| Riley Court | RC 6+00 L | 0.11 | 0.7 | 1.0 | Grass | 2.3 | 0.1 | 330 | 5.0 | 30 | B | 2.3 | 7.8 |
| Riley Court | RC 6+00 R | 0.11 | 0.4 | 0.6 | Grass | 2.6 | 2.1 | 99 | 1.0 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 9+50 D | 0.18 | 0.4 | 0.5 | EC-3-A | 4.9 | 27.0 | 178 | 2.7 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 9+50 L | 0.18 | 0.5 | 0.6 | EC-2 | 2.8 | 3.3 | 204 | 1.3 | 30 | B | 1.1 | 3.5 |
| Riley Court | RC 9+50 R | 0.18 | 0.5 | 0.7 | EC-2 | 2.5 | 2.5 | 204 | 1.4 | 30 | B | 1.1 | 3.5 |
| Riley Court | RC 12+50 D | 0.24 | 0.7 | 1.1 | EC-3-A | 3.5 | 6.8 | 81 | 14.0 | 30 | B | 4.7 | 17.1 |
| Riley Court | RC 14+00 D | 0.27 | 0.5 | 0.9 | EC-3-A | 5.8 | 24.6 | 197 | 14.4 | 30 | B | 5.0 | 18.1 |
| Riley Court | RC 14+00 L | 0.27 | 0.5 | 0.7 | EC-2 | 2.5 | 2.9 | 147 | 2.4 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 15+50 D | 0.29 | 0.4 | 0.6 | EC-3-A | 4.3 | 23.0 | 195 | 3.5 | 30 | B | 1.9 | 6.3 |
| Riley Court | RC 15+50 L | 0.29 | 0.3 | 0.5 | EC-3-A | 3.6 | 21.3 | 112 | 1.0 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 15+50 R | 0.29 | 0.4 | 0.7 | EC-2 | 3.6 | 8.8 | 294 | 2.5 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 19+50 D | 0.37 | 0.4 | 0.6 | EC-3-A | 4.0 | 16.2 | 228 | 2.5 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 19+50 L | 0.37 | 0.4 | 0.5 | EC-2 | 2.7 | 5.3 | 57 | 0.8 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 19+50 R | 0.37 | 0.4 | 0.7 | Grass | 1.7 | 0.6 | 41 | 0.7 | 30 | B | 0.8 | 2.1 |
| River Overlook Road | ROR 5+50 D | 0.10 | 0.6 | 0.7 | EC-3-A | 5.5 | 21.7 | 366 | 1.5 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 5+50 L | 0.10 | 0.5 | 0.7 | EC-2 | 3.6 | 5.8 | 107 | 0.4 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 5+50 R | 0.10 | 0.7 | 0.9 | EC-2 | 3.2 | 2.3 | 216 | 1.2 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 8+50 L | 0.16 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 28 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 9+50 D | 0.18 | SD | SD | SD | SD | 31.6 | 300 | 1.5 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 9+50 R | 0.18 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.7 | 66 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 9+50 R | 0.18 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.2 | 131 | 0.6 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 14+00 D | 0.27 | 0.6 | 0.7 | EC-3-A | 6.7 | 27.8 | 745 | 2.5 | 20 | C | 6.6 | 12.1 |
| River Overlook Road | ROR 14+00 L | 0.27 | 0.7 | 0.9 | EC-2 | 3.5 | 4.3 | 237 | 1.4 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 14+00 R | 0.27 | 0.7 | 0.8 | Grass | 2.3 | 0.8 | 155 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 18+00 L | 0.34 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 245 | 0.7 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 21+00 D | 0.40 | SD | SD | SD | SD | 28.0 | 222 | 1.0 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 21+00 L | 0.40 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 214 | 1.0 | 20 | C | 2.5 | 4.5 |
| Roaches Run Road | RRR 2+25 L | 0.04 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.7 | 307 | 3.0 | 33 | C | 6.6 | 12.1 |
| Roaches Run Road | RRR 2+25 R | 0.04 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.9 | 919 | 5.0 | 33 | C | 10.7 | 19.7 |
| Sharon Lane | SL 3+50 L | 0.07 | 0.3 | 0.5 | EC-2 | 4.0 | 16.1 | 285 | 0.7 | 31 | B | 0.8 | 2.1 |
| Sharon Lane | SL 4+00 L | 0.08 | 0.5 | 0.8 | EC-2 | 3.3 | 5.2 | 425 | 3.8 | 31 | B | 1.9 | 6.3 |
| Sharon Lane | SL 7+00 R | 0.13 | 0.4 | 0.6 | EC-2 | 2.4 | 4.0 | 97 | 0.7 | 31 | B | 0.8 | 2.1 |
| Sharon Lane | SL 9+00 D | 0.17 | 0.5 | 0.9 | EC-3-A | 4.7 | 17.8 | 279 | 9.5 | 31 | B | 3.7 | 13.3 |
| Sharon Lane | SL 9+00 L | 0.17 | 0.5 | 0.9 | EC-3-A | 3.4 | 8.3 | 692 | 7.0 | 31 | B | 2.9 | 10.0 |
| Sharon Lane | SL 9+00 R | 0.17 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.7 | 251 | 2.0 | 31 | B | 1.1 | 3.5 |
| Silver Fox Lane | SFL 1+25 L | 0.02 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.8 | 431 | 1.0 | 11 | D | 2.5 | 4.5 |
| Silver Fox Lane | SFL 1+25 R | 0.02 | 0.6 | 0.7 | EC-3-A | 5.0 | 15.9 | 593 | 1.1 | 11 | D | 4.5 | 8.3 |
| Spring Hollow Road | SHR 2+50 D | 0.05 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.0 | 608 | 4.7 | 33 | C | 10.7 | 19.7 |
| Spring Hollow Road | SHR 10+25 D | 0.19 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.5 | 235 | 10.1 | 33 | C | 20.3 | 37.6 |
| Spring Hollow Road | SHR 10+25 L | 0.19 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 99 | 1.0 | 33 | C | 2.5 | 4.5 |
| Spring Hollow Road | SHR 10+25 R | 0.19 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.7 | 369 | 3.0 | 33 | C | 6.6 | 12.1 |
| Spring Hollow Road | SHR 13+00 D | 0.25 | 0.5 | 0.6 | EC-3-A | 4.8 | 20.8 | 111 | 1.0 | 33 | C | 2.5 | 4.5 |
| Spring Road | SR 3+00 D | 0.06 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.3 | 255 | 0.4 | 17 | D | 2.5 | 4.5 |
| Spring Road | SR 5+00 R | 0.09 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.1 | 378 | 2.0 | 17 | D | 4.5 | 8.3 |
| Spring Road | SR 6+00 D | 0.11 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.6 | 615 | 3.9 | 17 | D | 8.7 | 15.9 |
| Susans Court | SC 0+00 D | 0.00 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.3 | 318 | 1.2 | 30 | D | 4.5 | 8.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Susans Court | SC 0+00 L | 0.00 | 0.3 | 0.5 | EC-2 | 3.3 | 10.4 | 247 | 1.0 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 3+00 D | 0.06 | 0.9 | 1.2 | EC-3-A | 6.9 | 15.8 | 363 | 9.0 | 30 | D | 17.3 | 31.9 |
| Susans Court | SC 3+00 R | 0.06 | 0.5 | 0.8 | EC-3-A | 4.0 | 13.3 | 106 | 7.0 | 30 | B | 2.9 | 10.0 |
| Susans Court | SC 7+50 D | 0.14 | 0.8 | 1.0 | EC-3-A | 6.9 | 22.3 | 341 | 5.2 | 30 | D | 12.4 | 22.8 |
| Susans Court | SC 7+50 L | 0.14 | 0.5 | 0.6 | EC-2 | 2.8 | 4.8 | 235 | 1.4 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 7+50 R | 0.14 | 0.5 | 0.9 | Grass | 2.7 | 1.0 | 133 | 3.7 | 30 | B | 1.9 | 6.3 |
| Susans Court | SC 9+50 D | 0.18 | SD | SD | SD | SD | 30.3 | 188 | 0.4 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 12+00 D | 0.23 | 0.4 | 0.6 | EC-2 | 4.0 | 9.7 | 179 | 2.0 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 12+50 D | 0.24 | 0.7 | 1.1 | EC-3-A | 3.9 | 8.0 | 54 | 14.4 | 30 | B | 5.0 | 18.1 |
| Susans Court | SC 13+00 D | 0.25 | 0.7 | 1.1 | EC-3-A | 4.9 | 12.0 | 277 | 23.4 | 30 | B | 6.9 | 25.7 |
| Susans Court | SC 13+50 L | 0.26 | 0.6 | 1.0 | EC-3-A | 4.5 | 11.9 | 71 | 14.5 | 30 | B | 5.0 | 18.1 |
| Susans Court | SC 14+00 D | 0.27 | SD | SD | SD | SD | 14.7 | 43 | 28.0 | 30 | D | 41.6 | 77.7 |
| Susans Court | SC 15+50 D | 0.29 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.1 | 280 | 2.5 | 30 | B | 1.5 | 4.9 |
| Susans Court | SC 15+50 L | 0.29 | 0.5 | 0.6 | EC-2 | 2.8 | 4.0 | 187 | 1.5 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 15+50 R | 0.29 | 0.4 | 0.5 | EC-2 | 2.7 | 6.8 | 100 | 1.0 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 20+50 L | 0.39 | 0.5 | 0.6 | EC-2 | 3.3 | 5.6 | 280 | 1.6 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 20+50 R | 0.39 | 0.4 | 0.6 | Grass | 2.3 | 1.0 | 54 | 0.2 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 25+50 D | 0.48 | 0.4 | 0.5 | EC-3-A | 4.3 | 19.0 | 283 | 1.8 | 30 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 1+00 L | 0.02 | 0.3 | 0.4 | EC-3-A | 4.1 | 27.8 | 99 | 0.6 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 6+50 D | 0.12 | 0.5 | 0.9 | EC-2 | 3.6 | 5.2 | 232 | 6.4 | 26 | B | 2.9 | 10.0 |
| Thompson Mill Road | TMR 6+50 L | 0.12 | 0.6 | 0.9 | EC-2 | 2.8 | 2.1 | 279 | 4.4 | 26 | B | 2.3 | 7.8 |
| Thompson Mill Road | TMR 6+50 R | 0.12 | 0.4 | 0.6 | EC-2 | 3.6 | 8.9 | 360 | 2.0 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 11+00 D | 0.21 | 0.6 | 1.1 | EC-2 | 3.9 | 5.9 | 194 | 11.0 | 26 | B | 4.0 | 14.2 |
| Thompson Mill Road | TMR 11+00 R | 0.21 | 0.4 | 0.6 | EC-2 | 2.4 | 3.8 | 114 | 1.0 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 14+00 D | 0.27 | 0.7 | 1.2 | Grass | 2.3 | 0.3 | 215 | 6.1 | 26 | B | 2.9 | 10.0 |
| Thompson Mill Road | TMR 14+50 L | 0.27 | 0.4 | 0.6 | EC-2 | 2.4 | 4.4 | 195 | 1.0 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 14+50 R | 0.27 | 0.5 | 0.6 | EC-2 | 3.3 | 6.8 | 298 | 1.6 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 17+00 D | 0.32 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.1 | 831 | 3.6 | 26 | B | 1.9 | 6.3 |
| Thompson Mill Road | TMR 22+00 D | 0.42 | 0.5 | 0.8 | EC-3-A | 5.2 | 19.8 | 300 | 9.8 | 26 | B | 3.7 | 13.3 |
| Thompson Mill Road | TMR 22+00 R | 0.42 | 0.6 | 0.9 | EC-3-A | 4.3 | 14.5 | 241 | 9.8 | 26 | B | 3.7 | 13.3 |
| Thompson Mill Road | TMR 25+00 R | 0.47 | 0.3 | 0.5 | EC-2 | 4.0 | 18.5 | 96 | 0.9 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 29+25 L | 0.55 | 0.6 | 0.7 | Grass | 2.1 | 0.9 | 229 | 1.2 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 29+25 R | 0.55 | 0.7 | 0.9 | EC-3-A | 5.8 | 16.7 | 548 | 3.2 | 26 | C | 8.7 | 15.9 |
| Timberline Ridge Road | TRR 0+00 L | 0.00 | 0.9 | 1.2 | EC-3-A | 4.9 | 7.5 | 764 | 6.0 | 27 | C | 12.4 | 22.8 |
| Timberline Ridge Road | TRR 0+00 R | 0.00 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.2 | 312 | 3.7 | 27 | C | 8.7 | 15.9 |
| Timberline Ridge Road | TRR 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 60 | 0.3 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.7 | 34 | 0.4 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 9+50 L | 0.18 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.4 | 124 | 0.8 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 13+00 D | 0.25 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.7 | 146 | 0.9 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 14+00 D | 0.27 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.6 | 99 | 2.3 | 27 | C | 6.6 | 12.1 |
| Timberline Ridge Road | TRR 14+00 R | 0.27 | 0.7 | 0.8 | EC-3-A | 5.5 | 18.3 | 129 | 2.3 | 27 | C | 6.6 | 12.1 |
| Timberline Ridge Road | TRR 15+00 L | 0.28 | 1.0 | 1.3 | EC-3-A | 5.2 | 8.0 | 746 | 8.0 | 27 | C | 15.6 | 28.8 |
| Timberline Ridge Road | TRR 15+50 D | 0.29 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.3 | 313 | 10.5 | 27 | C | 20.3 | 37.6 |
| Timberline Ridge Road | TRR 23+00 D | 0.44 | 0.5 | 0.6 | EC-3-A | 4.4 | 17.6 | 125 | 1.0 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 25+50 D | 0.48 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.0 | 182 | 2.0 | 27 | C | 4.5 | 8.3 |
| Tomahawk Way | TW 5+50 R | 0.10 | 0.8 | 1.2 | EC-3-A | 4.2 | 7.2 | 447 | 20.2 | 04A | B | 6.4 | 23.6 |
| Tomahawk Way | TW 9+50 R | 0.18 | 0.6 | 1.0 | EC-3-A | 4.2 | 9.7 | 344 | 13.9 | 04A | B | 4.7 | 17.1 |
| Tomahawk Way | TW 15+25 R | 0.29 | 0.6 | 0.9 | EC-2 | 3.1 | 3.4 | 348 | 5.9 | 04A | B | 2.6 | 8.9 |
| Tulip Poplar Drive | TPD 8+50 D | 0.16 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.3 | 145 | 6.5 | 4 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 8+50 L | 0.16 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.5 | 435 | 6.5 | 4 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 12+00 L | 0.23 | 0.5 | 0.8 | EC-2 | 3.3 | 5.1 | 287 | 3.9 | 4 | B | 1.9 | 6.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Tulip Poplar Drive | TPD 12+00 R | 0.23 | 0.7 | 1.1 | EC-2 | 3.0 | 2.5 | 142 | 8.6 | 4 | B | 3.5 | 12.2 |
| Tulip Poplar Drive | TPD 20+50 D | 0.39 | 0.5 | 0.8 | EC-3-A | 4.4 | 17.7 | 416 | 7.0 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 20+50 L | 0.39 | 0.5 | 0.9 | EC-3-A | 3.4 | 8.8 | 518 | 7.0 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 21+50 D | 0.41 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.9 | 507 | 7.2 | 5 | B | 3.2 | 11.1 |
| Tulip Poplar Drive | TPD 24+00 D | 0.45 | 0.5 | 0.8 | EC-3-A | 4.4 | 16.3 | 421 | 6.1 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 24+00 L | 0.45 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.2 | 347 | 4.3 | 5 | B | 2.3 | 7.8 |
| Tulip Poplar Drive | TPD 24+00 R | 0.45 | 0.5 | 0.7 | EC-2 | 2.5 | 2.6 | 105 | 1.5 | 5 | B | 1.1 | 3.5 |
| Tulip Poplar Drive | TPD 25+50 D | 0.48 | 0.7 | 1.1 | EC-3-A | 6.3 | 19.5 | 525 | 31.2 | 5 | B | 8.2 | 30.7 |
| Tulip Poplar Drive | TPD 25+50 R | 0.48 | 0.5 | 0.8 | EC-2 | 3.3 | 6.4 | 326 | 4.0 | 5 | B | 1.9 | 6.3 |
| Tulip Poplar Drive | TPD 36+50 D | 0.69 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.0 | 228 | 7.3 | 5 | B | 3.2 | 11.1 |
| Tulip Poplar Drive | TPD 36+50 L | 0.69 | 0.5 | 0.9 | EC-2 | 3.6 | 6.4 | 691 | 6.2 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 36+50 R | 0.69 | 0.3 | 0.5 | EC-2 | 3.6 | 14.2 | 208 | 1.0 | 5 | B | 0.8 | 2.1 |
| Valley Farms Road | VFR 0+00 L | 0.00 | 0.8 | 1.0 | EC-3-A | 4.5 | 7.1 | 857 | 3.6 | 34 | C | 8.7 | 15.9 |
| Vaught Drive | VD 10+50 D | 0.20 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.5 | 239 | 2.7 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 10+50 L | 0.20 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.3 | 184 | 2.0 | 17 | D | 4.5 | 8.3 |
| Vaught Drive | VD 10+50 R | 0.20 | 0.5 | 0.7 | EC-2 | 3.6 | 5.4 | 165 | 1.0 | 17 | D | 2.5 | 4.5 |
| Vaught Drive | VD 17+50 D | 0.33 | SD | SD | SD | SD | 6.4 | 154 | 32.0 | 17 | D | 45.6 | 85.1 |
| Vaught Drive | VD 17+50 L | 0.33 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.2 | 296 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 17+50 L | 0.33 | 0.8 | 1.1 | EC-2 | 3.8 | 4.3 | 69 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 17+50 R | 0.33 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.3 | 427 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 21+50 D | 0.41 | 0.7 | 0.9 | EC-3-A | 6.3 | 19.9 | 166 | 3.2 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 21+50 L | 0.41 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.4 | 413 | 3.2 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 27+00 D | 0.51 | 0.7 | 0.9 | EC-3-A | 5.8 | 16.5 | 136 | 3.9 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 27+00 L | 0.51 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.7 | 581 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 27+00 R | 0.51 | 0.6 | 0.7 | EC-2 | 2.8 | 2.6 | 84 | 0.5 | 17 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 1+50 D | 0.03 | 0.6 | 0.7 | EC-3-A | 5.5 | 21.8 | 59 | 2.0 | 29 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 2+25 L | 0.04 | 0.7 | 0.8 | EC-3-A | 5.5 | 18.3 | 70 | 2.2 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 3+00 L | 0.06 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 45 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 6+50 L | 0.12 | 1.3 | SD | EC-3-A | 4.3 | 4.9 | 289 | 12.0 | 29 | D | 21.8 | 40.2 |
| Venus Branch Road | VBR 7+00 D | 0.13 | 0.6 | 0.7 | EC-2 | 3.1 | 3.4 | 31 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 8+50 D | 0.16 | SD | SD | SD | SD | 30.3 | 84 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 8+50 L | 0.16 | 1.1 | 1.3 | EC-3-A | 3.8 | 3.1 | 113 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 9+50 D | 0.18 | SD | SD | SD | SD | 21.6 | 88 | 35.0 | 29 | D | 48.3 | 90.2 |
| Venus Branch Road | VBR 9+50 U | 0.18 | SD | SD | SD | SD | 8.2 | 210 | 30.5 | 29 | D | 44.7 | 83.4 |
| Venus Branch Road | VBR 16+75 L | 0.32 | 1.0 | 1.2 | EC-3-A | 4.4 | 5.3 | 629 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 16+75 R | 0.32 | 0.6 | 0.7 | EC-2 | 3.1 | 3.8 | 75 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 18+00 D | 0.34 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 72 | 0.2 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 22+75 R | 0.43 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.4 | 292 | 2.3 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 24+00 L | 0.45 | 0.6 | 0.7 | EC-2 | 2.8 | 2.8 | 112 | 0.5 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 26+00 L | 0.49 | 0.8 | 1.1 | EC-2 | 3.8 | 4.5 | 178 | 2.1 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 26+00 R | 0.49 | 0.5 | 0.7 | EC-2 | 3.6 | 6.8 | 46 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 27+50 L | 0.52 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.0 | 64 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 27+50 R | 0.52 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.7 | 43 | 2.9 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 29+75 L | 0.56 | 0.6 | 0.7 | EC-2 | 3.1 | 3.8 | 103 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 29+75 R | 0.56 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.8 | 357 | 3.0 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 36+75 D | 0.70 | 0.7 | 0.9 | EC-3-A | 6.3 | 22.4 | 233 | 4.0 | 29 | D | 8.7 | 15.9 |
| Venus Branch Road | VBR 36+75 L | 0.70 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.5 | 238 | 4.0 | 29 | D | 8.7 | 15.9 |
| Venus Branch Road | VBR 42+25 L | 0.80 | 1.1 | 1.3 | EC-3-A | 4.6 | 6.1 | 473 | 8.0 | 36 | D | 15.6 | 28.8 |
| Venus Branch Road | VBR 42+25 R | 0.80 | 1.2 | 1.5 | EC-3-A | 3.6 | 2.5 | 188 | 8.0 | 36 | D | 15.6 | 28.8 |
| Venus Branch Road | VBR 48+00 L | 0.91 | 1.4 | SD | EC-3-A | 4.5 | 4.1 | 327 | 14.0 | 36 | D | 24.6 | 45.5 |
| Venus Branch Road | VBR 48+00 R | 0.91 | 0.7 | 0.9 | EC-2 | 3.5 | 4.0 | 309 | 1.5 | 36 | D | 4.5 | 8.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Venus Branch Road | VBR 52+25 R | 0.99 | 0.5 | 0.7 | EC-2 | 3.6 | 6.7 | 45 | 0.3 | 36 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 55+00 L | 1.04 | 1.1 | 1.4 | EC-3-A | 4.8 | 5.1 | 677 | 10.0 | 36 | C | 18.9 | 34.9 |
| Venus Branch Road | VBR 55+00 R | 1.04 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 146 | 1.0 | 36 | C | 2.5 | 4.5 |
| Venus Branch Road | VBR 56+50 R | 1.07 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.5 | 360 | 2.3 | 36 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 57+00 L | 1.08 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 35 | 0.2 | 36 | C | 2.5 | 4.5 |
| Venus Branch Road | VBR 62+00 D | 1.17 | 1.3 | SD | EC-3-A | 5.3 | 5.9 | 359 | 15.0 | 36 | D | 26.0 | 48.2 |
| Venus Branch Road | VBR 62+00 R | 1.17 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.6 | 459 | 1.5 | 36 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 66+00 D | 1.25 | 1.4 | SD | EC-3-A | 5.6 | 5.6 | 349 | 19.8 | 36 | D | 33.1 | 61.4 |
| Venus Branch Road | VBR 66+50 R | 1.26 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.7 | 238 | 1.8 | 36 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 72+50 D | 1.37 | SD | SD | SD | SD | 6.6 | 591 | 30.0 | 36 | D | 43.8 | 81.7 |
| Venus Branch Road | VBR 72+50 R | 1.37 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.9 | 564 | 3.2 | 36 | D | 8.7 | 15.9 |
| Venus Branch Road | VBR 76+50 D | 1.45 | SD | SD | SD | SD | 5.3 | 346 | 38.0 | 36 | D | 51.0 | 95.3 |
| Venus Branch Road | VBR 76+50 R | 1.45 | 0.9 | 1.1 | EC-3-A | 4.7 | 7.2 | 353 | 4.1 | 36 | D | 10.7 | 19.7 |
| Venus Branch Road | VBR 79+00 D | 1.50 | SD | SD | SD | SD | 4.4 | 94 | 42.0 | 27 | C | 52.8 | 98.6 |
| Venus Branch Road | VBR 83+00 D | 1.57 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.0 | 445 | 6.0 | 27 | C | 12.4 | 22.8 |
| Venus Branch Road | VBR 83+00 R | 1.57 | 0.8 | 1.0 | EC-2 | 2.7 | 1.7 | 254 | 2.0 | 27 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 19+00 D | 0.36 | 0.6 | 0.7 | EC-3-A | 5.0 | 15.3 | 56 | 1.3 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 19+00 D | 0.36 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.5 | 374 | 1.3 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 19+50 D | 0.37 | 0.9 | 1.1 | EC-3-A | 6.6 | 15.8 | 377 | 6.7 | 33 | C | 14.0 | 25.8 |
| Vesey Drive | VSD 22+75 L | 0.43 | 0.8 | 1.1 | EC-2 | 3.8 | 5.0 | 294 | 2.2 | 33 | C | 6.6 | 12.1 |
| Vesey Drive | VSD 28+25 D1 | 0.54 | 0.6 | 0.7 | EC-3-A | 5.5 | 23.0 | 264 | 2.0 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 28+25 D2 | 0.54 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.6 | 187 | 2.9 | 33 | C | 6.6 | 12.1 |
| Vesey Drive | VSD 28+25 L | 0.54 | 0.7 | 0.9 | EC-2 | 3.2 | 2.6 | 223 | 1.1 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 28+25 R | 0.54 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 95 | 0.9 | 33 | C | 2.5 | 4.5 |
| Vesey Drive | VSD 32+50 D | 0.62 | 0.5 | 0.6 | EC-3-A | 4.8 | 21.5 | 200 | 0.3 | 33 | C | 2.5 | 4.5 |
| Vesey Drive | VSD 44+00 D | 0.83 | 0.7 | 0.9 | EC-3-A | 5.8 | 18.0 | 567 | 4.0 | 33 | C | 8.7 | 15.9 |
| Vesey Drive | VSD 50+00 L | 0.95 | 0.7 | 0.9 | EC-3-A | 5.8 | 15.8 | 507 | 4.0 | 33 | C | 8.7 | 15.9 |
| Walker Farm Drive | WFD 0+50 L | 0.01 | 0.6 | 0.9 | EC-3-A | 4.3 | 11.8 | 83 | 10.2 | 15 | B | 4.0 | 14.2 |
| Walker Farm Drive | WFD 0+50 R | 0.01 | 0.4 | 0.6 | Grass | 2.6 | 2.7 | 45 | 0.5 | 15 | B | 0.8 | 2.1 |
| Walker Farm Drive | WFD 6+75 R | 0.13 | 1.4 | 1.7 | EC-2 | 2.8 | 0.4 | 126 | 8.0 | 15 | D | 15.6 | 28.8 |
| Walker Farm Drive | WFD 9+00 L | 0.17 | 0.7 | 0.8 | Grass | 2.3 | 0.7 | 82 | 1.0 | 15 | D | 2.5 | 4.5 |
| Walker Farm Drive | WFD 9+00 R | 0.17 | 0.7 | 0.9 | EC-2 | 3.2 | 2.5 | 57 | 2.0 | 15 | D | 4.5 | 8.3 |
| Walker Farm Drive | WFD 13+00 D | 0.25 | 0.5 | 0.9 | EC-3-A | 4.7 | 16.2 | 519 | 10.1 | 15 | B | 4.0 | 14.2 |
| Walker Farm Drive | WFD 13+00 L | 0.25 | 1.1 | 1.3 | EC-3-A | 3.8 | 4.2 | 279 | 5.1 | 15 | D | 12.4 | 22.8 |
| Walker Farm Drive | WFD 13+00 R | 0.25 | 1.2 | 1.5 | EC-2 | 2.6 | 0.9 | 253 | 5.0 | 15 | D | 10.7 | 19.7 |
| Walker Farm Drive | WFD 16+25 R | 0.31 | 0.8 | 1.1 | EC-2 | 3.4 | 2.8 | 108 | 3.0 | 15 | D | 6.6 | 12.1 |
| Wambach Court | WC 0+50 L | 0.01 | 0.3 | 0.5 | EC-2 | 3.6 | 11.1 | 210 | 1.0 | 30 | B | 0.8 | 2.1 |
| Wambach Court | WC 7+50 D | 0.14 | 0.6 | 1.0 | EC-3-A | 5.9 | 20.1 | 926 | 20.0 | 30 | B | 6.2 | 22.9 |
| Wambach Court | WC 7+50 L | 0.14 | 0.7 | 1.1 | EC-2 | 2.6 | 1.0 | 609 | 7.4 | 30 | B | 3.2 | 11.1 |
| Wambach Court | WC 7+50 R | 0.14 | 0.6 | 0.9 | EC-2 | 2.8 | 2.4 | 350 | 5.0 | 30 | B | 2.3 | 7.8 |
| Wambach Court | WC 12+00 D | 0.23 | 0.4 | 0.6 | EC-3-A | 4.3 | 21.5 | 360 | 3.3 | 30 | B | 1.9 | 6.3 |
| Wambach Court | WC 12+00 R | 0.23 | 0.5 | 0.7 | EC-2 | 2.8 | 4.0 | 234 | 2.3 | 30 | B | 1.5 | 4.9 |
| Wells Drive | WD 0+50 L | 0.01 | 0.4 | 0.7 | EC-2 | 3.6 | 8.5 | 401 | 2.4 | 8 | B | 1.5 | 4.9 |
| Wells Drive | WD 0+50 R | 0.01 | 0.4 | 0.6 | EC-2 | 2.4 | 3.5 | 112 | 0.5 | 8 | B | 0.8 | 2.1 |
| Wells Drive | WD 12+50 D | 0.24 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.6 | 770 | 0.7 | 8 | D | 2.5 | 4.5 |
| Wells Drive | WD 21+00 L | 0.40 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.4 | 226 | 3.0 | 8 | D | 6.6 | 12.1 |
| Wells Drive | WD 21+00 R | 0.40 | 0.9 | 1.2 | EC-3-A | 4.2 | 5.9 | 325 | 4.8 | 8 | D | 10.7 | 19.7 |
| Wendy Hill road | WHR 8+00 D | 0.15 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 340 | 1.0 | 20 | D | 2.5 | 4.5 |
| Wendy Hill road | WHR 9+00 D | 0.17 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.5 | 495 | 2.0 | 20 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 11+75 R | 0.22 | 0.7 | 0.9 | EC-2 | 3.5 | 4.9 | 203 | 1.4 | 20 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 17+00 L | 0.32 | 0.5 | 0.7 | EC-2 | 3.6 | 5.4 | 206 | 1.0 | 20 | D | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by road name | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Wendy Hill road | WHR 17+00 R | 0.32 | 0.7 | 0.9 | EC-3-A | 3.5 | 7.0 | 507 | 2.0 | 20 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 30+00 D | 0.57 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.4 | 223 | 2.0 | 21 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 30+00 L | 0.57 | SD | SD | SD | SD | 28.1 | 56 | 1.0 | 21 | D | 2.5 | 4.5 |
| Western Lane | WL 10+00 D | 0.19 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.8 | 955 | 2.5 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 10+45 R | 0.20 | 0.8 | 1.1 | EC-2 | 3.8 | 4.8 | 251 | 2.5 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 10+45 U | 0.20 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.4 | 558 | 6.0 | 16 | D | 12.4 | 22.8 |
| Western Lane | WL 13+00 R | 0.25 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.2 | 184 | 1.8 | 16 | D | 4.5 | 8.3 |
| Western Lane | WL 23+00 L | 0.44 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.3 | 717 | 3.0 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 23+00 R | 0.44 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 246 | 2.0 | 16 | D | 4.5 | 8.3 |
| Western Lane | WL 29+00 D | 0.55 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 597 | 1.0 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 39+10 L | 0.74 | 0.7 | 0.8 | Grass | 2.3 | 0.6 | 122 | 0.5 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 39+10 R | 0.74 | 0.6 | 0.7 | EC-2 | 3.1 | 3.2 | 200 | 1.0 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 45+50 L | 0.86 | 0.6 | 0.7 | EC-2 | 3.1 | 3.7 | 265 | 0.5 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 45+50 R | 0.86 | 0.5 | 0.7 | EC-2 | 3.6 | 5.7 | 71 | 0.5 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 56+00 D | 1.06 | 0.8 | 1.0 | EC-3-B | 7.4 | 23.5 | 148 | 5.3 | 22 | D | 12.4 | 22.8 |
| Western Lane | WL 56+00 L | 1.06 | 0.7 | 0.9 | EC-2 | 3.5 | 3.5 | 163 | 2.0 | 22 | D | 4.5 | 8.3 |
| Western Lane | WL 56+00 R | 1.06 | 0.9 | 1.2 | EC-2 | 3.7 | 2.0 | 323 | 3.3 | 22 | D | 8.7 | 15.9 |
| Western Lane | WL 63+75 D | 1.21 | 0.9 | 1.2 | EC-3-A | 6.9 | 16.9 | 122 | 8.8 | 22 | D | 17.3 | 31.9 |
| Western Lane | WL 63+75 L | 1.21 | 0.9 | 1.2 | EC-3-A | 4.9 | 8.1 | 372 | 6.0 | 22 | D | 12.4 | 22.8 |
| Western Lane | WL 63+75 R | 1.21 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.7 | 106 | 3.0 | 22 | D | 6.6 | 12.1 |
| Western Lane | WL 71+00 D | 1.34 | 0.7 | 0.9 | EC-3-A | 6.6 | 21.7 | 165 | 5.0 | 22 | D | 10.7 | 19.7 |
| Western Lane | WL 71+00 L | 1.34 | 1.2 | 1.5 | EC-2 | 2.6 | 0.0 | 503 | 5.0 | 22 | D | 10.7 | 19.7 |
| Western Lane | WL 75+00 D | 1.42 | 1.0 | 1.2 | EC-3-A | 5.1 | 8.4 | 424 | 7.0 | 22 | D | 14.0 | 25.8 |
| Western Lane | WL 75+00 L | 1.42 | 1.0 | 1.2 | EC-2 | 3.2 | 1.8 | 348 | 4.0 | 22 | D | 8.7 | 15.9 |
| Western Lane | WL 75+00 R | 1.42 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.3 | 570 | 3.0 | 22 | D | 6.6 | 12.1 |
| Western Lane | WL 81+00 D | 1.53 | 0.7 | 0.9 | EC-2 | 3.5 | 3.2 | 412 | 2.0 | 28 | D | 4.5 | 8.3 |
| Western Lane | WL 82+00 D | 1.55 | 0.8 | 1.1 | EC-2 | 3.4 | 2.9 | 109 | 2.2 | 28 | D | 6.6 | 12.1 |
| Yarnell Court | YC 2+00 R | 0.04 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 379 | 1.2 | 34 | C | 4.5 | 8.3 |
| Yarnell Court | YC 7+50 L | 0.14 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.6 | 114 | 0.5 | 34 | C | 2.5 | 4.5 |
| Yarnell Court | YC 13+00 R | 0.25 | 0.8 | 1.0 | Grass | 2.6 | 0.2 | 420 | 1.3 | 35 | C | 4.5 | 8.3 |
| Yarnell Court | YC 14+00 L | 0.27 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.5 | 197 | 0.6 | 34 | C | 2.5 | 4.5 |
| Yarnell Court | YC 18+25 D | 0.35 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.6 | 579 | 2.6 | 35 | C | 6.6 | 12.1 |
| Youngs Drive | YD 0+50 L | 0.01 | 0.4 | 0.6 | Grass | 2.3 | 1.9 | 371 | 0.8 | 12 | B | 0.8 | 2.1 |
| Youngs Drive | YD 5+00 D | 0.09 | 0.6 | 1.0 | EC-2 | 3.3 | 3.6 | 216 | 8.0 | 9 | B | 3.2 | 11.1 |
| Youngs Drive | YD 5+00 L | 0.09 | 0.4 | 0.7 | Grass | 1.7 | 0.1 | 28 | 0.5 | 9 | B | 0.8 | 2.1 |
| Youngs Drive | YD 5+00 R | 0.09 | 0.6 | 1.1 | EC-2 | 3.3 | 3.9 | 946 | 8.3 | 9 | B | 3.5 | 12.2 |
| Youngs Drive | YD 11+50 L | 0.22 | 0.8 | 1.4 | Grass | 2.6 | 0.8 | 35 | 13.0 | 9 | B | 4.5 | 16.1 |
| Youngs Drive | YD 12+00 L | 0.23 | 0.5 | 0.7 | EC-2 | 2.5 | 2.2 | 482 | 1.4 | 9 | B | 1.1 | 3.5 |
| Youngs Drive | YD 12+00 R | 0.23 | 0.4 | 0.5 | EC-2 | 2.7 | 5.0 | 90 | 1.0 | 9 | B | 0.8 | 2.1 |

# APPENDIX E-4

## Ditch Tables by Map Panel

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| High Top Road | HTR 10+00 D | 0.19 | 0.5 | 0.9 | EC-3-A | 5.8 | 26.7 | 937 | 12.1 | 1 | B | 4.5 | 16.1 |
| High Top Road | HTR 12+00 R | 0.23 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.9 | 479 | 1.5 | 1 | B | 1.1 | 3.5 |
| High Top Road | HTR 115+00 D | 2.18 | 0.4 | 0.7 | EC-3-A | 5.1 | 24.2 | 356 | 6.0 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 115+00 L | 2.18 | 0.6 | 0.9 | Grass | 2.1 | 0.4 | 326 | 3.9 | 1 | B | 1.9 | 6.3 |
| High Top Road | HTR 115+00 R | 2.18 | 0.5 | 0.6 | EC-2 | 3.3 | 5.7 | 284 | 2.0 | 1 | B | 1.1 | 3.5 |
| High Top Road | HTR 118+50 D | 2.24 | 0.4 | 0.7 | EC-3-A | 5.1 | 25.8 | 391 | 6.7 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 118+50 L | 2.24 | 0.6 | 1.0 | Grass | 3.0 | 1.5 | 257 | 6.7 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 121+50 D | 2.30 | 0.5 | 0.7 | EC-3-A | 4.8 | 19.1 | 299 | 6.8 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 121+50 L | 2.30 | 0.5 | 0.8 | EC-3-A | 3.7 | 9.1 | 342 | 6.8 | 1 | B | 2.9 | 10.0 |
| High Top Road | HTR 132+00 D | 2.50 | 0.4 | 0.6 | EC-3-A | 4.3 | 20.6 | 383 | 2.3 | 1 | B | 1.5 | 4.9 |
| High Top Road | HTR 132+00 R | 2.50 | 0.5 | 0.7 | EC-2 | 2.8 | 3.8 | 454 | 2.3 | 1 | B | 1.5 | 4.9 |
| Crossway Lane | CL 4+00 U | 0.08 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.5 | 802 | 1.9 | 2 | B | 1.1 | 3.5 |
| Crossway Lane | CL 8+80 L | 0.17 | 0.4 | 0.6 | EC-2 | 4.0 | 10.6 | 302 | 1.4 | 2 | B | 1.1 | 3.5 |
| Crossway Lane | CL 8+80 U | 0.17 | 0.6 | 0.9 | EC-2 | 2.8 | 2.6 | 544 | 6.4 | 2 | B | 2.9 | 10.0 |
| Freeze Road | FR 4+00 D | 0.08 | 0.5 | 0.8 | EC-3-A | 3.7 | 10.3 | 366 | 5.0 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 4+00 L | 0.08 | 0.4 | 0.7 | EC-3-A | 4.0 | 17.3 | 364 | 3.2 | 2 | B | 1.9 | 6.3 |
| Freeze Road | FR 10+50 D | 0.20 | 0.5 | 0.8 | EC-3-A | 4.4 | 15.7 | 160 | 6.1 | 2 | B | 2.9 | 10.0 |
| Freeze Road | FR 10+50 L | 0.20 | 0.5 | 0.7 | EC-3-A | 4.0 | 14.2 | 604 | 4.1 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 20+50 D | 0.39 | 0.6 | 0.9 | EC-3-A | 5.0 | 17.2 | 514 | 13.5 | 2 | B | 4.7 | 17.1 |
| Freeze Road | FR 20+50 L | 0.39 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.9 | 693 | 4.1 | 2 | B | 2.3 | 7.8 |
| Freeze Road | FR 20+50 R | 0.39 | 0.5 | 0.8 | Grass | 2.7 | 1.3 | 200 | 2.0 | 2 | B | 1.5 | 4.9 |
| Freeze Road | FR 23+25 D | 0.44 | 0.5 | 0.8 | EC-3-A | 5.2 | 20.8 | 474 | 8.5 | 2 | B | 3.5 | 12.2 |
| Freeze Road | FR 23+25 L | 0.44 | 0.6 | 0.9 | EC-2 | 3.1 | 4.8 | 322 | 5.7 | 2 | B | 2.6 | 8.9 |
| Freeze Road | FR 23+25 R | 0.44 | 0.5 | 0.8 | Grass | 2.7 | 1.6 | 224 | 2.8 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 15+50 L | 0.29 | 0.9 | 1.4 | EC-3-A | 4.6 | 7.1 | 358 | 41.0 | 2 | B | 9.0 | 33.9 |
| High Top Road | HTR 15+50 R | 0.29 | 0.8 | 1.3 | EC-3-A | 5.4 | 14.0 | 353 | 41.0 | 2 | B | 9.0 | 33.9 |
| High Top Road | HTR 19+00 L | 0.36 | 0.5 | 0.9 | EC-3-A | 3.4 | 7.6 | 371 | 6.1 | 2 | B | 2.9 | 10.0 |
| High Top Road | HTR 23+00 L | 0.44 | 0.6 | 0.9 | EC-2 | 2.8 | 2.4 | 322 | 4.1 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 27+75 D | 0.53 | 0.4 | 0.5 | EC-3-A | 4.6 | 23.8 | 90 | 2.7 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 27+75 R | 0.53 | 0.5 | 0.8 | Grass | 2.7 | 1.7 | 103 | 2.7 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 33+75 D | 0.64 | 0.5 | 0.8 | EC-3-A | 4.4 | 15.9 | 162 | 6.4 | 2 | B | 2.9 | 10.0 |
| High Top Road | HTR 40+00 L | 0.76 | 0.4 | 0.6 | Grass | 2.3 | 1.9 | 274 | 0.6 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 40+00 R | 0.76 | 0.4 | 0.7 | EC-3-A | 3.6 | 11.4 | 597 | 3.8 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 49+00 L | 0.93 | 0.4 | 0.7 | Grass | 1.7 | 0.7 | 121 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 49+00 R | 0.93 | 0.5 | 0.6 | EC-2 | 3.3 | 6.2 | 610 | 1.7 | 2 | B | 1.1 | 3.5 |
| High Top Road | HTR 51+75 D | 0.98 | 0.3 | 0.5 | EC-2 | 3.6 | 13.6 | 206 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 51+75 L | 0.98 | 0.4 | 0.7 | Grass | 1.7 | 0.5 | 84 | 0.5 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 52+00 L | 0.98 | 0.4 | 0.7 | Grass | 1.7 | 0.6 | 106 | 0.3 | 2 | B | 0.8 | 2.1 |
| High Top Road | HTR 81+00 D | 1.53 | 0.5 | 0.8 | EC-3-A | 5.5 | 25.1 | 312 | 10.2 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 81+00 R | 1.53 | 0.6 | 1.0 | EC-3-A | 4.0 | 10.8 | 970 | 10.2 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 85+00 D | 1.61 | 0.6 | 0.9 | EC-3-A | 5.7 | 21.9 | 223 | 16.3 | 2 | B | 5.5 | 20.0 |
| High Top Road | HTR 85+00 L | 1.61 | 0.4 | 0.8 | EC-2 | 3.6 | 8.1 | 289 | 3.9 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 85+00 L | 1.61 | 0.8 | 1.2 | EC-2 | 2.7 | 2.0 | 60 | 12.3 | 2 | B | 4.5 | 16.1 |
| High Top Road | HTR 85+00 R | 1.61 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.8 | 357 | 4.0 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 89+50 D | 1.70 | 0.6 | 1.0 | EC-3-A | 5.7 | 19.5 | 242 | 18.5 | 2 | B | 6.0 | 21.9 |
| High Top Road | HTR 89+50 L | 1.70 | 0.5 | 0.7 | EC-3-A | 4.0 | 13.7 | 756 | 4.9 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 97+50 D | 1.85 | 0.6 | 1.1 | EC-2 | 3.3 | 4.9 | 255 | 10.6 | 2 | B | 4.0 | 14.2 |
| High Top Road | HTR 97+50 L | 1.85 | 0.4 | 0.7 | EC-3-A | 4.0 | 15.9 | 173 | 3.3 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 97+50 L | 1.85 | 0.6 | 0.9 | EC-3-A | 4.3 | 13.3 | 142 | 7.3 | 2 | B | 3.2 | 11.1 |
| High Top Road | HTR 99+50 L | 1.88 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.8 | 369 | 3.1 | 2 | B | 1.9 | 6.3 |
| High Top Road | HTR 103+00 D | 1.95 | 0.6 | 0.9 | EC-3-A | 4.3 | 13.2 | 142 | 8.5 | 2 | B | 3.5 | 12.2 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| High Top Road | HTR 103+00 L | 1.95 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.5 | 415 | 7.5 | 2 | B | 3.2 | 11.1 |
| High Top Road | HTR 103+00 L | 1.95 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.2 | 109 | 8.1 | 2 | B | 3.5 | 12.2 |
| High Top Road | HTR 109+50 D | 2.07 | SD | SD | SD | SD | 29.1 | 394 | 4.9 | 2 | B | 2.3 | 7.8 |
| High Top Road | HTR 109+50 L | 2.07 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.8 | 234 | 2.2 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 109+50 U | 2.07 | 0.4 | 0.6 | EC-2 | 4.0 | 10.8 | 367 | 2.2 | 2 | B | 1.5 | 4.9 |
| High Top Road | HTR 68+00 R | 1.29 | 0.5 | 0.6 | EC-2 | 3.3 | 6.2 | 595 | 1.6 | 3 | B | 1.1 | 3.5 |
| High Top Road | HTR 68+00 R | 1.29 | 0.4 | 0.5 | EC-3-A | 4.3 | 21.1 | 165 | 1.6 | 3 | B | 1.1 | 3.5 |
| High Top Road | HTR 69+50 D | 1.32 | 0.3 | 0.5 | EC-2 | 4.0 | 15.0 | 214 | 0.6 | 3 | B | 0.8 | 2.1 |
| Cliffside Road | CR 0+50 D | 0.01 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.3 | 205 | 7.6 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 0+50 R | 0.01 | 0.5 | 0.8 | EC-3-A | 4.7 | 15.1 | 536 | 7.1 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 3+50 D | 0.07 | 0.8 | 1.4 | EC-3-A | 4.5 | 7.1 | 301 | 38.0 | 4 | B | 8.9 | 33.5 |
| Cliffside Road | CR 3+50 L | 0.07 | 0.7 | 1.0 | EC-2 | 3.0 | 2.1 | 322 | 7.5 | 4 | B | 3.2 | 11.1 |
| Cliffside Road | CR 3+50 R | 0.07 | 0.8 | 1.3 | EC-3-A | 4.9 | 9.1 | 270 | 30.6 | 4 | B | 8.1 | 30.3 |
| Cliffside Road | CR 4+00 D | 0.08 | 0.6 | 0.9 | EC-3-A | 6.1 | 26.8 | 270 | 15.0 | 4 | B | 5.2 | 19.0 |
| Cliffside Road | CR 4+00 L | 0.08 | 0.3 | 0.5 | EC-2 | 3.6 | 13.7 | 87 | 0.6 | 4 | B | 0.8 | 2.1 |
| Cliffside Road | CR 4+00 R | 0.08 | 0.4 | 0.7 | Grass | 1.7 | 0.2 | 94 | 0.6 | 4 | B | 0.8 | 2.1 |
| Cliffside Road | CR 8+00 D | 0.15 | 0.4 | 0.5 | EC-3-A | 4.3 | 22.6 | 307 | 2.0 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 8+00 L | 0.15 | 0.5 | 0.6 | EC-2 | 2.8 | 3.8 | 148 | 1.5 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 11+75 L | 0.22 | 0.4 | 0.6 | EC-2 | 4.0 | 9.5 | 138 | 1.4 | 4 | B | 1.1 | 3.5 |
| Cliffside Road | CR 11+75 U | 0.22 | 0.5 | 0.8 | EC-3-A | 4.0 | 13.7 | 415 | 5.2 | 4 | B | 2.6 | 8.9 |
| Cliffside Road | CR 17+00 D | 0.32 | 0.7 | 1.2 | EC-3-A | 3.6 | 6.7 | 627 | 16.3 | 4 | B | 5.5 | 20.0 |
| Lookout Point Way | LPW 4+00 R | 0.08 | 0.4 | 0.6 | EC-2 | 4.0 | 10.0 | 289 | 1.2 | 4 | B | 1.1 | 3.5 |
| Lookout Point Way | LPW 6+00 D | 0.11 | 0.4 | 0.5 | EC-3-A | 4.6 | 26.9 | 270 | 1.2 | 4 | B | 1.1 | 3.5 |
| Lookout Point Way | LPW 6+00 L | 0.11 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.3 | 743 | 6.4 | 4 | B | 2.9 | 10.0 |
| Lookout Point Way | LPW 6+00 R | 0.11 | 0.5 | 0.7 | EC-2 | 2.5 | 2.0 | 168 | 1.2 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 4+75 D | 0.09 | 0.4 | 0.5 | EC-3-A | 4.0 | 18.3 | 116 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 4+75 L | 0.09 | 0.4 | 0.5 | EC-3-A | 4.0 | 15.5 | 310 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 6+75 D | 0.13 | 0.6 | 1.0 | EC-3-A | 4.5 | 13.5 | 383 | 13.8 | 4 | B | 4.7 | 17.1 |
| McDonalds Farm Road | MCFR 6+75 L | 0.13 | 0.4 | 0.6 | EC-2 | 3.6 | 8.3 | 158 | 1.3 | 4 | B | 1.1 | 3.5 |
| McDonalds Farm Road | MCFR 6+75 U | 0.13 | 0.6 | 0.9 | EC-3-A | 5.0 | 15.0 | 457 | 12.5 | 4 | B | 4.5 | 16.1 |
| McDonalds Farm Road | MCFR 11+50 L | 0.22 | 0.5 | 0.8 | EC-2 | 3.6 | 6.0 | 383 | 4.2 | 4 | B | 2.3 | 7.8 |
| Old Linden Road | OLR 2+00 D | 0.04 | 0.6 | 1.0 | EC-3-A | 6.6 | 25.6 | 328 | 26.4 | 4 | B | 7.4 | 27.8 |
| Old Linden Road | OLR 2+00 L | 0.04 | 0.6 | 0.9 | EC-2 | 2.8 | 2.6 | 98 | 5.3 | 4 | B | 2.6 | 8.9 |
| Old Linden Road | OLR 2+00 R | 0.04 | 0.8 | 1.4 | EC-2 | 3.4 | 2.8 | 530 | 21.1 | 4 | B | 6.6 | 24.3 |
| Old Linden Road | OLR 7+21 L | 0.14 | 0.7 | 1.1 | EC-2 | 2.6 | 1.6 | 498 | 7.2 | 4 | B | 3.2 | 11.1 |
| Old Linden Road | OLR 9+50 D | 0.18 | 0.7 | 1.3 | EC-2 | 3.2 | 2.6 | 150 | 12.3 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 9+50 L | 0.18 | 0.7 | 1.2 | EC-2 | 3.5 | 3.4 | 153 | 12.1 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 11+50 L | 0.22 | 0.8 | 1.2 | EC-2 | 2.7 | 1.5 | 193 | 12.3 | 4 | B | 4.5 | 16.1 |
| Old Linden Road | OLR 12+00 D | 0.23 | 0.8 | 1.2 | EC-3-A | 6.0 | 15.8 | 131 | 41.2 | 4 | B | 9.0 | 33.9 |
| Old Linden Road | OLR 16+00 L | 0.30 | 0.5 | 0.7 | EC-2 | 3.3 | 6.6 | 333 | 2.2 | 4 | B | 1.5 | 4.9 |
| Old Linden Road | OLR 16+00 U | 0.30 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.9 | 373.68 | 3.8 | 4 | B | 1.9 | 6.3 |
| Old Linden Road | OLR 31+75 D | 0.60 | 0.7 | 1.1 | EC-3-A | 6.1 | 21.2 | 504 | 26.3 | 4 | B | 7.4 | 27.8 |
| Old Linden Road | OLR 31+75 L | 0.60 | 0.8 | 1.3 | EC-3-A | 4.3 | 8.0 | 813 | 25.7 | 4 | B | 7.3 | 27.1 |
| Old Linden Road | OLR 43+50 L | 0.82 | 0.8 | 1.3 | EC-3-A | 4.9 | 9.0 | 1094 | 37.4 | 4 | B | 8.8 | 33.1 |
| Old Linden Road | OLR 54+00 D | 1.02 | 0.9 | 1.4 | EC-3-A | 4.6 | 7.9 | 1087 | 47.0 | 4 | B | 9.0 | 33.9 |
| Tulip Poplar Drive | TPD 8+50 D | 0.16 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.3 | 145 | 6.5 | 4 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 8+50 L | 0.16 | 0.5 | 0.8 | EC-3-A | 4.0 | 14.5 | 435 | 6.5 | 4 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 12+00 L | 0.23 | 0.5 | 0.8 | EC-2 | 3.3 | 5.1 | 287 | 3.9 | 4 | B | 1.9 | 6.3 |
| Tulip Poplar Drive | TPD 12+00 R | 0.23 | 0.7 | 1.1 | EC-2 | 3.0 | 2.5 | 142 | 8.6 | 4 | B | 3.5 | 12.2 |
| Tomahawk Way | TW 5+50 R | 0.10 | 0.8 | 1.2 | EC-3-A | 4.2 | 7.2 | 446.88 | 20.2 | 04A | B | 6.4 | 23.6 |
| Tomahawk Way | TW 9+50 R | 0.18 | 0.6 | 1.0 | EC-3-A | 4.2 | 9.7 | 344.3 | 13.9 | 04A | B | 4.7 | 17.1 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Tomahawk Way | TW 15+25 R | 0.29 | 0.6 | 0.9 | EC-2 | 3.1 | 3.4 | 348.13 | 5.9 | 04A | B | 2.6 | 8.9 |
| Heim Jones Road | HJR 3+50 D | 0.07 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.5 | 598 | 2.5 | 5 | B | 1.5 | 4.9 |
| Heim Jones Road | HJR 6+25 D | 0.12 | 0.3 | 0.5 | EC-2 | 3.6 | 13.1 | 224 | 1.0 | 5 | B | 0.8 | 2.1 |
| McDonalds Farm Road | MCFR 15+00 U | 0.28 | 0.6 | 0.8 | EC-2 | 3.1 | 4.8 | 284 | 5.0 | 5 | B | 2.3 | 7.8 |
| McDonalds Farm Road | MCFR 15+75 L | 0.30 | 0.7 | 1.0 | EC-3-A | 3.9 | 7.0 | 44 | 12.0 | 5 | B | 4.2 | 15.2 |
| McDonalds Farm Road | MCFR 20+50 L | 0.39 | 0.5 | 0.7 | EC-2 | 3.3 | 5.3 | 117 | 2.9 | 5 | B | 1.5 | 4.9 |
| McDonalds Farm Road | MCFR 20+50 R | 0.39 | 0.5 | 0.7 | EC-3-A | 4.0 | 11.2 | 434 | 4.5 | 5 | B | 2.3 | 7.8 |
| McDonalds Farm Road | MDFR 20+50 L | 0.39 | 0.6 | 0.9 | EC-3-A | 4.5 | 12.0 | 195 | 11.2 | 5 | B | 4.2 | 15.2 |
| McDonalds Farm Road | MCFR 30+50 D | 0.58 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.5 | 559 | 5.7 | 5 | B | 2.6 | 8.9 |
| Tulip Poplar Drive | TPD 20+50 D | 0.39 | 0.5 | 0.8 | EC-3-A | 4.4 | 17.7 | 416 | 7.0 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 20+50 L | 0.39 | 0.5 | 0.9 | EC-3-A | 3.4 | 8.8 | 518 | 7.0 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 21+50 D | 0.41 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.9 | 507 | 7.2 | 5 | B | 3.2 | 11.1 |
| Tulip Poplar Drive | TPD 24+00 D | 0.45 | 0.5 | 0.8 | EC-3-A | 4.4 | 16.3 | 421 | 6.1 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 24+00 L | 0.45 | 0.5 | 0.8 | EC-3-A | 3.4 | 7.2 | 347 | 4.3 | 5 | B | 2.3 | 7.8 |
| Tulip Poplar Drive | TPD 24+00 R | 0.45 | 0.5 | 0.7 | EC-2 | 2.5 | 2.6 | 105 | 1.5 | 5 | B | 1.1 | 3.5 |
| Tulip Poplar Drive | TPD 25+50 D | 0.48 | 0.7 | 1.1 | EC-3-A | 6.3 | 19.5 | 525 | 31.2 | 5 | B | 8.2 | 30.7 |
| Tulip Poplar Drive | TPD 25+50 R | 0.48 | 0.5 | 0.8 | EC-2 | 3.3 | 6.4 | 326 | 4.0 | 5 | B | 1.9 | 6.3 |
| Tulip Poplar Drive | TPD 36+50 D | 0.69 | 0.5 | 0.8 | EC-3-A | 5.2 | 21.0 | 228 | 7.3 | 5 | B | 3.2 | 11.1 |
| Tulip Poplar Drive | TPD 36+50 L | 0.69 | 0.5 | 0.9 | EC-2 | 3.6 | 6.4 | 691 | 6.2 | 5 | B | 2.9 | 10.0 |
| Tulip Poplar Drive | TPD 36+50 R | 0.69 | 0.3 | 0.5 | EC-2 | 3.6 | 14.2 | 208 | 1.0 | 5 | B | 0.8 | 2.1 |
| Elseas Farm Road | EFR 6+00 R | 0.11 | 0.5 | 0.7 | EC-2 | 2.8 | 3.2 | 464 | 2.4 | 6 | B | 1.5 | 4.9 |
| Elseas Farm Road | EFR 15+00 D | 0.28 | 0.5 | 0.7 | EC-3-A | 4.0 | 14.2 | 890 | 5.0 | 6 | B | 2.3 | 7.8 |
| Heim Jones Road | HJR 14+00 D | 0.27 | 0.3 | 0.5 | EC-2 | 4.0 | 16.0 | 858 | 1.0 | 6 | B | 0.8 | 2.1 |
| Heim Jones Road | HJR 20+00 D | 0.38 | 0.5 | 0.8 | EC-3-A | 3.7 | 9.3 | 529 | 4.4 | 6 | B | 2.3 | 7.8 |
| Reynolds Drive | RYD 6+00 L | 0.11 | 0.5 | 0.7 | EC-2 | 2.8 | 3.7 | 533 | 2.1 | 6 | B | 1.5 | 4.9 |
| Reynolds Drive | RYD 7+00 L | 0.13 | 0.5 | 0.7 | Grass | 2.7 | 1.6 | 93 | 2.0 | 6 | B | 1.1 | 3.5 |
| Reynolds Drive | RYD 7+00 R | 0.13 | 0.4 | 0.6 | Grass | 2.6 | 2.3 | 35 | 1.0 | 6 | B | 0.8 | 2.1 |
| Reynolds Drive | RYD 12+00 L | 0.23 | 0.4 | 0.7 | EC-2 | 3.6 | 8.9 | 302 | 2.2 | 6 | B | 1.5 | 4.9 |
| Reynolds Drive | RYD 17+00 L | 0.32 | 0.8 | 1.5 | EC-2 | 4.0 | 4.3 | 474 | 29.6 | 6 | B | 8.0 | 29.9 |
| Reynolds Drive | RYD 25+50 L | 0.48 | 1.0 | 1.5 | EC-3-A | 3.5 | 4.8 | 805 | 49.0 | 6 | B | 9.0 | 33.9 |
| Bragg Drive | BGD 6+50 D | 0.12 | SD | SD | SD | SD | 41.7 | 73 | 3.0 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 6+50 R | 0.12 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.4 | 506 | 3.0 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 12+50 D | 0.24 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.0 | 416 | 2.1 | 7 | B | 1.5 | 4.9 |
| Bragg Drive | BGD 17+50 D | 0.33 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.0 | 573 | 1.7 | 7 | B | 1.1 | 3.5 |
| Bragg Drive | BGD 22+00 D | 0.42 | 0.6 | 0.9 | EC-3-A | 4.3 | 12.6 | 990 | 8.0 | 7 | B | 3.2 | 11.1 |
| Bragg Drive | BGD 30+00 D | 0.57 | 0.5 | 0.6 | EC-2 | 3.3 | 5.5 | 288 | 2.0 | 7 | B | 1.1 | 3.5 |
| Bragg Drive | BGD 33+00 R | 0.63 | 0.4 | 0.8 | EC-2 | 3.6 | 8.4 | 446 | 3.6 | 7 | B | 1.9 | 6.3 |
| Bragg Drive | BGD 40+50 L | 0.77 | 0.5 | 0.8 | EC-2 | 3.6 | 6.5 | 236 | 4.7 | 7 | B | 2.3 | 7.8 |
| Bragg Drive | BGD 40+50 R | 0.77 | 0.6 | 1.0 | EC-3-A | 4.2 | 10.7 | 476 | 12.0 | 7 | B | 4.2 | 15.2 |
| Ehlers Drive | ED 0+00 L | 0.00 | 0.7 | 1.1 | EC-3-A | 4.4 | 10.6 | 844 | 17.0 | 7 | B | 5.5 | 20.0 |
| Ehlers Drive | ED 0+00 R | 0.00 | 0.7 | 0.9 | EC-3-A | 4.9 | 13.4 | 491 | 3.0 | 7 | D | 6.6 | 12.1 |
| Ehlers Drive | ED 0+50 D | 0.01 | 0.7 | 1.1 | EC-3-A | 4.9 | 11.9 | 726 | 21.3 | 7 | B | 6.6 | 24.3 |
| Ehlers Drive | ED 8+50 L | 0.16 | 0.7 | 1.0 | EC-3-A | 4.7 | 12.0 | 382 | 16.7 | 7 | B | 5.5 | 20.0 |
| Reynolds Drive | RYD 31+50 L | 0.60 | 0.5 | 0.9 | EC-2 | 3.6 | 5.5 | 346 | 5.2 | 7 | B | 2.6 | 8.9 |
| Reynolds Drive | RYD 35+75 L | 0.68 | 0.6 | 1.0 | EC-2 | 3.9 | 5.5 | 419 | 8.0 | 7 | B | 3.2 | 11.1 |
| Reynolds Drive | RYD 36+00 R | 0.68 | 0.7 | 1.1 | EC-3-A | 4.4 | 10.0 | 591 | 16.0 | 7 | B | 5.2 | 19.0 |
| Reynolds Drive | RYD 46+50 L | 0.88 | 0.6 | 1.0 | EC-2 | 3.3 | 4.4 | 861 | 7.7 | 7 | B | 3.2 | 11.1 |
| Reynolds Drive | RYD 51+50 L | 0.98 | 0.6 | 1.1 | EC-2 | 3.3 | 4.1 | 460 | 8.7 | 7 | B | 3.5 | 12.2 |
| Reynolds Drive | RYD 56+25 L | 1.07 | 0.5 | 0.7 | EC-2 | 2.8 | 5.0 | 384 | 3.0 | 7 | B | 1.5 | 4.9 |
| Markham Farm Road | MFR 4+00 D | 0.08 | 0.8 | 0.9 | EC-3-A | 5.2 | 13.6 | 786 | 4.0 | 8 | D | 8.7 | 15.9 |
| Markham Farm Road | MFR 8+75 D | 0.17 | 0.9 | 1.1 | EC-3-A | 5.7 | 14.0 | 93 | 5.4 | 8 | D | 12.4 | 22.8 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Markham Farm Road | MFR 8+75 R | 0.17 | 1.0 | 1.3 | EC-2 | 3.9 | 2.1 | 457 | 5.0 | 8 | D | 10.7 | 19.7 |
| Markham Place | MP 2+50 D | 0.05 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.9 | 396 | 1.0 | 8 | D | 4.5 | 8.3 |
| Markham Place | MP 10+00 D | 0.19 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.3 | 671 | 1.8 | 8 | D | 4.5 | 8.3 |
| Reynolds Drive | RYD 65+00 L | 1.23 | 1.0 | 1.2 | EC-3-A | 4.4 | 5.4 | 580 | 5.7 | 8 | D | 12.4 | 22.8 |
| Reynolds Drive | RYD 67+00 L | 1.27 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.2 | 132 | 1.0 | 8 | D | 2.5 | 4.5 |
| Reynolds Drive | RYD 67+00 R | 1.27 | 0.6 | 0.8 | Grass | 3.0 | 1.2 | 99 | 1.0 | 8 | D | 2.5 | 4.5 |
| Reynolds Drive | RYD 72+00 L | 1.36 | 1.1 | 1.4 | EC-3-A | 3.9 | 4.1 | 333 | 6.7 | 8 | D | 14.0 | 25.8 |
| Reynolds Drive | RYD 74+00 L | 1.40 | 0.9 | 1.1 | EC-2 | 3.0 | 1.1 | 142 | 3.0 | 8 | D | 6.6 | 12.1 |
| Reynolds Drive | RYD 74+00 R | 1.40 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.1 | 322 | 3.0 | 8 | D | 6.6 | 12.1 |
| Wells Drive | WD 0+50 L | 0.01 | 0.4 | 0.7 | EC-2 | 3.6 | 8.5 | 401 | 2.4 | 8 | B | 1.5 | 4.9 |
| Wells Drive | WD 0+50 R | 0.01 | 0.4 | 0.6 | EC-2 | 2.4 | 3.5 | 112 | 0.5 | 8 | B | 0.8 | 2.1 |
| Wells Drive | WD 12+50 D | 0.24 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.6 | 770 | 0.7 | 8 | D | 2.5 | 4.5 |
| Wells Drive | WD 21+00 L | 0.40 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.4 | 226 | 3.0 | 8 | D | 6.6 | 12.1 |
| Wells Drive | WD 21+00 R | 0.40 | 0.9 | 1.2 | EC-3-A | 4.2 | 5.9 | 325 | 4.8 | 8 | D | 10.7 | 19.7 |
| Farm View Road | FVR 16+00 D | 0.30 | 0.4 | 0.6 | Grass | 2.6 | 2.9 | 459 | 0.8 | 9 | B | 0.8 | 2.1 |
| Farms River Road | FRRD 0+50 L | 0.01 | 0.5 | 0.7 | EC-2 | 2.8 | 4.2 | 382 | 3.0 | 9 | B | 1.5 | 4.9 |
| Farms River Road | FRRD 0+50 R | 0.01 | 1.8 | SD | EC-2 | 3.4 | 0.5 | 812 | 20.0 | 9 | C | 33.1 | 61.4 |
| Farms River Road | FRRD 19+00 D | 0.36 | 1.7 | SD | EC-3-A | 3.7 | 1.4 | 88 | 18.5 | 9 | C | 31.7 | 58.8 |
| Farms River Road | FRRD 19+00 L | 0.36 | 1.4 | 1.7 | EC-2 | 2.8 | 1.0 | 763 | 8.0 | 9 | C | 15.6 | 28.8 |
| Farms River Road | FRRD 19+00 R | 0.36 | 1.4 | 1.7 | EC-2 | 2.8 | 0.1 | 367 | 8.0 | 9 | C | 15.6 | 28.8 |
| Farms River Road | FRRD 19+00 U | 0.36 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.8 | 759 | 1.0 | 9 | C | 2.5 | 4.5 |
| Howellsville Road | HR 1+50 D | 0.03 | 0.6 | 1.0 | EC-2 | 3.9 | 5.4 | 203 | 8.0 | 9 | B | 3.2 | 11.1 |
| Howellsville Road | HR 4+00 D | 0.08 | 0.5 | 0.7 | EC-2 | 2.8 | 3.9 | 535 | 2.5 | 9 | B | 1.5 | 4.9 |
| Howellsville Road | HR 4+00 L | 0.08 | 0.6 | 1.0 | EC-2 | 3.9 | 5.3 | 571 | 7.3 | 9 | B | 3.2 | 11.1 |
| Youngs Drive | YD 5+00 D | 0.09 | 0.6 | 1.0 | EC-2 | 3.3 | 3.6 | 216 | 8.0 | 9 | B | 3.2 | 11.1 |
| Youngs Drive | YD 5+00 L | 0.09 | 0.4 | 0.7 | Grass | 1.7 | 0.1 | 28 | 0.5 | 9 | B | 0.8 | 2.1 |
| Youngs Drive | YD 5+00 R | 0.09 | 0.6 | 1.1 | EC-2 | 3.3 | 3.9 | 946 | 8.3 | 9 | B | 3.5 | 12.2 |
| Youngs Drive | YD 11+50 L | 0.22 | 0.8 | 1.4 | Grass | 2.6 | 0.8 | 35 | 13.0 | 9 | B | 4.5 | 16.1 |
| Youngs Drive | YD 12+00 L | 0.23 | 0.5 | 0.7 | EC-2 | 2.5 | 2.2 | 482 | 1.4 | 9 | B | 1.1 | 3.5 |
| Youngs Drive | YD 12+00 R | 0.23 | 0.4 | 0.5 | EC-2 | 2.7 | 5.0 | 90 | 1.0 | 9 | B | 0.8 | 2.1 |
| Youngs Drive | YD 15+00 L | 0.28 | 0.6 | 0.7 | Grass | 2.1 | 0.2 | 261 | 1.8 | 9 | B | 1.1 | 3.5 |
| Youngs Drive | YD 15+00 R | 0.28 | 0.4 | 0.6 | Grass | 2.6 | 2.9 | 264 | 1.0 | 9 | B | 0.8 | 2.1 |
| Youngs Drive | YD 24+50 D | 0.46 | 0.4 | 0.6 | Grass | 2.6 | 2.9 | 457 | 0.9 | 9 | B | 0.8 | 2.1 |
| Farms River Road | FRRD 27+75 D | 0.53 | SD | SD | SD | SD | 1.2 | 259 | 60.1 | 10 | C | 52.8 | 98.6 |
| Farms River Road | FRRD 27+75 L | 0.53 | 1.2 | 1.5 | EC-2 | 2.6 | 0.6 | 431 | 5.0 | 10 | C | 10.7 | 19.7 |
| Farms River Road | FRRD 27+75 R | 0.53 | 1.3 | 1.6 | EC-2 | 2.7 | 0.4 | 359 | 6.0 | 10 | C | 12.4 | 22.8 |
| Farms River Road | FRRD 32+25 D | 0.61 | 1.8 | SD | EC-3-A | 3.7 | 1.7 | 269 | 20.5 | 10 | C | 34.2 | 63.5 |
| Farms River Road | FRRD 32+25 R | 0.61 | 1.8 | SD | EC-2 | 3.4 | 0.1 | 129 | 19.3 | 10 | C | 33.1 | 61.4 |
| Farms River Road | FRRD 38+00 R | 0.72 | 0.7 | 1.1 | EC-2 | 2.6 | 1.9 | 384 | 7.0 | 10 | B | 3.2 | 11.1 |
| Flynn Drive | FND 3+50 D | 0.07 | 0.7 | 1.1 | EC-2 | 2.6 | 1.1 | 944 | 8.3 | 10 | B | 3.5 | 12.2 |
| Flynn Drive | FND 5+00 U | 0.09 | 0.6 | 0.7 | Grass | 2.1 | 0.1 | 109 | 2.0 | 10 | B | 1.1 | 3.5 |
| Flynn Drive | FND 9+75 L | 0.18 | 0.5 | 0.9 | EC-2 | 3.6 | 5.4 | 871 | 5.3 | 10 | B | 2.6 | 8.9 |
| Flynn Drive | FND 11+00 D1 | 0.21 | 0.7 | 1.2 | EC-2 | 3.5 | 4.7 | 191 | 11.5 | 10 | B | 4.2 | 15.2 |
| Flynn Drive | FND 11+00 D2 | 0.21 | 0.6 | 1.0 | Grass | 3.0 | 1.8 | 93 | 5.4 | 10 | B | 2.6 | 8.9 |
| Flynn Drive | FND 11+00 L | 0.21 | 0.4 | 0.6 | Grass | 2.6 | 2.6 | 87 | 0.5 | 10 | B | 0.8 | 2.1 |
| Flynn Drive | FND 11+00 R | 0.21 | 0.6 | 0.8 | EC-2 | 3.1 | 3.2 | 368 | 5.0 | 10 | B | 2.3 | 7.8 |
| Flynn Drive | FND 18+75 R | 0.36 | 0.5 | 0.7 | EC-2 | 2.8 | 3.8 | 136 | 2.8 | 10 | B | 1.5 | 4.9 |
| Flynn Drive | FND 20+00 L | 0.38 | 0.6 | 1.0 | EC-2 | 3.9 | 6.8 | 210 | 8.0 | 10 | B | 3.2 | 11.1 |
| Flynn Drive | FND 20+00 R | 0.38 | 0.6 | 0.8 | EC-2 | 3.1 | 4.2 | 1204 | 5.0 | 10 | B | 2.3 | 7.8 |
| Flynn Drive | FND 23+50 D | 0.45 | 0.3 | 0.5 | EC-2 | 3.3 | 10.7 | 395 | 1.0 | 10 | B | 0.8 | 2.1 |
| Flynn Drive | FND 26+00 D | 0.49 | 0.5 | 0.7 | Grass | 2.7 | 1.1 | 349 | 1.3 | 10 | B | 1.1 | 3.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Flynn Drive | FND 27+75 L | 0.53 | 1.0 | 1.3 | EC-3-A | 5.9 | 10.4 | 639 | 10.0 | 10 | C | 18.9 | 34.9 |
| Flynn Drive | FND 27+75 R | 0.53 | 1.2 | 1.5 | EC-2 | 2.6 | 0.3 | 370 | 5.0 | 10 | C | 10.7 | 19.7 |
| Youngs Drive | YD 20+00 L | 0.38 | 0.4 | 0.7 | Grass | 1.7 | 0.1 | 104 | 0.4 | 10 | B | 0.8 | 2.1 |
| Dillard Court | DC 5+00 D | 0.09 | 0.3 | 0.5 | EC-2 | 3.1 | 7.5 | 431 | 0.6 | 11 | B | 0.8 | 2.1 |
| Dillard Court | DC 9+00 D | 0.17 | 0.6 | 1.0 | EC-2 | 3.1 | 5.0 | 1141 | 7.0 | 11 | B | 2.9 | 10.0 |
| Dillard Court | DC 9+00 D1 | 0.17 | 0.3 | 0.5 | EC-2 | 3.1 | 8.2 | 270 | 1.0 | 11 | B | 0.8 | 2.1 |
| Dry Run Court | DRC 6+50 D | 0.12 | 0.8 | 1.0 | EC-3-A | 6.1 | 15.3 | 81 | 4.1 | 11 | D | 10.7 | 19.7 |
| Dry Run Court | DRC 6+50 L | 0.12 | 0.9 | 1.1 | EC-3-A | 5.1 | 9.3 | 469 | 4.1 | 11 | D | 10.7 | 19.7 |
| Dry Run Court | DRC 9+00 D | 0.17 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 696 | 1.2 | 11 | D | 4.5 | 8.3 |
| Dry Run Court | DRC 18+60 L | 0.35 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 211 | 1.0 | 11 | D | 2.5 | 4.5 |
| Dry Run Court | DRC 18+60 R | 0.35 | 0.6 | 0.7 | EC-2 | 3.1 | 4.9 | 138 | 1.0 | 11 | D | 2.5 | 4.5 |
| Howellsville Road | HR 46+50 D | 0.88 | 0.6 | 1.0 | EC-3-A | 3.7 | 7.6 | 912 | 9.9 | 11 | B | 3.7 | 13.3 |
| Silver Fox Lane | SFL 1+25 L | 0.02 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.8 | 431 | 1.0 | 11 | D | 2.5 | 4.5 |
| Silver Fox Lane | SFL 1+25 R | 0.02 | 0.6 | 0.7 | EC-3-A | 5.0 | 15.9 | 593 | 1.1 | 11 | D | 4.5 | 8.3 |
| Briar Lane | BL 0+00 L | 0.00 | 0.4 | 0.5 | EC-3-A | 4.0 | 15.2 | 591 | 2.0 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 0+00 R | 0.00 | 0.5 | 0.7 | EC-2 | 3.3 | 6.6 | 396 | 2.7 | 12 | B | 1.5 | 4.9 |
| Briar Lane | BMR 1+00 R | 0.02 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 95 | 1.0 | 12 | D | 2.5 | 4.5 |
| Briar Lane | BL 6+50 D | 0.12 | 0.5 | 0.7 | EC-2 | 2.5 | 2.8 | 123 | 1.5 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 7+00 L | 0.13 | 0.6 | 0.9 | EC-3-A | 3.7 | 7.1 | 36 | 8.3 | 12 | B | 3.5 | 12.2 |
| Briar Lane | BL 8+00 D | 0.15 | 0.5 | 0.9 | EC-3-A | 5.8 | 24.0 | 472 | 14.0 | 12 | B | 4.7 | 17.1 |
| Briar Lane | BL 8+00 R | 0.15 | 0.5 | 0.7 | EC-2 | 2.5 | 2.0 | 99 | 1.5 | 12 | B | 1.1 | 3.5 |
| Briar Lane | BL 11+50 L | 0.22 | 0.6 | 0.7 | Grass | 2.1 | 0.9 | 167 | 2.0 | 12 | B | 1.1 | 3.5 |
| Howellsville Road | HR 11+00 L | 0.21 | 0.4 | 0.7 | EC-2 | 3.6 | 8.2 | 372 | 2.4 | 12 | B | 1.5 | 4.9 |
| Howellsville Road | HR 15+00 L | 0.28 | 0.4 | 0.6 | EC-2 | 4.0 | 9.0 | 349 | 1.5 | 12 | B | 1.1 | 3.5 |
| Howellsville Road | HR 17+00 D | 0.32 | 0.5 | 0.8 | EC-2 | 2.8 | 4.3 | 294 | 4.0 | 12 | B | 1.9 | 6.3 |
| Howellsville Road | HR 17+50 D | 0.33 | 0.6 | 0.9 | EC-3-A | 4.0 | 9.2 | 411 | 8.8 | 12 | B | 3.5 | 12.2 |
| Youngs Drive | YD 0+50 L | 0.01 | 0.4 | 0.6 | Grass | 2.3 | 1.9 | 371 | 0.8 | 12 | B | 0.8 | 2.1 |
| Blue Mountain Road | BMR 82+00 L | 1.55 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.1 | 201 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 82+00 R | 1.55 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.6 | 187 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 87+00 L | 1.65 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.9 | 159 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 87+00 R | 1.65 | 0.5 | 0.7 | EC-2 | 3.6 | 6.0 | 183 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 89+50 L | 1.70 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 71 | 0.5 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 89+50 R | 1.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.6 | 361 | 2.0 | 13 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 96+50 L | 1.83 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.9 | 149 | 1.0 | 13 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 96+50 R | 1.83 | 0.7 | 0.9 | EC-2 | 3.5 | 3.7 | 219 | 1.5 | 13 | D | 4.5 | 8.3 |
| Hobbs Knob Road | HKR 2+00 L | 0.04 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 101 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 2+00 R | 0.04 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.4 | 452 | 3.5 | 13 | D | 8.7 | 15.9 |
| Hobbs Knob Road | HKR 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 116 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 130 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 14+00 L | 0.27 | 0.5 | 0.7 | EC-2 | 3.6 | 5.9 | 191 | 1.0 | 13 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 14+00 R | 0.27 | 0.6 | 0.7 | EC-2 | 3.1 | 3.7 | 97 | 0.5 | 13 | D | 2.5 | 4.5 |
| Reynolds Drive | RYD 78+00 D | 1.48 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.0 | 181 | 1.5 | 13 | D | 4.5 | 8.3 |
| Reynolds Drive | RYD 79+00 R | 1.50 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.2 | 416 | 3.2 | 13 | D | 8.7 | 15.9 |
| Blue Mountain Road | BMR 5+00 | 0.09 | 0.4 | 0.7 | EC-2 | 4.0 | 9.1 | 433 | 4.0 | 14 | B | 1.9 | 6.3 |
| Blue Mountain Road | BMR 7+00 L | 0.13 | 0.9 | 1.1 | EC-3-A | 4.7 | 8.3 | 818 | 4.5 | 14 | D | 10.7 | 19.7 |
| Blue Mountain Road | BMR 67+50 D | 1.28 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.8 | 612 | 2.5 | 14 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 69+00 D | 1.31 | 0.5 | 0.6 | EC-3-A | 4.8 | 19.7 | 289 | 1.0 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 2+50 L | 0.05 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.6 | 98 | 0.5 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 2+50 R | 0.05 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.8 | 370 | 1.0 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 8+50 D | 0.16 | 0.8 | 1.0 | EC-3-A | 4.9 | 10.4 | 184 | 3.5 | 14 | D | 8.7 | 15.9 |
| Cindy's Way | CW 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.4 | 178 | 1.0 | 14 | D | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Cindy's Way | CW 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.5 | 91 | 0.5 | 14 | D | 2.5 | 4.5 |
| Cindy's Way | CW 13+50 L | 0.26 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.0 | 457 | 1.3 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 13+50 L | 0.26 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.0 | 33 | 1.3 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 13+50 R | 0.26 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.8 | 342 | 2.0 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 20+00 L | 0.38 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.6 | 220 | 1.5 | 14 | D | 4.5 | 8.3 |
| Cindy's Way | CW 20+00 R | 0.38 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.6 | 248 | 1.0 | 14 | D | 2.5 | 4.5 |
| Hobbs Knob Road | HKR 16+50 D | 0.31 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.4 | 181 | 3.1 | 14 | D | 8.7 | 15.9 |
| Hobbs Knob Road | HKR 16+50 L | 0.31 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.1 | 141 | 2.0 | 14 | D | 4.5 | 8.3 |
| Hobbs Knob Road | HKR 16+50 R | 0.31 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.8 | 300 | 5.0 | 14 | D | 10.7 | 19.7 |
| Hobbs Knob Road | HKR 25+00 L | 0.47 | 0.5 | 0.7 | EC-2 | 3.6 | 5.3 | 315 | 0.8 | 14 | D | 2.5 | 4.5 |
| Farms Riverview Road | FRVR -10+00 D | -0.19 | 1.0 | 1.5 | EC-3-A | 3.5 | 3.4 | 170 | 40.0 | 15 | B | 9.0 | 33.9 |
| Farms Riverview Road | FRVR -10+00 DL | -0.19 | 0.4 | 0.7 | Grass | 1.7 | 0.2 | 411 | 1.0 | 15 | B | 0.8 | 2.1 |
| Farms Riverview Road | FRVR -10+00 L | -0.19 | 0.8 | 1.5 | Grass | 2.6 | 0.3 | 435 | 15.0 | 15 | B | 5.0 | 18.1 |
| Howellsville Road | HR 87+00 L | 1.65 | 0.7 | 1.3 | EC-2 | 3.2 | 2.5 | 515 | 13.2 | 15 | B | 4.7 | 17.1 |
| Howellsville Road | HR 87+00 R | 1.65 | 0.5 | 0.6 | EC-2 | 2.8 | 4.0 | 106 | 1.5 | 15 | B | 1.1 | 3.5 |
| Walker Farm Drive | WFD 0+50 L | 0.01 | 0.6 | 0.9 | EC-3-A | 4.3 | 11.8 | 83 | 10.2 | 15 | B | 4.0 | 14.2 |
| Walker Farm Drive | WFD 0+50 R | 0.01 | 0.4 | 0.6 | Grass | 2.6 | 2.7 | 45 | 0.5 | 15 | B | 0.8 | 2.1 |
| Walker Farm Drive | WFD 6+75 R | 0.13 | 1.4 | 1.7 | EC-2 | 2.8 | 0.4 | 126 | 8.0 | 15 | D | 15.6 | 28.8 |
| Walker Farm Drive | WFD 9+00 L | 0.17 | 0.7 | 0.8 | Grass | 2.3 | 0.7 | 82 | 1.0 | 15 | D | 2.5 | 4.5 |
| Walker Farm Drive | WFD 9+00 R | 0.17 | 0.7 | 0.9 | EC-2 | 3.2 | 2.5 | 57 | 2.0 | 15 | D | 4.5 | 8.3 |
| Walker Farm Drive | WFD 13+00 D | 0.25 | 0.5 | 0.9 | EC-3-A | 4.7 | 16.2 | 519 | 10.1 | 15 | B | 4.0 | 14.2 |
| Walker Farm Drive | WFD 13+00 L | 0.25 | 1.1 | 1.3 | EC-3-A | 3.8 | 4.2 | 279 | 5.1 | 15 | D | 12.4 | 22.8 |
| Walker Farm Drive | WFD 13+00 R | 0.25 | 1.2 | 1.5 | EC-2 | 2.6 | 0.9 | 253 | 5.0 | 15 | D | 10.7 | 19.7 |
| Walker Farm Drive | WFD 16+25 R | 0.31 | 0.8 | 1.1 | EC-2 | 3.4 | 2.8 | 108 | 3.0 | 15 | D | 6.6 | 12.1 |
| Donna Court | DNC 1+50 D | 0.03 | 0.7 | 0.9 | EC-3-A | 6.3 | 20.5 | 300 | 3.3 | 16 | D | 8.7 | 15.9 |
| Donna Court | DNC 1+50 L | 0.03 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.9 | 582 | 2.0 | 16 | D | 4.5 | 8.3 |
| Donna Court | DNC 1+50 R | 0.03 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 122 | 1.0 | 16 | D | 2.5 | 4.5 |
| Donna Court | DNC 6+50 D | 0.12 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.6 | 162 | 1.0 | 16 | D | 2.5 | 4.5 |
| Donna Court | DNC 13+00 D | 0.25 | 0.5 | 0.7 | EC-3-A | 5.8 | 23.4 | 1156 | 2.0 | 16 | D | 4.5 | 8.3 |
| Gary Lane | GL 0+50 L | 0.01 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.4 | 295 | 1.0 | 16 | D | 2.5 | 4.5 |
| Gary Lane | GL 0+50 L | 0.01 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.2 | 307 | 4.3 | 16 | D | 10.7 | 19.7 |
| Gary Lane | GL 10+50 D | 0.20 | 0.8 | 1.0 | EC-3-B | 7.2 | 21.8 | 89 | 6.4 | 16 | D | 14.0 | 25.8 |
| Gary Lane | GL 10+50 L | 0.20 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.6 | 116 | 3.0 | 16 | D | 6.6 | 12.1 |
| Gary Lane | GL 10+50 R | 0.20 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.4 | 332 | 3.5 | 16 | D | 8.7 | 15.9 |
| Gary Lane (western) | GLW 3+00 L | 0.06 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.3 | 184 | 1.5 | 16 | D | 4.5 | 8.3 |
| Gary Lane (western) | GLW 3+00 R | 0.06 | 0.7 | 0.9 | EC-2 | 3.5 | 3.3 | 221 | 2.0 | 16 | D | 4.5 | 8.3 |
| Gary Lane (western) | GLW 5+00 D | 0.09 | 1.0 | 1.2 | EC-3-A | 6.2 | 13.5 | 179 | 8.8 | 16 | D | 17.3 | 31.9 |
| Gary Lane (western) | GLW 5+00 R | 0.09 | 1.1 | 1.3 | EC-3-A | 5.3 | 8.9 | 280 | 8.8 | 16 | D | 17.3 | 31.9 |
| Gary Lane (western) | GLW 8+00 D | 0.15 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.5 | 207 | 2.0 | 16 | D | 4.5 | 8.3 |
| Goode Drive | GD 11+00 D | 0.21 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.9 | 305 | 1.0 | 16 | D | 2.5 | 4.5 |
| Goode Drive | GD 11+00 L | 0.21 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 58 | 1.0 | 16 | D | 2.5 | 4.5 |
| Lake Drive | LD 20+50 R | 0.39 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.6 | 112 | 1.0 | 16 | D | 2.5 | 4.5 |
| Martin Farms Road | MFRR 1+75 L | 0.03 | 0.8 | 1.0 | Grass | 2.6 | 0.4 | 128 | 1.5 | 16 | D | 4.5 | 8.3 |
| Martin Farms Road | MFRR 1+75 R | 0.03 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 39 | 1.0 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 10+00 D | 0.19 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.8 | 955 | 2.5 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 10+45 R | 0.20 | 0.8 | 1.1 | EC-2 | 3.8 | 4.8 | 251 | 2.5 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 10+45 U | 0.20 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.4 | 558 | 6.0 | 16 | D | 12.4 | 22.8 |
| Western Lane | WL 13+00 R | 0.25 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.2 | 184 | 1.8 | 16 | D | 4.5 | 8.3 |
| Western Lane | WL 23+00 L | 0.44 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.3 | 717 | 3.0 | 16 | D | 6.6 | 12.1 |
| Western Lane | WL 23+00 R | 0.44 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 246 | 2.0 | 16 | D | 4.5 | 8.3 |
| Western Lane | WL 29+00 D | 0.55 | 0.6 | 0.7 | EC-2 | 2.8 | 2.9 | 597 | 1.0 | 16 | D | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Western Lane | WL 39+10 L | 0.74 | 0.7 | 0.8 | Grass | 2.3 | 0.6 | 122 | 0.5 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 39+10 R | 0.74 | 0.6 | 0.7 | EC-2 | 3.1 | 3.2 | 200 | 1.0 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 45+50 L | 0.86 | 0.6 | 0.7 | EC-2 | 3.1 | 3.7 | 265 | 0.5 | 16 | D | 2.5 | 4.5 |
| Western Lane | WL 45+50 R | 0.86 | 0.5 | 0.7 | EC-2 | 3.6 | 5.7 | 71 | 0.5 | 16 | D | 2.5 | 4.5 |
| Blue Mountain Road | BMR 15+75 D | 0.30 | SD | SD | SD | SD | 39.5 | 153 | 7.7 | 17 | D | 15.6 | 28.8 |
| Blue Mountain Road | BMR 15+75 L | 0.30 | 1.0 | 1.2 | EC-3-A | 5.6 | 9.5 | 758 | 7.7 | 17 | D | 15.6 | 28.8 |
| Blue Mountain Road | BMR 18+50 L | 0.35 | 0.9 | 1.2 | EC-3-A | 4.2 | 5.9 | 350 | 4.8 | 17 | D | 10.7 | 19.7 |
| Blue Mountain Road | BMR 18+50 R | 0.35 | 0.7 | 0.9 | EC-3-A | 4.6 | 10.8 | 252 | 3.0 | 17 | D | 6.6 | 12.1 |
| Blue Mountain Road | BMR 22+75 D | 0.43 | SD | SD | SD | SD | 33.7 | 146 | 1.5 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 22+75 L | 0.43 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.3 | 343 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 30+50 L | 0.58 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.5 | 724 | 4.0 | 17 | D | 8.7 | 15.9 |
| Blue Mountain Road | BMR 31+25 L | 0.59 | 0.6 | 0.7 | EC-3-A | 5.0 | 17.2 | 238 | 2.0 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 35+00 D | 0.66 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.5 | 166 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 35+00 L | 0.66 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.9 | 353 | 1.2 | 17 | D | 4.5 | 8.3 |
| Blue Mountain Road | BMR 44+00 D | 0.83 | 0.7 | 0.9 | EC-2 | 3.5 | 3.5 | 598 | 2.0 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 1+00 D1 | 0.02 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.5 | 58 | 0.9 | 17 | D | 2.5 | 4.5 |
| Goode Drive | GD 6+00 D | 0.11 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.8 | 212 | 3.0 | 17 | D | 6.6 | 12.1 |
| Goode Drive | GD 6+00 L | 0.11 | 0.7 | 0.9 | EC-2 | 3.5 | 3.6 | 277 | 2.0 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 6+00 R | 0.11 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.7 | 298 | 1.0 | 17 | D | 2.5 | 4.5 |
| Goode Drive | GD 17+50 D | 0.33 | 0.7 | 0.8 | EC-3-A | 6.8 | 25.4 | 59 | 3.3 | 17 | D | 8.7 | 15.9 |
| Goode Drive | GD 17+50 L | 0.33 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.4 | 401 | 2.0 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 17+50 R | 0.33 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.2 | 255 | 1.3 | 17 | D | 4.5 | 8.3 |
| Goode Drive | GD 23+50 D | 0.45 | 0.9 | 1.2 | EC-3-A | 6.0 | 13.9 | 133 | 7.3 | 17 | D | 15.6 | 28.8 |
| Goode Drive | GD 23+50 L | 0.45 | 1.0 | 1.3 | EC-3-A | 3.6 | 4.2 | 476 | 5.0 | 17 | D | 10.7 | 19.7 |
| Goode Drive | GD 23+50 R | 0.45 | 0.6 | 0.8 | Grass | 3.0 | 1.7 | 159 | 1.0 | 17 | D | 2.5 | 4.5 |
| Spring Road | SR 3+00 D | 0.06 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.3 | 255 | 0.4 | 17 | D | 2.5 | 4.5 |
| Spring Road | SR 5+00 R | 0.09 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.1 | 378 | 2.0 | 17 | D | 4.5 | 8.3 |
| Spring Road | SR 6+00 D | 0.11 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.6 | 615 | 3.9 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 10+50 D | 0.20 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.5 | 239 | 2.7 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 10+50 L | 0.20 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.3 | 184 | 2.0 | 17 | D | 4.5 | 8.3 |
| Vaught Drive | VD 10+50 R | 0.20 | 0.5 | 0.7 | EC-2 | 3.6 | 5.4 | 165 | 1.0 | 17 | D | 2.5 | 4.5 |
| Vaught Drive | VD 17+50 D | 0.33 | SD | SD | SD | SD | 6.4 | 154 | 32.0 | 17 | D | 45.6 | 85.1 |
| Vaught Drive | VD 17+50 L | 0.33 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.2 | 296 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 17+50 L | 0.33 | 0.8 | 1.1 | EC-2 | 3.8 | 4.3 | 69 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 17+50 R | 0.33 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.3 | 427 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 21+50 D | 0.41 | 0.7 | 0.9 | EC-3-A | 6.3 | 19.9 | 166 | 3.2 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 21+50 L | 0.41 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.4 | 413 | 3.2 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 27+00 D | 0.51 | 0.7 | 0.9 | EC-3-A | 5.8 | 16.5 | 136 | 3.9 | 17 | D | 8.7 | 15.9 |
| Vaught Drive | VD 27+00 L | 0.51 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.7 | 581 | 3.0 | 17 | D | 6.6 | 12.1 |
| Vaught Drive | VD 27+00 R | 0.51 | 0.6 | 0.7 | EC-2 | 2.8 | 2.6 | 84 | 0.5 | 17 | D | 2.5 | 4.5 |
| Barbara Drive | BD 11+25 L | 0.21 | 0.8 | 1.1 | EC-2 | 3.8 | 3.6 | 671 | 3.0 | 18 | D | 6.6 | 12.1 |
| Briar Lane | BL 16+00 D | 0.30 | 0.5 | 0.8 | EC-3-A | 5.2 | 20.2 | 429 | 7.5 | 18 | B | 3.2 | 11.1 |
| Briar Lane | BL 16+00 L | 0.30 | 0.5 | 0.8 | EC-2 | 2.8 | 3.4 | 426 | 4.0 | 18 | B | 1.9 | 6.3 |
| Briar Lane | BL 16+00 R | 0.30 | 0.4 | 0.7 | EC-3-A | 3.6 | 13.0 | 485 | 3.8 | 18 | B | 1.9 | 6.3 |
| Elinore Lane | EL 1+00 D | 0.02 | 1.2 | SD | EC-3-B | 7.1 | 12.4 | 278 | 18.0 | 18 | D | 30.3 | 56.1 |
| Elinore Lane | EL 1+00 L | 0.02 | 0.9 | 1.1 | EC-3-A | 6.6 | 16.3 | 347 | 6.6 | 18 | D | 14.0 | 25.8 |
| Elinore Lane | EL 1+00 R | 0.02 | 0.6 | 0.7 | EC-2 | 2.8 | 2.8 | 85 | 1.0 | 18 | D | 2.5 | 4.5 |
| Elinore Lane | EL 3+50 L | 0.07 | 0.4 | 0.7 | EC-2 | 3.6 | 7.8 | 352 | 2.7 | 18 | B | 1.5 | 4.9 |
| Elinore Lane | EL 3+75 R | 0.07 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 132 | 1.3 | 18 | D | 4.5 | 8.3 |
| Elinore Lane | EL 5+00 L | 0.09 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.6 | 402 | 2.6 | 18 | D | 6.6 | 12.1 |
| Elinore Lane | EL 11+00 L | 0.21 | 0.5 | 0.7 | EC-2 | 3.3 | 6.2 | 320 | 2.4 | 18 | B | 1.5 | 4.9 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Elinore Lane | EL 11+00 R | 0.21 | 0.9 | 1.1 | EC-2 | 3.0 | 1.6 | 168 | 2.9 | 18 | D | 6.6 | 12.1 |
| Elinore Lane | EL 15+25 L | 0.29 | 0.4 | 0.6 | EC-2 | 2.4 | 4.1 | 40 | 1.0 | 18 | B | 0.8 | 2.1 |
| Elinore Lane | EL 15+25 R | 0.29 | 0.5 | 0.7 | Grass | 2.7 | 1.7 | 46 | 2.0 | 18 | B | 1.1 | 3.5 |
| Elinore Lane | EL 17+00 L | 0.32 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.4 | 68 | 1.1 | 18 | B | 1.1 | 3.5 |
| Elinore Lane | EL 17+00 R | 0.32 | 0.3 | 0.5 | EC-2 | 3.1 | 8.9 | 117 | 1.0 | 18 | B | 0.8 | 2.1 |
| Elinore Lane | EL 20+00 D | 0.38 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.2 | 109 | 1.0 | 18 | D | 2.5 | 4.5 |
| Huck Finn Drive | HFD 13+00 D | 0.25 | 0.8 | 1.0 | EC-3-A | 6.1 | 17.0 | 222 | 5.0 | 18 | D | 10.7 | 19.7 |
| Huck Finn Drive | HFD 13+00 L | 0.25 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.9 | 440 | 5.0 | 18 | B | 2.3 | 7.8 |
| Huck Finn Drive | HFD 18+00 D | 0.34 | 0.4 | 0.5 | EC-3-A | 4.6 | 26.2 | 183 | 2.0 | 18 | B | 1.1 | 3.5 |
| Huck Finn Drive | HFD 18+00 L | 0.34 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.0 | 421 | 2.0 | 18 | B | 1.1 | 3.5 |
| Joans Quadrangle Road | JQR 5+75 D | 0.11 | SD | SD | SD | SD | 30.6 | 214 | 8.1 | 18 | B | 3.5 | 12.2 |
| Joans Quadrangle Road | JQR 5+75 L | 0.11 | 0.4 | 0.6 | EC-3-A | 4.0 | 15.5 | 479 | 2.5 | 18 | B | 1.5 | 4.9 |
| Joans Quadrangle Road | JQR 5+75 R | 0.11 | 0.5 | 0.8 | EC-3-A | 4.0 | 12.9 | 391 | 6.0 | 18 | B | 2.6 | 8.9 |
| Joans Quadrangle Road | JQR 10+00 R | 0.19 | 0.4 | 0.7 | EC-3-A | 4.0 | 17.6 | 696 | 3.8 | 18 | B | 1.9 | 6.3 |
| Joans Quadrangle Road | JQR 24+00 D | 0.45 | 0.5 | 0.8 | EC-2 | 3.3 | 6.3 | 785 | 4.0 | 18 | B | 1.9 | 6.3 |
| Joans Quadrangle Road | JQR 35+00 D | 0.66 | 0.4 | 0.6 | EC-3-A | 3.6 | 14.2 | 342 | 1.2 | 18 | B | 1.1 | 3.5 |
| Joans Quadrangle Road | JQR 35+00 R | 0.66 | 0.4 | 0.6 | EC-2 | 3.6 | 8.0 | 500 | 1.2 | 18 | B | 1.1 | 3.5 |
| Heavens Tree Trail | HTT 22+00 D | 0.42 | SD | SD | SD | SD | 13.4 | 226 | 66.0 | 19 | C | 52.8 | 98.6 |
| Heavens Tree Trail | HTT 22+50 D | 0.43 | SD | SD | SD | SD | 7.6 | 59 | 71.0 | 19 | C | 52.8 | 98.6 |
| Heavens Tree Trail | HTT 22+50 R | 0.43 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.4 | 487 | 5.0 | 19 | C | 10.7 | 19.7 |
| Howellsville Road | HR 90+50 D | 1.71 | 0.6 | 1.1 | EC-2 | 3.3 | 3.9 | 300 | 9.0 | 19 | B | 3.5 | 12.2 |
| Howellsville Road | HR 90+50 D | 1.71 | 1.0 | 1.5 | EC-3-A | 3.5 | 3.9 | 400 | 58.6 | 19 | B | 9.0 | 33.9 |
| Howellsville Road | HR 90+50 L | 1.71 | 0.6 | 0.8 | EC-2 | 3.1 | 3.1 | 99 | 5.0 | 19 | B | 2.3 | 7.8 |
| Howellsville Road | HR 90+50 R | 1.71 | 0.5 | 0.9 | Grass | 2.7 | 1.1 | 182 | 4.0 | 19 | B | 1.9 | 6.3 |
| Lake Drive | LD 0+00 D | 0.00 | 0.4 | 0.6 | Grass | 2.3 | 1.3 | 182 | 0.6 | 19 | B | 0.8 | 2.1 |
| Heavens Tree Trail | HTT 3+00 D | 0.06 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.9 | 247 | 2.0 | 20 | C | 4.5 | 8.3 |
| Heavens Tree Trail | HTT 3+00 R | 0.06 | 0.8 | 1.0 | EC-3-A | 4.9 | 10.5 | 178 | 4.0 | 20 | C | 8.7 | 15.9 |
| Heavens Tree Trail | HTT 7+00 D | 0.13 | 0.9 | 1.1 | EC-3-A | 5.9 | 13.9 | 372 | 7.0 | 20 | C | 14.0 | 25.8 |
| Heavens Tree Trail | HTT 7+00 D1 | 0.13 | 1.0 | 1.2 | EC-3-B | 7.0 | 16.7 | 366 | 10.0 | 20 | C | 18.9 | 34.9 |
| Heavens Tree Trail | HTT 11+00 R | 0.21 | 1.2 | SD | EC-3-A | 6.3 | 9.7 | 266 | 14.0 | 20 | C | 24.6 | 45.5 |
| Heavens Tree Trail | HTT 14+50 R | 0.27 | 0.9 | 1.2 | EC-3-A | 6.0 | 14.1 | 385 | 7.2 | 20 | C | 15.6 | 28.8 |
| Heavens Tree Trail | HTT 17+50 R | 0.33 | 1.1 | 1.4 | EC-3-A | 5.5 | 7.8 | 249 | 11.0 | 20 | C | 20.3 | 37.6 |
| Lake Drive | LDS 5+50 D | 0.10 | 1.3 | SD | EC-3-A | 5.2 | 6.1 | 201 | 14.0 | 20 | D | 24.6 | 45.5 |
| Lake Drive | LDS 5+50 D1 | 0.10 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.9 | 496 | 3.8 | 20 | D | 8.7 | 15.9 |
| Lake Drive | LDS 5+50 D2 | 0.10 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.9 | 180 | 5.3 | 20 | D | 12.4 | 22.8 |
| Lake Drive | LDS 5+50 L | 0.10 | 0.8 | 1.1 | EC-2 | 3.4 | 2.8 | 242 | 3.0 | 20 | D | 6.6 | 12.1 |
| Lake Drive | LDS 5+50 R | 0.10 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 158 | 1.0 | 20 | D | 2.5 | 4.5 |
| Lake Drive | LD 6+50 R | 0.12 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.0 | 491 | 2.4 | 20 | D | 6.6 | 12.1 |
| Lake Drive | LD 6+50 U | 0.12 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.1 | 287 | 2.0 | 20 | D | 4.5 | 8.3 |
| Lake Drive | LD 11+75 R | 0.22 | 0.9 | 1.1 | EC-3-A | 5.7 | 13.3 | 230 | 6.0 | 20 | D | 12.4 | 22.8 |
| Lake Drive | LD 11+75 U | 0.22 | 0.5 | 0.6 | EC-3-A | 4.4 | 18.3 | 150 | 0.5 | 20 | D | 2.5 | 4.5 |
| Lake Drive | LD 15+50 D1 | 0.29 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.9 | 578 | 3.0 | 20 | D | 6.6 | 12.1 |
| Marino Lane | ML 0+35 L | 0.01 | 0.7 | 0.9 | EC-3-A | 6.6 | 21.8 | 611 | 4.8 | 20 | D | 10.7 | 19.7 |
| Marino Lane | ML 0+35 R | 0.01 | 0.7 | 0.9 | EC-2 | 3.5 | 4.2 | 91 | 1.8 | 20 | D | 4.5 | 8.3 |
| Marino Lane | ML 2+50 D | 0.05 | 0.9 | 1.2 | EC-3-B | 7.6 | 19.8 | 203 | 9.5 | 20 | D | 18.9 | 34.9 |
| Marino Lane | ML 2+50 R | 0.05 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.4 | 173 | 2.6 | 20 | D | 6.6 | 12.1 |
| Marino Lane | ML 5+50 R | 0.10 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.5 | 178 | 2.1 | 20 | D | 6.6 | 12.1 |
| Marino Lane | ML 7+00 D1 | 0.13 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 140 | 0.7 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 7+00 D2 | 0.13 | SD | SD | SD | SD | 32.4 | 338 | 0.5 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 10+50 L | 0.20 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.9 | 100 | 0.2 | 20 | D | 2.5 | 4.5 |
| Marino Lane | ML 16+70 D | 0.32 | 1.1 | SD | EC-3-A | 6.2 | 9.2 | 757 | 12.8 | 20 | D | 23.2 | 42.9 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| River Overlook Road | ROR 5+50 D | 0.10 | 0.6 | 0.7 | EC-3-A | 5.5 | 21.7 | 366 | 1.5 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 5+50 L | 0.10 | 0.5 | 0.7 | EC-2 | 3.6 | 5.8 | 107 | 0.4 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 5+50 R | 0.10 | 0.7 | 0.9 | EC-2 | 3.2 | 2.3 | 216 | 1.2 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 8+50 L | 0.16 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 28 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 9+50 D | 0.18 | SD | SD | SD | SD | 31.6 | 300 | 1.5 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 9+50 R | 0.18 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.7 | 66 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 9+50 R | 0.18 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.2 | 131 | 0.6 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 14+00 D | 0.27 | 0.6 | 0.7 | EC-3-A | 6.7 | 27.8 | 745 | 2.5 | 20 | C | 6.6 | 12.1 |
| River Overlook Road | ROR 14+00 L | 0.27 | 0.7 | 0.9 | EC-2 | 3.5 | 4.3 | 237 | 1.4 | 20 | C | 4.5 | 8.3 |
| River Overlook Road | ROR 14+00 R | 0.27 | 0.7 | 0.8 | Grass | 2.3 | 0.8 | 155 | 0.5 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 18+00 L | 0.34 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 245 | 0.7 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 21+00 D | 0.40 | SD | SD | SD | SD | 28.0 | 222 | 1.0 | 20 | C | 2.5 | 4.5 |
| River Overlook Road | ROR 21+00 L | 0.40 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 214 | 1.0 | 20 | C | 2.5 | 4.5 |
| Wendy Hill road | WHR 8+00 D | 0.15 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 340 | 1.0 | 20 | D | 2.5 | 4.5 |
| Wendy Hill road | WHR 9+00 D | 0.17 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.5 | 495 | 2.0 | 20 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 11+75 R | 0.22 | 0.7 | 0.9 | EC-2 | 3.5 | 4.9 | 203 | 1.4 | 20 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 17+00 L | 0.32 | 0.5 | 0.7 | EC-2 | 3.6 | 5.4 | 206 | 1.0 | 20 | D | 2.5 | 4.5 |
| Wendy Hill road | WHR 17+00 R | 0.32 | 0.7 | 0.9 | EC-3-A | 3.5 | 7.0 | 507 | 2.0 | 20 | D | 4.5 | 8.3 |
| Dogwood Farm Road | DFR 19+00 L | 0.36 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.7 | 412 | 2.0 | 21 | D | 4.5 | 8.3 |
| Dogwood Farm Road | DFR 30+00 U | 0.57 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.4 | 65 | 0.1 | 21 | D | 2.5 | 4.5 |
| Dogwood Farm Road | DFR 32+50 D | 0.62 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.7 | 178 | 1.0 | 21 | D | 2.5 | 4.5 |
| McIlee Court | MC 0+50 L | 0.01 | 1.2 | 1.5 | EC-3-A | 4.0 | 3.1 | 532 | 8.0 | 21 | D | 15.6 | 28.8 |
| McIlee Court | MC 0+50 R | 0.01 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.1 | 292 | 1.0 | 21 | D | 2.5 | 4.5 |
| McIlee Court | MC 6+75 L | 0.13 | 1.5 | SD | EC-3-A | 4.6 | 4.6 | 273 | 17.0 | 21 | D | 28.9 | 53.5 |
| McIlee Court | MC 10+50 L | 0.20 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.4 | 313 | 1.5 | 21 | D | 4.5 | 8.3 |
| McIlee Court | MC 16+50 D | 0.31 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.7 | 188 | 3.5 | 21 | D | 8.7 | 15.9 |
| McIlee Court | MC 16+50 L | 0.31 | 0.7 | 0.8 | EC-3-A | 5.5 | 15.3 | 116 | 3.0 | 21 | D | 6.6 | 12.1 |
| McIlee Court | MC 16+50 R | 0.31 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.3 | 89 | 0.5 | 21 | D | 2.5 | 4.5 |
| Old Oak Lane | OOL 12+00 L | 0.23 | SD | SD | SD | SD | 0.1 | 197 | 27.0 | 21 | D | 40.6 | 75.6 |
| Old Oak Lane | OOL 19+50 L | 0.37 | 1.2 | 1.5 | EC-3-A | 3.6 | 2.2 | 575 | 7.8 | 21 | D | 15.6 | 28.8 |
| Old Oregon Road | OOR 10+50 D | 0.20 | 0.9 | 1.1 | EC-3-A | 6.7 | 17.0 | 296 | 8.0 | 21 | C | 15.6 | 28.8 |
| Old Oregon Road | OOR 10+50 R | 0.20 | 1.0 | 1.2 | EC-3-A | 5.5 | 10.0 | 519 | 7.0 | 21 | C | 14.0 | 25.8 |
| Old Oregon Road | OOR 17+25 R | 0.33 | 0.7 | 0.9 | EC-3-A | 4.6 | 10.4 | 203 | 2.9 | 21 | C | 6.6 | 12.1 |
| Old Oregon Road | OOR 23+25 L | 0.44 | 1.2 | 1.5 | EC-3-A | 4.0 | 4.1 | 405 | 8.0 | 21 | C | 15.6 | 28.8 |
| Old Oregon Road | OOR 26+60 D | 0.50 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.4 | 175 | 3.0 | 21 | D | 6.6 | 12.1 |
| Old Oregon Road | OOR 26+60 L | 0.50 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.6 | 115 | 2.0 | 21 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 30+00 D | 0.57 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.4 | 223 | 2.0 | 21 | D | 4.5 | 8.3 |
| Wendy Hill road | WHR 30+00 L | 0.57 | SD | SD | SD | SD | 28.1 | 56 | 1.0 | 21 | D | 2.5 | 4.5 |
| Goode Drive | GD 36+75 D | 0.70 | 0.8 | 1.0 | EC-3-A | 4.5 | 7.3 | 371 | 4.0 | 22 | D | 8.7 | 15.9 |
| Goode Drive | GD 36+75 L | 0.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.3 | 123 | 1.7 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 36+75 R | 0.70 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 207 | 1.5 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 43+00 R | 0.81 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.1 | 301 | 3.3 | 22 | D | 8.7 | 15.9 |
| Goode Drive | GD 48+25 D | 0.91 | 0.6 | 0.8 | EC-3-A | 6.3 | 23.2 | 238 | 2.3 | 22 | D | 6.6 | 12.1 |
| Goode Drive | GD 48+25 L | 0.91 | 0.8 | 1.0 | EC-2 | 2.7 | 1.8 | 320 | 1.2 | 22 | D | 4.5 | 8.3 |
| Goode Drive | GD 48+25 R | 0.91 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.2 | 97 | 1.0 | 22 | D | 2.5 | 4.5 |
| Honey Farm Lane | HFL -6+50 D | -0.12 | 0.8 | 0.9 | EC-3-A | 5.2 | 11.7 | 146 | 4.0 | 22 | D | 8.7 | 15.9 |
| Honey Farm Lane | HFL -6+50 D1 | -0.12 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.0 | 298 | 3.0 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL -5+50 D | -0.10 | 0.6 | 0.7 | EC-2 | 3.1 | 4.8 | 392 | 0.8 | 22 | D | 2.5 | 4.5 |
| Honey Farm Lane | HLF 2+75 L | 0.05 | 1.2 | 1.5 | EC-3-A | 4.0 | 4.7 | 40 | 7.5 | 22 | D | 15.6 | 28.8 |
| Honey Farm Lane | HLF 2+75 R | 0.05 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.5 | 486 | 6.0 | 22 | D | 12.4 | 22.8 |
| Honey Farm Lane | HLF 4+00 D | 0.08 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.2 | 326 | 2.0 | 22 | D | 4.5 | 8.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Honey Farm Lane | HFL 14+50 D | 0.27 | 0.6 | 0.8 | EC-3-A | 6.3 | 26.5 | 118 | 2.3 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL 14+50 R | 0.27 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.7 | 509 | 2.2 | 22 | D | 6.6 | 12.1 |
| Honey Farm Lane | HFL 15+00 D | 0.28 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.1 | 148 | 0.2 | 22 | D | 2.5 | 4.5 |
| Honey Farm Road | HFR 0+00 U | 0.00 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.7 | 375 | 2.1 | 22 | D | 6.6 | 12.1 |
| Mountain Lake Drive | MLD 8+50 D | 0.16 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.2 | 163 | 2.5 | 22 | D | 6.6 | 12.1 |
| Mountain Lake Drive | MLD 8+50 L | 0.16 | 0.7 | 0.9 | EC-2 | 3.5 | 4.8 | 299 | 2.0 | 22 | D | 4.5 | 8.3 |
| Mountain Lake Drive | MLD 8+50 R | 0.16 | 0.5 | 0.7 | EC-2 | 3.6 | 6.2 | 126 | 0.2 | 22 | D | 2.5 | 4.5 |
| Old Oregon Road | OOR 32+50 D | 0.62 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 293 | 1.0 | 22 | D | 2.5 | 4.5 |
| Otto Place | OP 2+00 D | 0.04 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.7 | 234 | 0.2 | 22 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 11+00 D | 0.21 | 0.5 | 0.6 | EC-3-A | 3.7 | 9.5 | 274 | 1.0 | 22 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 25+00 D | 0.47 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.8 | 776 | 2.4 | 22 | D | 6.6 | 12.1 |
| Western Lane | WL 56+00 D | 1.06 | 0.8 | 1.0 | EC-3-B | 7.4 | 23.5 | 148 | 5.3 | 22 | D | 12.4 | 22.8 |
| Western Lane | WL 56+00 L | 1.06 | 0.7 | 0.9 | EC-2 | 3.5 | 3.5 | 163 | 2.0 | 22 | D | 4.5 | 8.3 |
| Western Lane | WL 56+00 R | 1.06 | 0.9 | 1.2 | EC-2 | 3.7 | 2.0 | 323 | 3.3 | 22 | D | 8.7 | 15.9 |
| Western Lane | WL 63+75 D | 1.21 | 0.9 | 1.2 | EC-3-A | 6.9 | 16.9 | 122 | 8.8 | 22 | D | 17.3 | 31.9 |
| Western Lane | WL 63+75 L | 1.21 | 0.9 | 1.2 | EC-3-A | 4.9 | 8.1 | 372 | 6.0 | 22 | D | 12.4 | 22.8 |
| Western Lane | WL 63+75 R | 1.21 | 0.8 | 1.0 | EC-3-A | 3.8 | 5.7 | 106 | 3.0 | 22 | D | 6.6 | 12.1 |
| Western Lane | WL 71+00 D | 1.34 | 0.7 | 0.9 | EC-3-A | 6.6 | 21.7 | 165 | 5.0 | 22 | D | 10.7 | 19.7 |
| Western Lane | WL 71+00 L | 1.34 | 1.2 | 1.5 | EC-2 | 2.6 | 0.0 | 503 | 5.0 | 22 | D | 10.7 | 19.7 |
| Western Lane | WL 75+00 D | 1.42 | 1.0 | 1.2 | EC-3-A | 5.1 | 8.4 | 424 | 7.0 | 22 | D | 14.0 | 25.8 |
| Western Lane | WL 75+00 L | 1.42 | 1.0 | 1.2 | EC-2 | 3.2 | 1.8 | 348 | 4.0 | 22 | D | 8.7 | 15.9 |
| Western Lane | WL 75+00 R | 1.42 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.3 | 570 | 3.0 | 22 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 1+50 D | 0.03 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.4 | 319 | 2.2 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 1+50 R | 0.03 | 0.9 | 1.3 | Grass | 2.8 | 1.0 | 354 | 2.2 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 8+50 L | 0.16 | 0.7 | 0.9 | EC-2 | 3.5 | 3.7 | 241 | 1.9 | 23 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 12+00 L | 0.23 | 1.3 | SD | EC-3-B | 7.3 | 11.5 | 332 | 20.3 | 23 | D | 34.2 | 63.5 |
| Drummer Hill Road | DHR 14+00 D | 0.27 | 1.3 | SD | EC-3-A | 6.8 | 10.3 | 196 | 21.0 | 23 | D | 34.2 | 63.5 |
| Drummer Hill Road | DHR 15+50 L | 0.29 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.7 | 362 | 1.5 | 23 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 17+00 D | 0.32 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.2 | 486 | 10.5 | 23 | D | 20.3 | 37.6 |
| Drummer Hill Road | DHR 27+50 D | 0.52 | SD | SD | SD | SD | 31.2 | 297 | 12.0 | 23 | D | 21.8 | 40.2 |
| Drummer Hill Road | DHR 27+50 D1 | 0.52 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.5 | 289 | 1.7 | 23 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 27+50 L | 0.52 | 1.1 | 1.4 | EC-3-A | 5.4 | 8.9 | 239 | 10.0 | 23 | D | 18.9 | 34.9 |
| Drummer Hill Road | DHR 31+00 D | 0.59 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.4 | 251 | 2.7 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 31+50 D | 0.60 | 0.7 | 0.8 | EC-3-A | 6.8 | 24.1 | 284 | 3.2 | 23 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 31+50 L | 0.60 | 0.9 | 1.2 | EC-3-A | 3.5 | 4.5 | 28 | 3.2 | 23 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 37+00 L | 0.70 | 0.9 | 1.2 | EC-3-A | 4.2 | 6.0 | 495 | 4.7 | 23 | D | 10.7 | 19.7 |
| Drummer Hill Road | DHR 37+00 R | 0.70 | 0.7 | 0.8 | Grass | 2.3 | 0.9 | 93 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 61+50 D | 1.16 | 0.7 | 0.8 | EC-3-A | 5.5 | 16.8 | 375 | 2.8 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 61+50 R | 1.16 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.3 | 377 | 2.8 | 23 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 66+50 D | 1.26 | 0.5 | 0.6 | EC-3-A | 4.4 | 18.8 | 330 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 66+50 L | 1.26 | 0.5 | 0.6 | EC-3-A | 4.4 | 15.0 | 286 | 0.5 | 23 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 67+50 D | 1.28 | 1.0 | 1.3 | EC-3-A | 5.2 | 8.7 | 623 | 7.5 | 23 | D | 15.6 | 28.8 |
| Huck Finn Drive | HFD 8+25 D | 0.16 | 0.9 | 1.2 | EC-3-A | 3.5 | 3.8 | 523 | 3.4 | 23 | D | 8.7 | 15.9 |
| Jennings Farm Court | JFC 0+50 L | 0.01 | 1.0 | 1.3 | EC-3-A | 3.6 | 5.0 | 353 | 5.0 | 23 | D | 10.7 | 19.7 |
| Jennings Farm Court | JFC 0+50 R | 0.01 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.5 | 373 | 1.1 | 23 | D | 4.5 | 8.3 |
| Jennings Farm Court | JFC 9+00 D | 0.17 | 0.9 | 1.1 | EC-3-A | 5.1 | 9.9 | 530 | 4.2 | 23 | D | 10.7 | 19.7 |
| Kits Court | KC 9+00 D | 0.17 | SD | SD | SD | SD | 30.3 | 615 | 2.0 | 23 | D | 4.5 | 8.3 |
| Kits Court | KC 9+00 R | 0.17 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 85 | 0.5 | 23 | D | 2.5 | 4.5 |
| Mountain Lake Drive | MLD 16+00 D | 0.30 | 1.0 | 1.2 | EC-3-A | 5.1 | 8.8 | 469 | 7.0 | 23 | D | 14.0 | 25.8 |
| Mountain Lake Drive | MLD 16+00 L | 0.30 | 1.2 | 1.6 | EC-2 | 3.6 | 1.2 | 84 | 6.2 | 23 | D | 14.0 | 25.8 |
| Mountain Lake Drive | MLD 17+00 L | 0.32 | 0.8 | 1.0 | EC-2 | 2.7 | 1.3 | 184 | 2.0 | 23 | D | 4.5 | 8.3 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Mountain Lake Drive | MLD 17+00 U | 0.32 | 0.9 | 1.1 | EC-3-A | 4.7 | 7.7 | 346 | 4.2 | 23 | D | 10.7 | 19.7 |
| Mountain Lake Drive | MLD 21+00 D | 0.40 | 0.9 | 1.1 | EC-3-A | 5.7 | 14.9 | 254 | 5.1 | 23 | D | 12.4 | 22.8 |
| Mountain Lake Drive | MLD 21+00 L | 0.40 | 0.8 | 1.1 | EC-2 | 3.8 | 3.2 | 360 | 3.0 | 23 | D | 6.6 | 12.1 |
| Mountain Lake Drive | MLD 21+00 R | 0.40 | 0.8 | 1.0 | EC-2 | 2.7 | 1.3 | 179 | 2.0 | 23 | D | 4.5 | 8.3 |
| Mountain Lake Drive | MLD 24+50 D | 0.46 | 1.0 | 1.2 | EC-3-B | 7.0 | 16.0 | 253 | 9.4 | 23 | D | 18.9 | 34.9 |
| Drummer Hill Road | DHR 85+50 D | 1.62 | SD | SD | SD | SD | 41.6 | 70 | 1.7 | 24 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 89+50 D | 1.70 | 0.7 | 0.9 | EC-3-B | 7.1 | 23.6 | 455 | 4.7 | 24 | D | 10.7 | 19.7 |
| Drummer Hill Road | DHR 89+50 L | 1.70 | 0.5 | 0.7 | EC-2 | 3.6 | 6.2 | 112 | 0.6 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 89+50 R | 1.70 | 0.9 | 1.1 | EC-3-A | 4.0 | 6.7 | 418 | 4.0 | 24 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 97+50 D | 1.85 | 0.6 | 0.7 | EC-2 | 3.1 | 4.5 | 109 | 0.5 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 97+75 D | 1.85 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.4 | 469 | 1.0 | 24 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 105+00 D | 1.99 | 0.5 | 0.8 | EC-3-A | 4.7 | 16.9 | 102 | 8.7 | 24 | B | 3.5 | 12.2 |
| Drummer Hill Road | DHR 105+00 L | 1.99 | 0.6 | 0.9 | EC-3-A | 4.3 | 12.2 | 361 | 7.4 | 24 | B | 3.2 | 11.1 |
| Drummer Hill Road | DHR 105+00 R | 1.99 | 0.4 | 0.6 | EC-2 | 4.0 | 10.7 | 161 | 1.2 | 24 | B | 1.1 | 3.5 |
| Peggys Court | PGC 0+00 D | 0.00 | 0.4 | 0.7 | EC-3-A | 4.0 | 16.3 | 202 | 3.5 | 24 | B | 1.9 | 6.3 |
| Peggys Court | PGC 0+00 L | 0.00 | 0.5 | 0.6 | EC-2 | 2.8 | 3.9 | 280 | 1.5 | 24 | B | 1.1 | 3.5 |
| Peggys Court | PGC 0+00 R | 0.00 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.2 | 348 | 1.7 | 24 | B | 1.1 | 3.5 |
| Peggys Court | PGC 4+90 D | 0.09 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.3 | 296 | 2.0 | 24 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 1+00 L | 0.02 | 0.3 | 0.4 | EC-3-A | 4.1 | 27.8 | 99 | 0.6 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 6+50 D | 0.12 | 0.5 | 0.9 | EC-2 | 3.6 | 5.2 | 232 | 6.4 | 26 | B | 2.9 | 10.0 |
| Thompson Mill Road | TMR 6+50 L | 0.12 | 0.6 | 0.9 | EC-2 | 2.8 | 2.1 | 279 | 4.4 | 26 | B | 2.3 | 7.8 |
| Thompson Mill Road | TMR 6+50 R | 0.12 | 0.4 | 0.6 | EC-2 | 3.6 | 8.9 | 360 | 2.0 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 11+00 D | 0.21 | 0.6 | 1.1 | EC-2 | 3.9 | 5.9 | 194 | 11.0 | 26 | B | 4.0 | 14.2 |
| Thompson Mill Road | TMR 11+00 R | 0.21 | 0.4 | 0.6 | EC-2 | 2.4 | 3.8 | 114 | 1.0 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 14+00 D | 0.27 | 0.7 | 1.2 | Grass | 2.3 | 0.3 | 215 | 6.1 | 26 | B | 2.9 | 10.0 |
| Thompson Mill Road | TMR 14+50 L | 0.27 | 0.4 | 0.6 | EC-2 | 2.4 | 4.4 | 195 | 1.0 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 14+50 R | 0.27 | 0.5 | 0.6 | EC-2 | 3.3 | 6.8 | 298 | 1.6 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 17+00 D | 0.32 | 0.4 | 0.7 | EC-3-A | 3.6 | 12.1 | 831 | 3.6 | 26 | B | 1.9 | 6.3 |
| Thompson Mill Road | TMR 22+00 D | 0.42 | 0.5 | 0.8 | EC-3-A | 5.2 | 19.8 | 300 | 9.8 | 26 | B | 3.7 | 13.3 |
| Thompson Mill Road | TMR 22+00 R | 0.42 | 0.6 | 0.9 | EC-3-A | 4.3 | 14.5 | 241 | 9.8 | 26 | B | 3.7 | 13.3 |
| Thompson Mill Road | TMR 25+00 R | 0.47 | 0.3 | 0.5 | EC-2 | 4.0 | 18.5 | 96 | 0.9 | 26 | B | 0.8 | 2.1 |
| Thompson Mill Road | TMR 29+25 L | 0.55 | 0.6 | 0.7 | Grass | 2.1 | 0.9 | 229 | 1.2 | 26 | B | 1.1 | 3.5 |
| Thompson Mill Road | TMR 29+25 R | 0.55 | 0.7 | 0.9 | EC-3-A | 5.8 | 16.7 | 548 | 3.2 | 26 | C | 8.7 | 15.9 |
| Eagles Crag Road | ECR 0+00 D | 0.00 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.8 | 730 | 2.0 | 27 | D | 4.5 | 8.3 |
| Old Oak Lane | OOL 34+00 R | 0.64 | 1.6 | SD | EC-3-A | 4.3 | 2.9 | 325 | 19.8 | 27 | C | 33.1 | 61.4 |
| Old Oak Lane | OOL 38+50 R | 0.73 | 1.1 | 1.4 | EC-3-A | 3.4 | 2.5 | 401 | 5.1 | 27 | C | 12.4 | 22.8 |
| Old Oak Lane | OOL 41+50 D | 0.79 | 1.6 | SD | EC-3-A | 5.0 | 5.0 | 336 | 26.0 | 27 | C | 39.5 | 73.6 |
| Old Oak Lane | OOL 53+00 L | 1.00 | 0.9 | 1.2 | EC-2 | 3.7 | 2.8 | 745 | 4.0 | 27 | C | 8.7 | 15.9 |
| Old Oregon Road | OOR 0+50 R | 0.01 | 0.9 | 1.2 | EC-2 | 3.7 | 2.3 | 196 | 3.4 | 27 | C | 8.7 | 15.9 |
| Old Oregon Road | OOR 0+50 R | 0.01 | 1.0 | SD | EC-3-B | 7.4 | 16.6 | 604 | 12.6 | 27 | C | 23.2 | 42.9 |
| Timberline Ridge Road | TRR 0+00 L | 0.00 | 0.9 | 1.2 | EC-3-A | 4.9 | 7.5 | 764 | 6.0 | 27 | C | 12.4 | 22.8 |
| Timberline Ridge Road | TRR 0+00 R | 0.00 | 0.8 | 1.0 | EC-3-A | 4.5 | 8.2 | 312 | 3.7 | 27 | C | 8.7 | 15.9 |
| Timberline Ridge Road | TRR 8+50 L | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 60 | 0.3 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 8+50 R | 0.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.7 | 34 | 0.4 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 9+50 L | 0.18 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.4 | 124 | 0.8 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 13+00 D | 0.25 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.7 | 146 | 0.9 | 27 | C | 2.5 | 4.5 |
| Timberline Ridge Road | TRR 14+00 D | 0.27 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.6 | 99 | 2.3 | 27 | C | 6.6 | 12.1 |
| Timberline Ridge Road | TRR 14+00 R | 0.27 | 0.7 | 0.8 | EC-3-A | 5.5 | 18.3 | 129 | 2.3 | 27 | C | 6.6 | 12.1 |
| Timberline Ridge Road | TRR 15+00 L | 0.28 | 1.0 | 1.3 | EC-3-A | 5.2 | 8.0 | 746 | 8.0 | 27 | C | 15.6 | 28.8 |
| Timberline Ridge Road | TRR 15+50 D | 0.29 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.3 | 313 | 10.5 | 27 | C | 20.3 | 37.6 |
| Timberline Ridge Road | TRR 23+00 D | 0.44 | 0.5 | 0.6 | EC-3-A | 4.4 | 17.6 | 125 | 1.0 | 27 | C | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Timberline Ridge Road | TRR 25+50 D | 0.48 | 0.6 | 0.8 | EC-3-A | 4.5 | 14.0 | 182 | 2.0 | 27 | C | 4.5 | 8.3 |
| Venus Branch Road | VBR 79+00 D | 1.50 | SD | SD | SD | SD | 4.4 | 94 | 42.0 | 27 | C | 52.8 | 98.6 |
| Venus Branch Road | VBR 83+00 D | 1.57 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.0 | 445 | 6.0 | 27 | C | 12.4 | 22.8 |
| Venus Branch Road | VBR 83+00 R | 1.57 | 0.8 | 1.0 | EC-2 | 2.7 | 1.7 | 254 | 2.0 | 27 | C | 4.5 | 8.3 |
| Brookview Lane | BVL 10+00 D | 0.19 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.7 | 320 | 1.0 | 28 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 43+50 L | 0.82 | 0.9 | 1.2 | EC-3-A | 3.5 | 3.6 | 494 | 3.7 | 28 | D | 8.7 | 15.9 |
| Drummer Hill Road | DHR 43+50 D | 0.82 | SD | SD | SD | SD | 35.1 | 187 | 5.7 | 28 | D | 12.4 | 22.8 |
| Drummer Hill Road | DHR 47+50 D | 0.90 | SD | SD | SD | SD | 45.0 | 129 | 2.5 | 28 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 47+50 L | 0.90 | 0.8 | 1.0 | Grass | 2.6 | 0.4 | 172 | 1.5 | 28 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 47+50 R | 0.90 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 94 | 1.0 | 28 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 51+00 D | 0.97 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 230 | 0.5 | 28 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 54+50 D | 1.03 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.5 | 241 | 2.0 | 28 | D | 4.5 | 8.3 |
| Goode Drive | GD 58+00 D | 1.10 | 0.9 | 1.1 | EC-3-A | 6.7 | 18.5 | 118 | 7.9 | 28 | D | 15.6 | 28.8 |
| Goode Drive | GD 58+00 L | 1.10 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.2 | 325 | 2.9 | 28 | D | 6.6 | 12.1 |
| Goode Drive | GD 58+00 R | 1.10 | 0.8 | 1.0 | EC-3-A | 5.5 | 14.5 | 523 | 5.0 | 28 | D | 10.7 | 19.7 |
| Old Oak Lane | OOL 24+50 L | 0.46 | 1.0 | 1.3 | EC-3-A | 3.6 | 4.5 | 444 | 4.4 | 28 | D | 10.7 | 19.7 |
| Old Oak Lane | OOL 26+00 L | 0.49 | 0.9 | 1.1 | EC-3-A | 4.7 | 8.7 | 96 | 5.0 | 28 | D | 10.7 | 19.7 |
| Pine Ridge Drive | PRD 39+00 D | 0.74 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.5 | 66 | 1.8 | 28 | D | 4.5 | 8.3 |
| Pine Ridge Drive | PRD 39+00 L | 0.74 | 0.7 | 0.8 | Grass | 2.3 | 0.2 | 269 | 0.8 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 39+00 R | 0.74 | 0.6 | 0.7 | EC-2 | 3.1 | 4.9 | 510 | 1.0 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 46+00 D | 0.87 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.1 | 78 | 1.7 | 28 | D | 4.5 | 8.3 |
| Pine Ridge Drive | PRD 46+00 L | 0.87 | 0.6 | 0.8 | Grass | 3.0 | 1.6 | 172 | 0.7 | 28 | D | 2.5 | 4.5 |
| Pine Ridge Drive | PRD 46+00 R | 0.87 | 0.6 | 0.7 | EC-2 | 3.1 | 4.5 | 364 | 1.0 | 28 | D | 2.5 | 4.5 |
| Western Lane | WL 81+00 D | 1.53 | 0.7 | 0.9 | EC-2 | 3.5 | 3.2 | 412 | 2.0 | 28 | D | 4.5 | 8.3 |
| Western Lane | WL 82+00 D | 1.55 | 0.8 | 1.1 | EC-2 | 3.4 | 2.9 | 109 | 2.2 | 28 | D | 6.6 | 12.1 |
| Bobbie Court | BCT 4+50 R | 0.09 | 0.7 | 0.9 | EC-2 | 3.5 | 4.6 | 241 | 2.0 | 29 | D | 4.5 | 8.3 |
| Bobbie Court | BCT 8+50 D | 0.16 | 1.2 | 1.5 | EC-3-A | 4.1 | 4.8 | 74 | 8.8 | 29 | D | 17.3 | 31.9 |
| Bobbie Court | BCT 8+50 L | 0.16 | SD | SD | SD | SD | 28.7 | 339 | 3.0 | 29 | D | 6.6 | 12.1 |
| Bobbie Court | BCT 8+50 R | 0.16 | 1.0 | 1.2 | EC-3-A | 4.4 | 6.4 | 392 | 5.6 | 29 | D | 12.4 | 22.8 |
| Bobbie Court | BCT 13+00 D | 0.25 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.2 | 395 | 1.2 | 29 | D | 4.5 | 8.3 |
| Bobbie Court | BCT 13+00 L | 0.25 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.5 | 311 | 5.0 | 29 | D | 10.7 | 19.7 |
| Bobbie Court | BCT 13+00 R | 0.25 | 0.8 | 1.0 | EC-3-A | 3.8 | 6.4 | 389 | 3.0 | 29 | D | 6.6 | 12.1 |
| Brookview Lane | BVL 6+50 D | 0.12 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.2 | 450 | 1.5 | 29 | D | 4.5 | 8.3 |
| Brookview Lane | BVL 12+00 D | 0.23 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.8 | 176 | 1.0 | 29 | D | 2.5 | 4.5 |
| Brookview Road | BVR 5+00 D | 0.09 | 0.5 | 0.7 | EC-2 | 3.6 | 6.1 | 459 | 0.6 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 74+50 D | 1.41 | 0.6 | 0.7 | EC-3-A | 5.0 | 17.2 | 497 | 1.5 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 74+50 L | 1.41 | 0.8 | 1.0 | EC-2 | 2.7 | 1.9 | 260 | 1.4 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 74+50 R | 1.41 | 0.5 | 0.7 | EC-2 | 3.6 | 5.8 | 40 | 0.3 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 75+50 R | 1.43 | 0.5 | 0.7 | EC-2 | 3.6 | 5.3 | 95 | 0.7 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 75+75 D | 1.43 | 0.5 | 0.6 | EC-3-A | 4.8 | 22.9 | 374 | 0.8 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 77+00 D | 1.46 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.4 | 92 | 0.3 | 29 | D | 2.5 | 4.5 |
| Drummer Hill Road | DHR 78+00 D | 1.48 | 0.6 | 0.8 | EC-3-A | 4.5 | 12.3 | 62 | 1.2 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 78+00 L | 1.48 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.8 | 100 | 1.2 | 29 | D | 4.5 | 8.3 |
| Drummer Hill Road | DHR 79+00 D | 1.50 | 0.9 | 1.1 | EC-3-B | 7.5 | 22.4 | 644 | 8.5 | 29 | D | 17.3 | 31.9 |
| Drummer Hill Road | DHR 79+00 L | 1.50 | 0.6 | 0.8 | EC-3-A | 5.9 | 21.7 | 465 | 3.0 | 29 | D | 6.6 | 12.1 |
| Drummer Hill Road | DHR 79+00 R | 1.50 | 0.8 | 1.0 | EC-3-A | 5.5 | 13.5 | 564 | 4.4 | 29 | D | 10.7 | 19.7 |
| Kits Court | KC 4+50 D | 0.09 | 0.6 | 0.7 | EC-3-A | 5.0 | 16.5 | 383 | 1.4 | 29 | D | 4.5 | 8.3 |
| Kits Court | KC 4+50 L | 0.09 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.7 | 237 | 1.4 | 29 | D | 4.5 | 8.3 |
| Parker Circle | PC 0+50 L | 0.01 | 0.6 | 0.8 | EC-3-A | 4.5 | 11.2 | 359 | 1.8 | 29 | D | 4.5 | 8.3 |
| Parker Circle | PC 1+50 D | 0.03 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.9 | 369 | 1.0 | 29 | D | 2.5 | 4.5 |
| Parker Circle | PC 1+50 R | 0.03 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 209 | 1.0 | 29 | D | 2.5 | 4.5 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Parker Circle | PC 3+00 D | 0.06 | 0.4 | 0.7 | EC-3-A | 5.1 | 25.2 | 416 | 6.8 | 29 | B | 2.9 | 10.0 |
| Venus Branch Road | VBR 1+50 D | 0.03 | 0.6 | 0.7 | EC-3-A | 5.5 | 21.8 | 59 | 2.0 | 29 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 2+25 L | 0.04 | 0.7 | 0.8 | EC-3-A | 5.5 | 18.3 | 70 | 2.2 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 3+00 L | 0.06 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 45 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 6+50 L | 0.12 | 1.3 | SD | EC-3-A | 4.3 | 4.9 | 289 | 12.0 | 29 | D | 21.8 | 40.2 |
| Venus Branch Road | VBR 7+00 D | 0.13 | 0.6 | 0.7 | EC-2 | 3.1 | 3.4 | 31 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 8+50 D | 0.16 | SD | SD | SD | SD | 30.3 | 84 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 8+50 L | 0.16 | 1.1 | 1.3 | EC-3-A | 3.8 | 3.1 | 113 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 9+50 D | 0.18 | SD | SD | SD | SD | 21.6 | 88 | 35.0 | 29 | D | 48.3 | 90.2 |
| Venus Branch Road | VBR 9+50 U | 0.18 | SD | SD | SD | SD | 8.2 | 210 | 30.5 | 29 | D | 44.7 | 83.4 |
| Venus Branch Road | VBR 16+75 L | 0.32 | 1.0 | 1.2 | EC-3-A | 4.4 | 5.3 | 629 | 6.0 | 29 | D | 12.4 | 22.8 |
| Venus Branch Road | VBR 16+75 R | 0.32 | 0.6 | 0.7 | EC-2 | 3.1 | 3.8 | 75 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 18+00 D | 0.34 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 72 | 0.2 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 22+75 R | 0.43 | 0.7 | 0.9 | EC-3-A | 4.9 | 11.4 | 292 | 2.3 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 24+00 L | 0.45 | 0.6 | 0.7 | EC-2 | 2.8 | 2.8 | 112 | 0.5 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 26+00 L | 0.49 | 0.8 | 1.1 | EC-2 | 3.8 | 4.5 | 178 | 2.1 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 26+00 R | 0.49 | 0.5 | 0.7 | EC-2 | 3.6 | 6.8 | 46 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 27+50 L | 0.52 | 0.5 | 0.6 | EC-3-A | 4.0 | 14.0 | 64 | 1.0 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 27+50 R | 0.52 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.7 | 43 | 2.9 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 29+75 L | 0.56 | 0.6 | 0.7 | EC-2 | 3.1 | 3.8 | 103 | 0.1 | 29 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 29+75 R | 0.56 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.8 | 357 | 3.0 | 29 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 36+75 D | 0.70 | 0.7 | 0.9 | EC-3-A | 6.3 | 22.4 | 233 | 4.0 | 29 | D | 8.7 | 15.9 |
| Venus Branch Road | VBR 36+75 L | 0.70 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.5 | 238 | 4.0 | 29 | D | 8.7 | 15.9 |
| Pickford Court | PFC 0+50 L | 0.01 | 0.3 | 0.5 | EC-2 | 3.6 | 14.5 | 251 | 0.4 | 30 | B | 0.8 | 2.1 |
| Pickford Court | PFC 3+00 L | 0.06 | 0.5 | 0.7 | EC-2 | 2.8 | 4.8 | 213 | 2.8 | 30 | B | 1.5 | 4.9 |
| Pickford Court | PFC 3+00 R | 0.06 | 0.5 | 0.8 | EC-2 | 2.8 | 3.3 | 598 | 4.0 | 30 | B | 1.9 | 6.3 |
| Reid Drive | RD 5+00 D | 0.09 | 0.3 | 0.5 | EC-2 | 4.0 | 18.4 | 210 | 1.0 | 30 | B | 0.8 | 2.1 |
| Reid Drive | RD 13+00 D | 0.25 | 0.4 | 0.5 | EC-3-A | 4.3 | 22.4 | 301 | 1.5 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 13+00 L | 0.25 | 0.4 | 0.6 | EC-2 | 3.6 | 8.7 | 254 | 1.5 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 18+50 D | 0.35 | 0.4 | 0.5 | EC-3-A | 4.0 | 16.4 | 344 | 2.0 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 18+50 L | 0.35 | 0.4 | 0.6 | EC-3-A | 3.6 | 13.4 | 231 | 1.4 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 34+00 L | 0.64 | 0.5 | 0.7 | EC-2 | 2.5 | 3.0 | 135 | 1.4 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 37+50 L | 0.71 | 0.5 | 0.9 | Grass | 2.7 | 1.7 | 308 | 3.0 | 30 | B | 1.9 | 6.3 |
| Reid Drive | RD 39+50 D | 0.75 | 0.5 | 0.7 | EC-3-A | 4.4 | 15.2 | 375 | 4.5 | 30 | B | 2.3 | 7.8 |
| Reid Drive | RD 39+50 L | 0.75 | 0.5 | 0.7 | Grass | 2.7 | 1.1 | 170 | 2.0 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 39+50 R | 0.75 | 0.5 | 0.6 | EC-2 | 3.3 | 6.6 | 375 | 1.7 | 30 | B | 1.1 | 3.5 |
| Reid Drive | RD 44+50 L | 0.84 | 0.4 | 0.6 | EC-3-A | 4.0 | 16.7 | 231 | 2.7 | 30 | B | 1.5 | 4.9 |
| Reid Drive | RD 44+50 R | 0.84 | 0.4 | 0.6 | EC-2 | 3.6 | 7.2 | 295 | 2.0 | 30 | B | 1.1 | 3.5 |
| Riley Court | RC 6+00 D | 0.11 | 0.5 | 0.7 | EC-3-A | 4.4 | 16.7 | 203 | 6.0 | 30 | B | 2.6 | 8.9 |
| Riley Court | RC 6+00 L | 0.11 | 0.7 | 1.0 | Grass | 2.3 | 0.1 | 330 | 5.0 | 30 | B | 2.3 | 7.8 |
| Riley Court | RC 6+00 R | 0.11 | 0.4 | 0.6 | Grass | 2.6 | 2.1 | 99 | 1.0 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 9+50 D | 0.18 | 0.4 | 0.5 | EC-3-A | 4.9 | 27.0 | 178 | 2.7 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 9+50 L | 0.18 | 0.5 | 0.6 | EC-2 | 2.8 | 3.3 | 204 | 1.3 | 30 | B | 1.1 | 3.5 |
| Riley Court | RC 9+50 R | 0.18 | 0.5 | 0.7 | EC-2 | 2.5 | 2.5 | 204 | 1.4 | 30 | B | 1.1 | 3.5 |
| Riley Court | RC 12+50 D | 0.24 | 0.7 | 1.1 | EC-3-A | 3.5 | 6.8 | 81 | 14.0 | 30 | B | 4.7 | 17.1 |
| Riley Court | RC 14+00 D | 0.27 | 0.5 | 0.9 | EC-3-A | 5.8 | 24.6 | 197 | 14.4 | 30 | B | 5.0 | 18.1 |
| Riley Court | RC 14+00 L | 0.27 | 0.5 | 0.7 | EC-2 | 2.5 | 2.9 | 147 | 2.4 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 15+50 D | 0.29 | 0.4 | 0.6 | EC-3-A | 4.3 | 23.0 | 195 | 3.5 | 30 | B | 1.9 | 6.3 |
| Riley Court | RC 15+50 L | 0.29 | 0.3 | 0.5 | EC-3-A | 3.6 | 21.3 | 112 | 1.0 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 15+50 R | 0.29 | 0.4 | 0.7 | EC-2 | 3.6 | 8.8 | 294 | 2.5 | 30 | B | 1.5 | 4.9 |
| Riley Court | RC 19+50 D | 0.37 | 0.4 | 0.6 | EC-3-A | 4.0 | 16.2 | 228 | 2.5 | 30 | B | 1.5 | 4.9 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Riley Court | RC 19+50 L | 0.37 | 0.4 | 0.5 | EC-2 | 2.7 | 5.3 | 57 | 0.8 | 30 | B | 0.8 | 2.1 |
| Riley Court | RC 19+50 R | 0.37 | 0.4 | 0.7 | Grass | 1.7 | 0.6 | 41 | 0.7 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 0+00 D | 0.00 | 0.7 | 0.8 | EC-3-A | 3.9 | 8.3 | 318 | 1.2 | 30 | D | 4.5 | 8.3 |
| Susans Court | SC 0+00 L | 0.00 | 0.3 | 0.5 | EC-2 | 3.3 | 10.4 | 247 | 1.0 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 3+00 D | 0.06 | 0.9 | 1.2 | EC-3-A | 6.9 | 15.8 | 363 | 9.0 | 30 | D | 17.3 | 31.9 |
| Susans Court | SC 3+00 R | 0.06 | 0.5 | 0.8 | EC-3-A | 4.0 | 13.3 | 106 | 7.0 | 30 | B | 2.9 | 10.0 |
| Susans Court | SC 7+50 D | 0.14 | 0.8 | 1.0 | EC-3-A | 6.9 | 22.3 | 341 | 5.2 | 30 | D | 12.4 | 22.8 |
| Susans Court | SC 7+50 L | 0.14 | 0.5 | 0.6 | EC-2 | 2.8 | 4.8 | 235 | 1.4 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 7+50 R | 0.14 | 0.5 | 0.9 | Grass | 2.7 | 1.0 | 133 | 3.7 | 30 | B | 1.9 | 6.3 |
| Susans Court | SC 9+50 D | 0.18 | SD | SD | SD | SD | 30.3 | 188 | 0.4 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 12+00 D | 0.23 | 0.4 | 0.6 | EC-2 | 4.0 | 9.7 | 179 | 2.0 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 12+50 D | 0.24 | 0.7 | 1.1 | EC-3-A | 3.9 | 8.0 | 54 | 14.4 | 30 | B | 5.0 | 18.1 |
| Susans Court | SC 13+00 D | 0.25 | 0.7 | 1.1 | EC-3-A | 4.9 | 12.0 | 277 | 23.4 | 30 | B | 6.9 | 25.7 |
| Susans Court | SC 13+50 L | 0.26 | 0.6 | 1.0 | EC-3-A | 4.5 | 11.9 | 71 | 14.5 | 30 | B | 5.0 | 18.1 |
| Susans Court | SC 14+00 D | 0.27 | SD | SD | SD | SD | 14.7 | 43 | 28.0 | 30 | D | 41.6 | 77.7 |
| Susans Court | SC 15+50 D | 0.29 | 0.4 | 0.6 | EC-3-A | 3.6 | 12.1 | 280 | 2.5 | 30 | B | 1.5 | 4.9 |
| Susans Court | SC 15+50 L | 0.29 | 0.5 | 0.6 | EC-2 | 2.8 | 4.0 | 187 | 1.5 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 15+50 R | 0.29 | 0.4 | 0.5 | EC-2 | 2.7 | 6.8 | 100 | 1.0 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 20+50 L | 0.39 | 0.5 | 0.6 | EC-2 | 3.3 | 5.6 | 280 | 1.6 | 30 | B | 1.1 | 3.5 |
| Susans Court | SC 20+50 R | 0.39 | 0.4 | 0.6 | Grass | 2.3 | 1.0 | 54 | 0.2 | 30 | B | 0.8 | 2.1 |
| Susans Court | SC 25+50 D | 0.48 | 0.4 | 0.5 | EC-3-A | 4.3 | 19.0 | 283 | 1.8 | 30 | B | 1.1 | 3.5 |
| Wambach Court | WC 0+50 L | 0.01 | 0.3 | 0.5 | EC-2 | 3.6 | 11.1 | 210 | 1.0 | 30 | B | 0.8 | 2.1 |
| Wambach Court | WC 7+50 D | 0.14 | 0.6 | 1.0 | EC-3-A | 5.9 | 20.1 | 926 | 20.0 | 30 | B | 6.2 | 22.9 |
| Wambach Court | WC 7+50 L | 0.14 | 0.7 | 1.1 | EC-2 | 2.6 | 1.0 | 609 | 7.4 | 30 | B | 3.2 | 11.1 |
| Wambach Court | WC 7+50 R | 0.14 | 0.6 | 0.9 | EC-2 | 2.8 | 2.4 | 350 | 5.0 | 30 | B | 2.3 | 7.8 |
| Wambach Court | WC 12+00 D | 0.23 | 0.4 | 0.6 | EC-3-A | 4.3 | 21.5 | 360 | 3.3 | 30 | B | 1.9 | 6.3 |
| Wambach Court | WC 12+00 R | 0.23 | 0.5 | 0.7 | EC-2 | 2.8 | 4.0 | 234 | 2.3 | 30 | B | 1.5 | 4.9 |
| Gayles Lane | GYL 5+50 D | 0.10 | 0.4 | 0.6 | EC-3-A | 5.4 | 27.6 | 247 | 4.4 | 31 | B | 2.3 | 7.8 |
| Gayles Lane | GYL 5+50 L | 0.10 | 0.5 | 0.9 | Grass | 2.7 | 1.9 | 262 | 3.5 | 31 | B | 1.9 | 6.3 |
| Gayles Lane | GYL 9+00 D | 0.17 | 0.4 | 0.6 | EC-3-A | 4.0 | 17.3 | 416 | 2.7 | 31 | B | 1.5 | 4.9 |
| Gayles Lane | GYL 9+00 L | 0.17 | 0.5 | 0.8 | Grass | 2.7 | 1.4 | 234 | 2.7 | 31 | B | 1.5 | 4.9 |
| Gayles Lane | GYL 9+00 R | 0.17 | 0.5 | 0.7 | Grass | 2.7 | 1.2 | 25 | 1.5 | 31 | B | 1.1 | 3.5 |
| Gayles Lane | GYL 11+00 D | 0.21 | 0.4 | 0.7 | EC-3-A | 4.0 | 15.9 | 217 | 3.3 | 31 | B | 1.9 | 6.3 |
| Gayles Lane | GYL 11+01 D | 0.21 | 0.3 | 0.5 | EC-2 | 3.6 | 12.8 | 291 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 7+50 D | 0.14 | 0.4 | 0.5 | EC-3-A | 4.3 | 20.4 | 366 | 1.5 | 31 | B | 1.1 | 3.5 |
| Judy Lane | JL 7+50 L | 0.14 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.1 | 189 | 1.5 | 31 | B | 1.1 | 3.5 |
| Judy Lane | JL 10+00 D | 0.19 | 0.3 | 0.5 | EC-3-A | 3.6 | 22.6 | 563 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 10+00 L | 0.19 | 0.3 | 0.4 | EC-3-A | 3.9 | 24.7 | 155 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 11+50 D | 0.22 | 0.4 | 0.7 | EC-3-A | 5.1 | 26.8 | 370 | 5.5 | 31 | B | 2.6 | 8.9 |
| Judy Lane | JL 11+50 D1 | 0.22 | 0.4 | 0.8 | EC-2 | 3.6 | 8.4 | 713 | 4.0 | 31 | B | 1.9 | 6.3 |
| Judy Lane | JL 12+00 DA S | 0.23 | 0.9 | 1.4 | EC-3-A | 4.6 | 9.0 | 1000 | 50.0 | 31 | B | 9.0 | 33.9 |
| Judy Lane | JL 21+00 D | 0.40 | 0.3 | 0.5 | EC-2 | 3.6 | 11.8 | 501 | 1.0 | 31 | B | 0.8 | 2.1 |
| Judy Lane | JL 21+10 DA N | 0.40 | 0.4 | 0.7 | EC-2 | 3.6 | 7.1 | 348 | 3.0 | 31 | B | 1.5 | 4.9 |
| Reid Drive | RD 23+00 D | 0.44 | 0.4 | 0.5 | EC-3-A | 4.9 | 27.4 | 194 | 2.2 | 31 | B | 1.5 | 4.9 |
| Reid Drive | RD 23+00 L | 0.44 | 0.3 | 0.5 | EC-2 | 3.6 | 14.5 | 366 | 1.0 | 31 | B | 0.8 | 2.1 |
| Reid Drive | RD 23+00 R | 0.44 | 0.5 | 0.8 | Grass | 2.7 | 1.3 | 398 | 2.3 | 31 | B | 1.5 | 4.9 |
| Reid Drive | RD 28+00 D | 0.53 | 0.6 | 1.0 | EC-3-A | 4.2 | 10.2 | 303 | 13.1 | 31 | B | 4.7 | 17.1 |
| Reid Drive | RD 29+00 D | 0.55 | 0.6 | 1.0 | EC-2 | 3.9 | 6.9 | 371 | 8.5 | 31 | B | 3.5 | 12.2 |
| Sharon Lane | SL 3+50 L | 0.07 | 0.3 | 0.5 | EC-2 | 4.0 | 16.1 | 285 | 0.7 | 31 | B | 0.8 | 2.1 |
| Sharon Lane | SL 4+00 L | 0.08 | 0.5 | 0.8 | EC-2 | 3.3 | 5.2 | 425 | 3.8 | 31 | B | 1.9 | 6.3 |
| Sharon Lane | SL 7+00 R | 0.13 | 0.4 | 0.6 | EC-2 | 2.4 | 4.0 | 97 | 0.7 | 31 | B | 0.8 | 2.1 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Sharon Lane | SL 9+00 D | 0.17 | 0.5 | 0.9 | EC-3-A | 4.7 | 17.8 | 279 | 9.5 | 31 | B | 3.7 | 13.3 |
| Sharon Lane | SL 9+00 L | 0.17 | 0.5 | 0.9 | EC-3-A | 3.4 | 8.3 | 692 | 7.0 | 31 | B | 2.9 | 10.0 |
| Sharon Lane | SL 9+00 R | 0.17 | 0.4 | 0.6 | EC-3-A | 3.6 | 11.7 | 251 | 2.0 | 31 | B | 1.1 | 3.5 |
| Mosbys Meadow Lane | MML 8+00 D | 0.15 | 0.8 | 1.4 | EC-2 | 3.8 | 4.0 | 334 | 24.0 | 32 | B | 6.9 | 25.7 |
| Mountain Laurel Lane | MLL 0+50 L | 0.01 | 0.4 | 0.6 | EC-2 | 2.4 | 4.4 | 593 | 1.0 | 32 | B | 0.8 | 2.1 |
| Mountain Laurel Lane | MLL 0+50 R | 0.01 | 0.8 | 1.2 | EC-3-A | 3.8 | 5.5 | 248 | 20.0 | 32 | B | 6.2 | 22.9 |
| Old Oak Lane | OOL 61+25 L | 1.16 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 219 | 0.5 | 32 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 61+25 R | 1.16 | 0.6 | 0.7 | EC-2 | 3.1 | 3.5 | 144 | 0.1 | 32 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 64+50 R | 1.22 | 1.0 | 1.2 | EC-3-A | 5.6 | 9.8 | 373 | 8.0 | 32 | C | 15.6 | 28.8 |
| Old Oak Lane | OOL 72+50 R | 1.37 | 0.5 | 0.8 | Grass | 2.7 | 1.7 | 336 | 2.3 | 32 | B | 1.5 | 4.9 |
| Old Oak Lane | OOL 76+75 U | 1.45 | 0.7 | 0.9 | EC-3-A | 5.8 | 15.7 | 601 | 3.1 | 32 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 78+50 D | 1.49 | 0.7 | 1.3 | Grass | 2.5 | 0.7 | 87 | 8.3 | 32 | B | 3.5 | 12.2 |
| Old Oak Lane | OOL 78+50 L | 1.49 | 0.6 | 0.9 | EC-2 | 2.8 | 2.7 | 138 | 4.3 | 32 | B | 2.3 | 7.8 |
| Old Oak Lane | OOL 78+50 R | 1.49 | 0.8 | 1.0 | EC-3-A | 4.9 | 9.5 | 949 | 4.0 | 32 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 79+75 D | 1.51 | 0.7 | 1.3 | EC-2 | 3.2 | 2.6 | 542 | 15.0 | 32 | B | 5.0 | 18.1 |
| Old Oak Lane | OOL 79+75 L | 1.51 | 0.6 | 0.8 | EC-3-A | 4.5 | 13.3 | 493 | 1.5 | 32 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 79+75 R | 1.51 | 0.8 | 1.0 | Grass | 2.6 | 0.7 | 192 | 2.0 | 32 | C | 4.5 | 8.3 |
| Nancy Court | NC 0+00 L | 0.00 | 0.6 | 0.7 | EC-3-A | 5.0 | 16.9 | 69 | 1.4 | 33 | C | 4.5 | 8.3 |
| Nancy Court | NC 0+00 R | 0.00 | 0.7 | 0.9 | EC-2 | 3.5 | 3.0 | 294 | 2.0 | 33 | C | 4.5 | 8.3 |
| Nancy Court | NC 3+50 D | 0.07 | 0.4 | 0.5 | EC-3-A | 5.1 | 24.9 | 167 | 0.9 | 33 | C | 2.5 | 4.5 |
| Nancy Court | NC 6+00 D | 0.11 | 0.7 | 0.8 | EC-3-A | 5.5 | 15.0 | 168 | 3.0 | 33 | C | 6.6 | 12.1 |
| Nancy Court | NC 6+00 L | 0.11 | 0.8 | 0.9 | EC-3-A | 4.2 | 8.6 | 163 | 2.9 | 33 | C | 6.6 | 12.1 |
| Nancy Court | NC 6+95 D | 0.13 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.5 | 483 | 3.5 | 33 | C | 8.7 | 15.9 |
| Roaches Run Road | RRR 2+25 L | 0.04 | 0.7 | 0.8 | EC-3-A | 5.5 | 17.7 | 307 | 3.0 | 33 | C | 6.6 | 12.1 |
| Roaches Run Road | RRR 2+25 R | 0.04 | 0.8 | 1.0 | EC-3-A | 5.5 | 12.9 | 919 | 5.0 | 33 | C | 10.7 | 19.7 |
| Spring Hollow Road | SHR 2+50 D | 0.05 | 0.9 | 1.1 | EC-3-A | 5.1 | 10.0 | 608 | 4.7 | 33 | C | 10.7 | 19.7 |
| Spring Hollow Road | SHR 10+25 D | 0.19 | 1.0 | 1.2 | EC-3-B | 7.2 | 16.5 | 235 | 10.1 | 33 | C | 20.3 | 37.6 |
| Spring Hollow Road | SHR 10+25 L | 0.19 | 0.5 | 0.7 | EC-2 | 3.6 | 6.4 | 99 | 1.0 | 33 | C | 2.5 | 4.5 |
| Spring Hollow Road | SHR 10+25 R | 0.19 | 0.8 | 0.9 | EC-3-A | 4.2 | 7.7 | 369 | 3.0 | 33 | C | 6.6 | 12.1 |
| Spring Hollow Road | SHR 13+00 D | 0.25 | 0.5 | 0.6 | EC-3-A | 4.8 | 20.8 | 111 | 1.0 | 33 | C | 2.5 | 4.5 |
| Vesey Drive | VSD 19+00 D | 0.36 | 0.6 | 0.7 | EC-3-A | 5.0 | 15.3 | 56 | 1.3 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 19+00 D | 0.36 | 0.6 | 0.8 | EC-3-A | 4.2 | 9.5 | 374 | 1.3 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 19+50 D | 0.37 | 0.9 | 1.1 | EC-3-A | 6.6 | 15.8 | 377 | 6.7 | 33 | C | 14.0 | 25.8 |
| Vesey Drive | VSD 22+75 L | 0.43 | 0.8 | 1.1 | EC-2 | 3.8 | 5.0 | 294 | 2.2 | 33 | C | 6.6 | 12.1 |
| Vesey Drive | VSD 28+25 D1 | 0.54 | 0.6 | 0.7 | EC-3-A | 5.5 | 23.0 | 264 | 2.0 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 28+25 D2 | 0.54 | 0.7 | 0.9 | EC-3-A | 4.9 | 12.6 | 187 | 2.9 | 33 | C | 6.6 | 12.1 |
| Vesey Drive | VSD 28+25 L | 0.54 | 0.7 | 0.9 | EC-2 | 3.2 | 2.6 | 223 | 1.1 | 33 | C | 4.5 | 8.3 |
| Vesey Drive | VSD 28+25 R | 0.54 | 0.6 | 0.7 | EC-2 | 3.1 | 4.6 | 95 | 0.9 | 33 | C | 2.5 | 4.5 |
| Vesey Drive | VSD 32+50 D | 0.62 | 0.5 | 0.6 | EC-3-A | 4.8 | 21.5 | 200 | 0.3 | 33 | C | 2.5 | 4.5 |
| Vesey Drive | VSD 44+00 D | 0.83 | 0.7 | 0.9 | EC-3-A | 5.8 | 18.0 | 567 | 4.0 | 33 | C | 8.7 | 15.9 |
| Vesey Drive | VSD 50+00 L | 0.95 | 0.7 | 0.9 | EC-3-A | 5.8 | 15.8 | 507 | 4.0 | 33 | C | 8.7 | 15.9 |
| Mountain Laurel Lane | MLL 11+25 D | 0.21 | 0.7 | 1.1 | EC-2 | 2.6 | 1.7 | 49 | 7.2 | 34 | B | 3.2 | 11.1 |
| Mountain Laurel Lane | MLL 11+25 L | 0.21 | 0.7 | 1.2 | Grass | 2.5 | 0.2 | 309 | 7.1 | 34 | B | 3.2 | 11.1 |
| Mountain Laurel Lane | MLL 13+25 D | 0.25 | 0.9 | 1.5 | Grass | 2.7 | 0.1 | 77 | 16.0 | 34 | B | 5.2 | 19.0 |
| Mountain Laurel Lane | MLL 13+25 L | 0.25 | 0.4 | 0.6 | Grass | 2.3 | 1.7 | 165 | 1.0 | 34 | B | 0.8 | 2.1 |
| Mountain Laurel Lane | MLL 13+25 R | 0.25 | 0.7 | 1.3 | EC-2 | 3.7 | 3.1 | 782 | 15.2 | 34 | B | 5.2 | 19.0 |
| Mountain Laurel Lane | MLL 14+00 D | 0.27 | 0.6 | 0.9 | EC-2 | 2.8 | 2.0 | 257 | 6.2 | 34 | B | 2.9 | 10.0 |
| Mountain Laurel Lane | MLL 18+56 D | 0.35 | 0.5 | 0.7 | Grass | 2.7 | 1.3 | 316 | 1.9 | 34 | B | 1.1 | 3.5 |
| Old Oak Lane | OOL 82+00 R | 1.55 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.2 | 138 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 85+25 L | 1.61 | 0.8 | 1.0 | Grass | 2.6 | 0.3 | 215 | 2.0 | 34 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 85+25 R | 1.61 | 1.0 | 1.4 | Grass | 3.0 | 0.4 | 58 | 3.7 | 34 | C | 8.7 | 15.9 |

| Shenandoah Farms Sanitary District APPENDIX E SECTION B DITCH TABLES by Map Panel | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROAD NAME | DITCH LABEL R = RIGHT, L = LEFT, U = UPSTREAM, D = DOWNSTREAM | ROAD LOCATION, MILES FROM 0+00 | RECOMMENDED 2-YEAR DITCH DEPTH IN FEET | RECOMMENDED 10-YEAR DITCH DEPTH IN FEET | DITCH LINING | 2-YEAR FLOW VELOCITY (FPS) | DITCH SLOPE IN PERCENT | DITCH LENGTH FEET | DRAINAGE AREA TO DITCH ACRES | MAP PANEL NUMBER | HYDROLOGIC SOILS GROUP | 2-YEAR FLOW IN DITCH (CFS) | 10-YEAR FLOW IN DITCH (CFS) |
| Old Oak Lane | OOL 87+50 D | 1.66 | 0.6 | 1.1 | EC-2 | 3.3 | 3.1 | 782 | 9.0 | 34 | B | 3.5 | 12.2 |
| Old Oak Lane | OOL 88+50 D | 1.68 | 0.6 | 0.9 | Grass | 3.0 | 1.9 | 362 | 5.0 | 34 | B | 2.3 | 7.8 |
| Old Oak Lane | OOL 88+50 U1 | 1.68 | SD | SD | SD | SD | 28.3 | 366 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 88+50 U2 | 1.68 | 0.7 | 0.8 | Grass | 2.3 | 0.8 | 309 | 1.0 | 34 | C | 2.5 | 4.5 |
| Old Oak Lane | OOL 89+50 L | 1.70 | 0.8 | 1.0 | EC-2 | 2.7 | 1.1 | 87 | 1.4 | 34 | C | 4.5 | 8.3 |
| Old Oak Lane | OOL 89+50 R | 1.70 | 1.0 | 1.4 | Grass | 3.0 | 0.8 | 192 | 3.8 | 34 | C | 8.7 | 15.9 |
| Old Oak Lane | OOL 92+00 R | 1.74 | 0.7 | 0.9 | EC-2 | 3.2 | 2.3 | 85 | 2.0 | 34 | C | 4.5 | 8.3 |
| Ridgewood Lane | RL 6+25 D | 0.12 | 0.5 | 0.6 | EC-3-A | 4.4 | 16.6 | 56 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 6+25 L | 0.12 | 1.0 | 1.4 | Grass | 3.0 | 0.4 | 20 | 3.7 | 34 | C | 8.7 | 15.9 |
| Ridgewood Lane | RL 6+25 R | 0.12 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.9 | 309 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 7+50 D | 0.14 | 0.8 | 1.1 | EC-2 | 3.8 | 4.6 | 281 | 2.7 | 34 | C | 6.6 | 12.1 |
| Ridgewood Lane | RL 7+50 U | 0.14 | 0.5 | 0.6 | EC-3-A | 4.0 | 13.2 | 163 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 10+00 D | 0.19 | SD | SD | SD | SD | 8.0 | 329 | 27.0 | 34 | C | 40.6 | 75.6 |
| Ridgewood Lane | RL 10+00 L | 0.19 | 0.6 | 0.8 | EC-3-A | 4.2 | 10.6 | 274 | 1.4 | 34 | C | 4.5 | 8.3 |
| Ridgewood Lane | RL 11+50 D | 0.22 | 1.5 | SD | EC-3-A | 5.8 | 6.6 | 114 | 25.1 | 34 | C | 39.5 | 73.6 |
| Ridgewood Lane | RL 11+50 L | 0.22 | 0.5 | 0.6 | EC-3-A | 4.0 | 11.7 | 179 | 1.0 | 34 | C | 2.5 | 4.5 |
| Ridgewood Lane | RL 11+50 R | 0.22 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.6 | 64 | 0.5 | 34 | C | 2.5 | 4.5 |
| Valley Farms Road | VFR 0+00 L | 0.00 | 0.8 | 1.0 | EC-3-A | 4.5 | 7.1 | 857 | 3.6 | 34 | C | 8.7 | 15.9 |
| Yarnell Court | YC 2+00 R | 0.04 | 0.7 | 0.9 | EC-3-A | 3.5 | 6.6 | 379 | 1.2 | 34 | C | 4.5 | 8.3 |
| Yarnell Court | YC 7+50 L | 0.14 | 0.5 | 0.7 | EC-3-A | 3.4 | 7.6 | 114 | 0.5 | 34 | C | 2.5 | 4.5 |
| Yarnell Court | YC 14+00 L | 0.27 | 0.5 | 0.7 | EC-3-A | 3.4 | 8.5 | 197 | 0.6 | 34 | C | 2.5 | 4.5 |
| Farms Ridge Road | FRR 0+00 L | 0.00 | 0.6 | 0.7 | EC-2 | 2.8 | 2.3 | 394 | 1.0 | 35 | C | 2.5 | 4.5 |
| Farms Ridge Road | FRR 0+00 R | 0.00 | 0.6 | 0.7 | EC-2 | 3.1 | 3.1 | 247 | 0.6 | 35 | C | 2.5 | 4.5 |
| Yarnell Court | YC 13+00 R | 0.25 | 0.8 | 1.0 | Grass | 2.6 | 0.2 | 420 | 1.3 | 35 | C | 4.5 | 8.3 |
| Yarnell Court | YC 18+25 D | 0.35 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.6 | 579 | 2.6 | 35 | C | 6.6 | 12.1 |
| Venus Branch Road | VBR 42+25 L | 0.80 | 1.1 | 1.3 | EC-3-A | 4.6 | 6.1 | 473 | 8.0 | 36 | D | 15.6 | 28.8 |
| Venus Branch Road | VBR 42+25 R | 0.80 | 1.2 | 1.5 | EC-3-A | 3.6 | 2.5 | 188 | 8.0 | 36 | D | 15.6 | 28.8 |
| Venus Branch Road | VBR 48+00 L | 0.91 | 1.4 | SD | EC-3-A | 4.5 | 4.1 | 327 | 14.0 | 36 | D | 24.6 | 45.5 |
| Venus Branch Road | VBR 48+00 R | 0.91 | 0.7 | 0.9 | EC-2 | 3.5 | 4.0 | 309 | 1.5 | 36 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 52+25 R | 0.99 | 0.5 | 0.7 | EC-2 | 3.6 | 6.7 | 45 | 0.3 | 36 | D | 2.5 | 4.5 |
| Venus Branch Road | VBR 55+00 L | 1.04 | 1.1 | 1.4 | EC-3-A | 4.8 | 5.1 | 677 | 10.0 | 36 | C | 18.9 | 34.9 |
| Venus Branch Road | VBR 55+00 R | 1.04 | 0.5 | 0.6 | EC-3-A | 3.7 | 10.5 | 146 | 1.0 | 36 | C | 2.5 | 4.5 |
| Venus Branch Road | VBR 56+50 R | 1.07 | 0.7 | 0.9 | EC-3-A | 4.6 | 9.5 | 360 | 2.3 | 36 | D | 6.6 | 12.1 |
| Venus Branch Road | VBR 57+00 L | 1.08 | 0.5 | 0.6 | EC-3-A | 4.0 | 12.5 | 35 | 0.2 | 36 | C | 2.5 | 4.5 |
| Venus Branch Road | VBR 62+00 D | 1.17 | 1.3 | SD | EC-3-A | 5.3 | 5.9 | 359 | 15.0 | 36 | D | 26.0 | 48.2 |
| Venus Branch Road | VBR 62+00 R | 1.17 | 0.7 | 0.8 | EC-3-A | 3.9 | 7.6 | 459 | 1.5 | 36 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 66+00 D | 1.25 | 1.4 | SD | EC-3-A | 5.6 | 5.6 | 349 | 19.8 | 36 | D | 33.1 | 61.4 |
| Venus Branch Road | VBR 66+50 R | 1.26 | 0.7 | 0.9 | EC-3-A | 3.5 | 5.7 | 238 | 1.8 | 36 | D | 4.5 | 8.3 |
| Venus Branch Road | VBR 72+50 D | 1.37 | SD | SD | SD | SD | 6.6 | 591 | 30.0 | 36 | D | 43.8 | 81.7 |
| Venus Branch Road | VBR 72+50 R | 1.37 | 0.9 | 1.1 | EC-3-A | 4.0 | 5.9 | 564 | 3.2 | 36 | D | 8.7 | 15.9 |
| Venus Branch Road | VBR 76+50 D | 1.45 | SD | SD | SD | SD | 5.3 | 346 | 38.0 | 36 | D | 51.0 | 95.3 |
| Venus Branch Road | VBR 76+50 R | 1.45 | 0.9 | 1.1 | EC-3-A | 4.7 | 7.2 | 353 | 4.1 | 36 | D | 10.7 | 19.7 |
| Blue Mountain Road | BMR 72+50 R | 1.37 | 0.8 | 1.1 | EC-2 | 3.8 | 3.2 | 469 | 2.8 | 41 | D | 6.6 | 12.1 |

### 7.4.6.3 Geotextile Channel Linings

Geotextile materials designated as Standard EC-3 (Type A and B) Soil Stabilization Mat are used for protective linings in ditches. Standard EC-3 Soil Stabilization Mat is intended to be used as a protective ditch lining material to be applied when the design velocity exceeds the allowable velocity for Standard EC-2, Jute Mesh.

When the design velocity exceeds the allowable velocity for Standard EC-3, a paved (or riprap) lining is required.

The Standard EC-3 (Type C) Soil Stabilization Mat may be used as a protective slope lining for dry cut or fill slopes and wet cut slopes to stabilize the slope on which vegetation is being established. (See VDOT Road and Bridge Standards)

#### 7.4.6.3.1
#### *Design Criteria, Geotextile Linings*

Standard EC-3 Type A is to be employed where the 2-year design velocity in the ditch does not exceed 7* feet per second (fps).

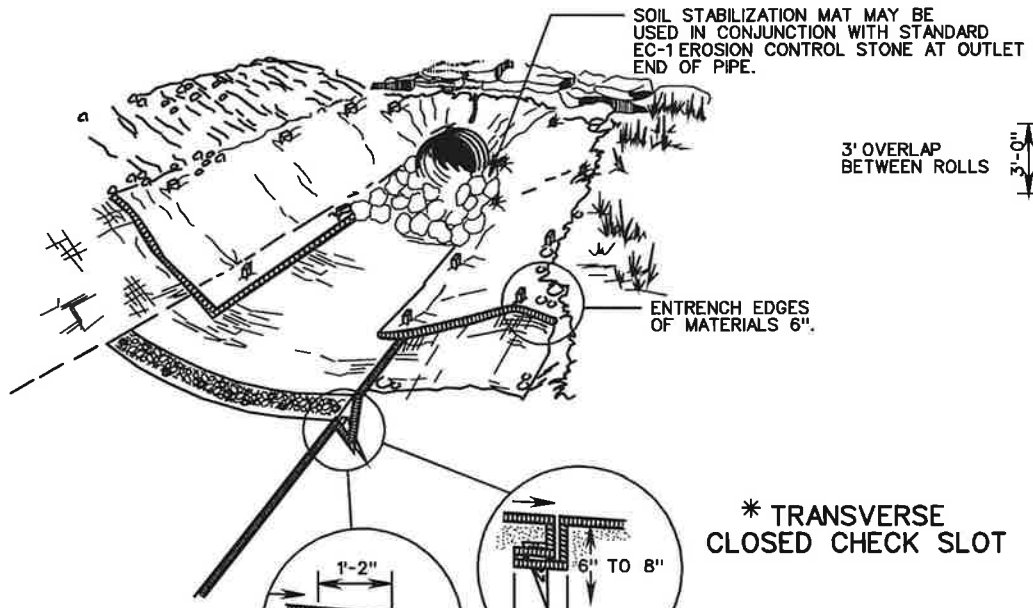
Standard EC-3 Type B is to be employed where the 2-year design velocity does not exceed 10 fps.

A Manning's n-value of 0.05 should be used with Standard EC-3.

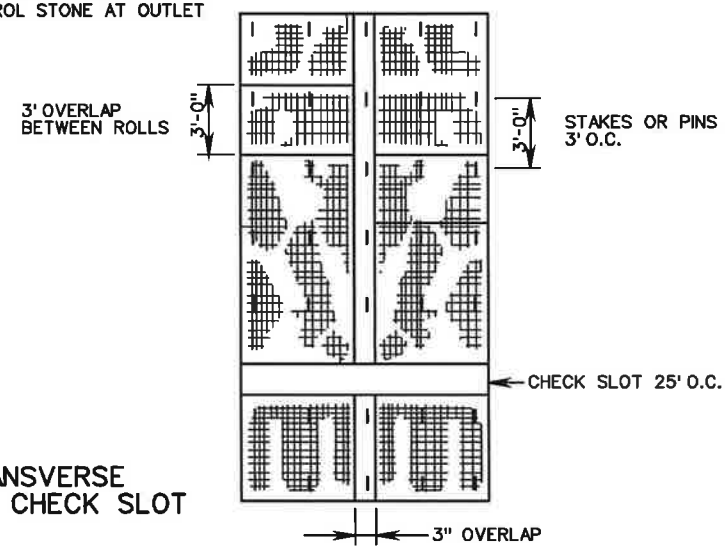
Typically, the use of Standard EC-3 Type A should begin at the point where the flow velocity exceeds 4 fps (velocity is assumed to be for flow in an EC-2 lined channel) and change to EC-3, Type B at the appropriate point, until the design velocity exceeds 10 fps or until the velocity decreases so that the use of a ditch lining can be discontinued.

| **Table 7-1. PROTECTIVE LININGS FOR DITCHES AND CHANNELS** Type of Lining | Mannings "n" Value (Default) | Maximum Allowable Velocity (fps) |
|---|---|---|
| Bare Earth | 0.03 | Varies |
| VDOT EC-2 | 0.05 | 4.0 |
| VDOT | | |

## TYPICAL INSTALLATION AT END OF PIPE



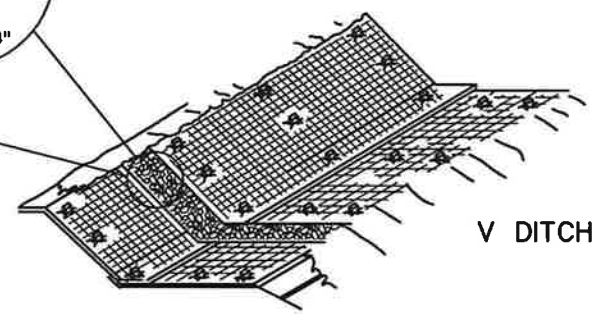

## STAKING DETAIL



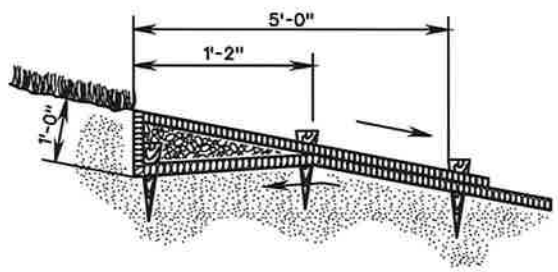

## * TRANSVERSE CLOSED CHECK SLOT

## * TRANSVERSE OPEN CHECK SLOT

* TRANSVERSE CHECK SLOT TO BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION FOR PREFERRED INSTALLATION.



## V DITCH




## UPSTREAM AND DOWNSTREAM TERMINAL

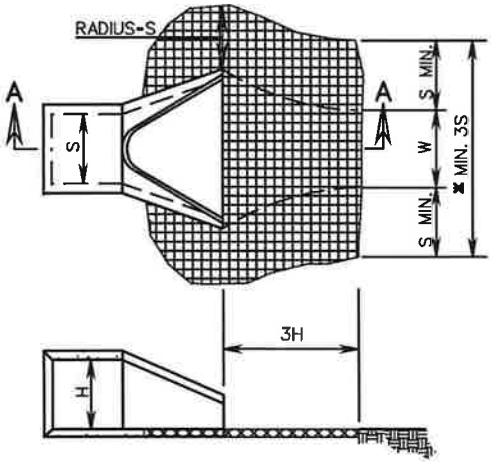
## NOTES:

1. STAKES SHALL BE WOOD OR METAL AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE A MINIMUM OF 12" IN LENGTH. IN SANDY SOILS METAL STAKES A MINIMUM OF 18" IN LENGTH SHALL BE USED.
2. SOIL STABILIZATION MAT TYPE A AND B ARE TO BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.
3. SOIL STABILIZATION MAT SHOULD BE INSTALLED TO THE SHOULDER BREAK POINT OR EXISTING GROUND THEN EMBEDDED 6". MATERIAL ON BOTH SIDES OF THE DITCH SHALL BE INSTALLED TO THE SAME ELEVATIONS.
4. IF MORE THAN 3 LINES OF MATERIAL ARE REQUIRED PARALLEL TO THE ℄ OF THE DITCH, MATERIAL SHALL BE INSTALLED PERPENDICULAR TO THE CENTER LINE OF THE DITCH, STARTING AT THE LOWEST ℄ ELEVATION OF THE DITCH.
5. FOR SOURCES OF APPROVED MATERIALS SEE VDOT'S APPROVED PRODUCTS LIST FOR ST'D. EC-3, TYPE A OR B.

| SPECIFICATION REFERENCE | SOIL STABILIZATION MAT<br>DITCH INSTALLATION TYPE A OR B<br>VIRGINIA DEPARTI OF TRANSPORTATION | VDOT<br>ROAD AND BRIDGE STANDARDS |
|---|---|---|
| 244<br>606 | | REVISION DATE — SHEET 1 OF 3<br>113.03 |

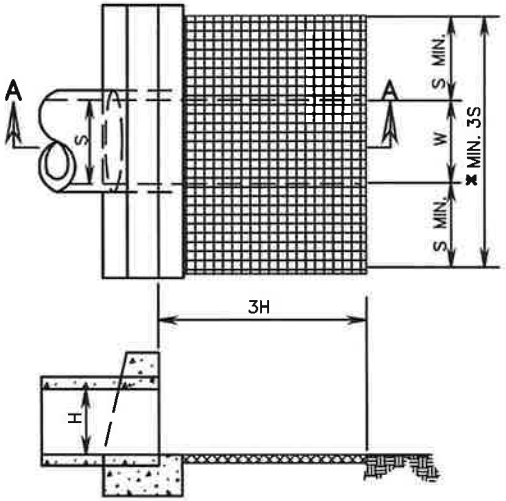
EC-3

## DETAIL 1




SECTION A-A

## DETAIL 2




SECTION A-A

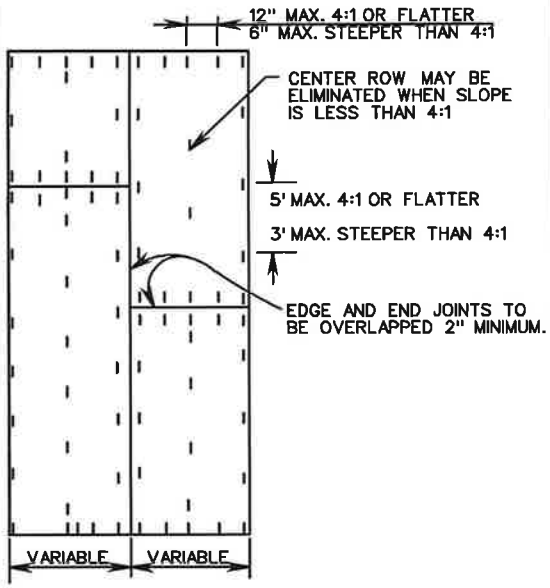
## NOTES:

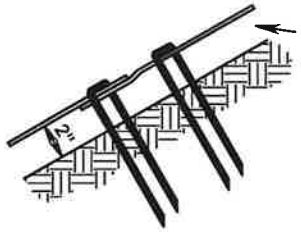
1. FOR MULTIPLE LINE INSTALLATIONS, DIMENSION S IS TO GOVERN THE PROTECTION OUTSIDE THE CHANNEL WIDTH (W).
2. ON ANY INSTALLATION REQUIRING CULVERT OUTLET PROTECTION WHERE NO ENDWALL OR ENDSECTION IS SPECIFIED ON THE PLANS, CONSTRUCTION IS TO BE IN ACCORDANCE WITH DETAIL 2 SHOWN ABOVE.
3. SOIL STABILIZATION MAT TYPE B SHALL BE USED FOR CULVERT OUTLET PROTECTION WHERE THE OUTLET VELOCITY IS 6 FPS OR LESS FOR THE DESIGN STORM AND THE TOTAL HYDRAULIC OPENING IS LESS THAN 7 SQUARE FEET. IF THE TOTAL HYDRAULIC OPENING IS 7 SQUARE FEET OR GREATER, OR THE DESIGN STORM OUTLET VELOCITY IS GREATER THAN 6 FPS USE STANDARD EC-1.
4. S - DIAMETER OF CIRCULAR CULVERT OR SPAN FOR BOX, ELLIPTICAL OR ARCH CULVERT.
   H - DIAMETER OF CIRCULAR CULVERT OR RISE/HEIGHT FOR BOX, ELLIPTICAL OR ARCH CULVERT.

✖ USE TYPICAL SECTION SHOWN ON PLANS FOR SIDE SLOPE, BOTTOM WIDTH AND DEPTH OF CHANNEL OR MATCH EXISTING DITCH OR NATURAL GROUND.

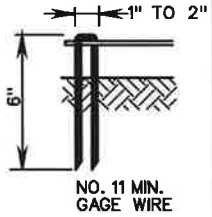
| | | | |
|---|---|---|---|
| VDOT ROAD AND BRIDGE STANDARDS | SOIL STABILIZATION MAT<br>CULVERT OUTLET PROTECTION INSTALLATION<br>VIRGINIA DEPARTMENT RANSPORTATION | SPECIFICATION REFERENCE | |
| SHEET 2 OF 3 | REVISION DATE | 204<br>245<br>303<br>414 | |
| 113.04 | | | |

EC-2

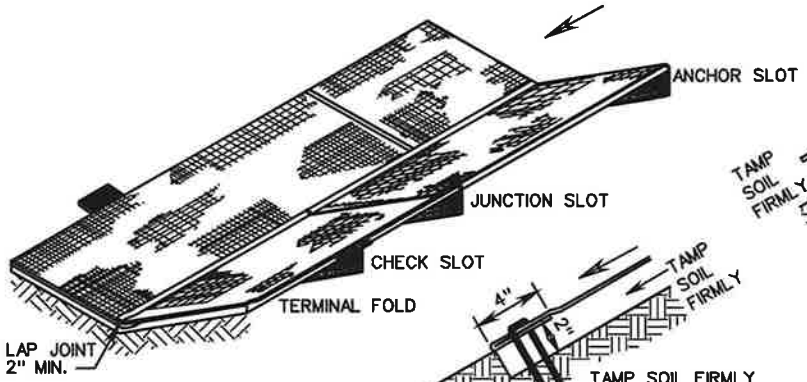


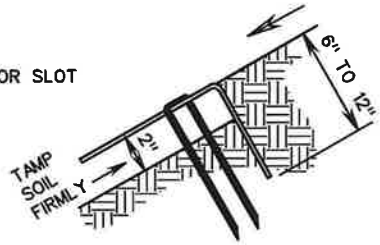




JUNCTION SLOT

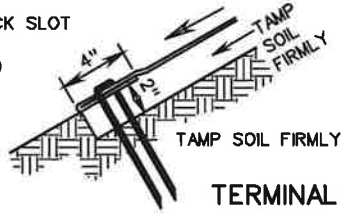



SOIL RETENTION MAT



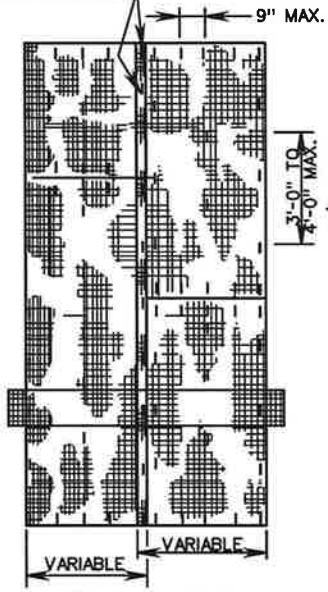




ANCHOR SLOT

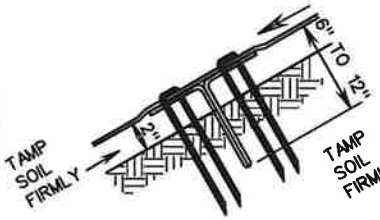



TERMINAL FOLD

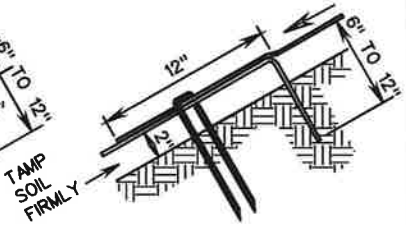
COMBINE THIRD ROW OF STAPLES FROM EACH STRIP IN LAP WITH ALTERNATE SPACING.



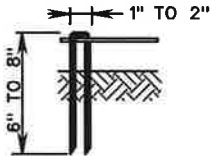

PLAN VIEW
STAPLING DIAGRAM




CHECK SLOT




JUNCTION SLOT




JUTE MESH

## NOTES:

1. APPROXIMATE 200 STAPLES REQUIRED PER 4' X 225' ROLL.
2. ANCHOR SLOTS, JUNCTION SLOTS AND CHECK SLOTS TO BE BURIED 6" TO 12" AND VARIABLE.
3. MAX. SPACING C-C CHECK SLOTS 100' SLOPE 4% OR LESS 50' SLOPE STEEPER THAN 4%.
4. STAPLES FORMED FROM NO. 8 STEEL WIRE 8" STAPLE MINIMUM LENGTH FOR SANDY SOIL 6" STAPLE MINIMUM LENGTH FOR OTHER SOIL.

## GENERAL NOTES:

1. BASIS OF PAYMENT TO BE SQUARE YARDS OF PROTECTIVE COVERING COMPLETE IN PLACE. PROTECTIVE COVERING IS TO BE LOCATED AS INDICATED ON THE PLANS IN ACCORDANCE WITH THE DIMENSIONS SPECIFIED ON TYPICAL SECTION.
2. "T-TOP" STAPLES OR OTHER MANUFACTURER'S DESIGN APPROVED BY THE ENGINEER MAY BE SUBSTITUTED FOR THE STAPLES SHOWN.
3. JUTE MESH OR SOIL RETENTION MAT IN ACCORDANCE WITH THE SPECIFICATIONS MAY BE USED AT THE OPTION OF THE CONTRACTOR.
4. WIDTH OF MATERIAL MAY VARY FROM MINIMUM DIMENSION BY INCREMENTS OF 4 OR 5 FEET.
5. FOR SOURCES OF APPROVED MATERIAL SEE VDOT'S APPROVED PRODUCTS LIST FOR ST'D. EC-2 MATERIAL.

VDOT
ROAD AND BRIDGE STANDARDS

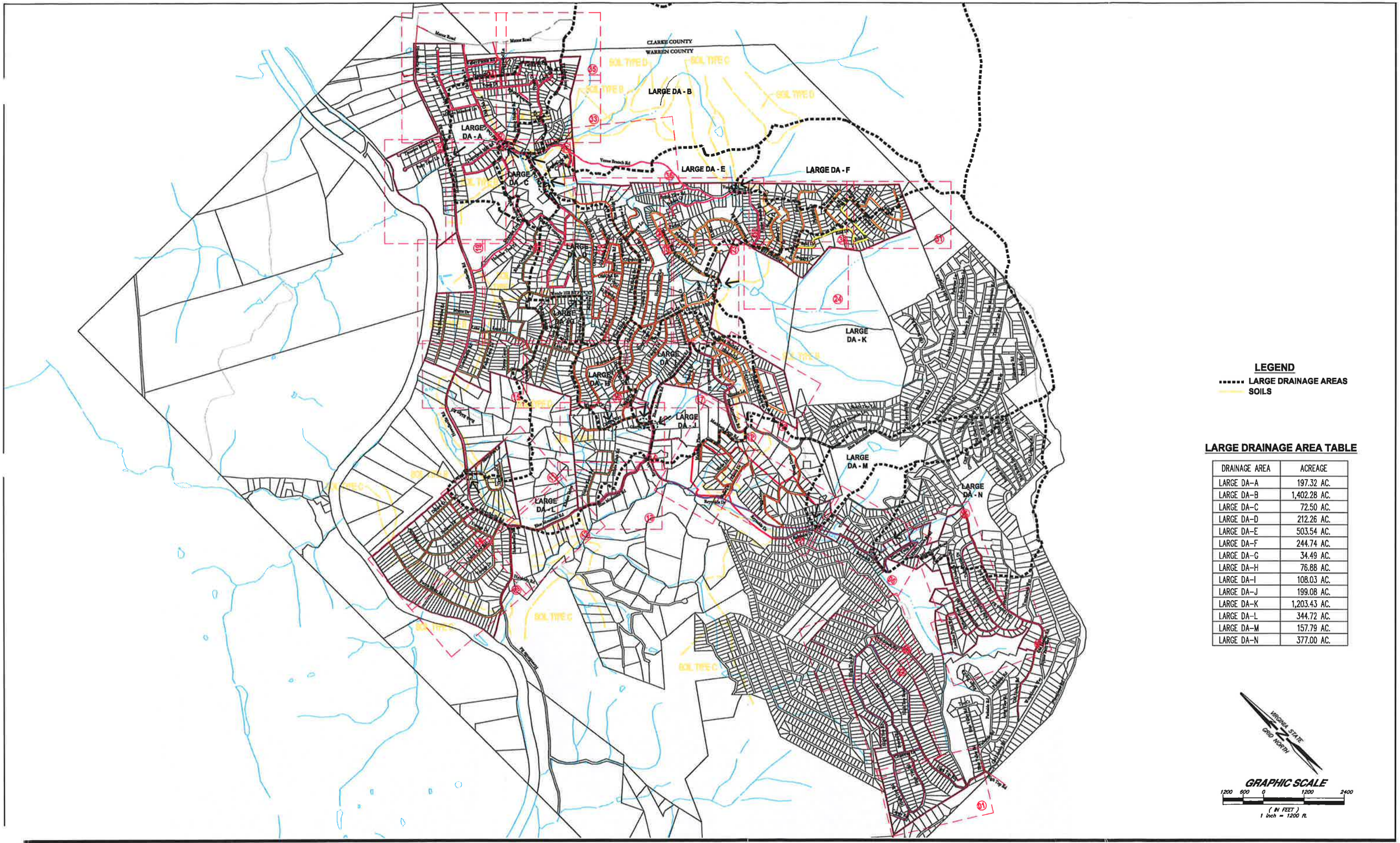
SHEET 1 OF
113.02

REVISION DATE

# PROTECTIVE COVERING INSTALLATION CRITERIA

VIRGINIA DEPARTMENT TRANSPORTATION

SPECIFICATION REFERENCE
244
606




## LARGE DRAINAGE AREA TABLE

| DRAINAGE AREA | ACREAGE |
|---|---|
| LARGE DA–A | 197.32 AC. |
| LARGE DA–B | 1,402.28 AC. |
| LARGE DA–C | 72.50 AC. |
| LARGE DA–D | 212.26 AC. |
| LARGE DA–E | 503.54 AC. |
| LARGE DA–F | 244.74 AC. |
| LARGE DA–G | 34.49 AC. |
| LARGE DA–H | 76.88 AC. |
| LARGE DA–I | 108.03 AC. |
| LARGE DA–J | 199.08 AC. |
| LARGE DA–K | 1,203.43 AC. |
| LARGE DA–L | 344.72 AC. |
| LARGE DA–M | 157.79 AC. |
| LARGE DA–N | 377.00 AC. |

| NO. | DESCRIPTION | DATE | REVS'D | REVW'D | APRV'D | DATE |
|---|---|---|---|---|---|---|
| | REVISION | | | | | |

PROFESSIONAL SEAL
COMMONWEALTH OF VIRGINIA
RONALD A. MISLOWSKY, JR.
No. 20674
PROFESSIONAL ENGINEER

PROJECT
# SHENANDOAH FARMS

SHENANDOAH DISTRICT
WARREN COUNTY, VIRGINIA

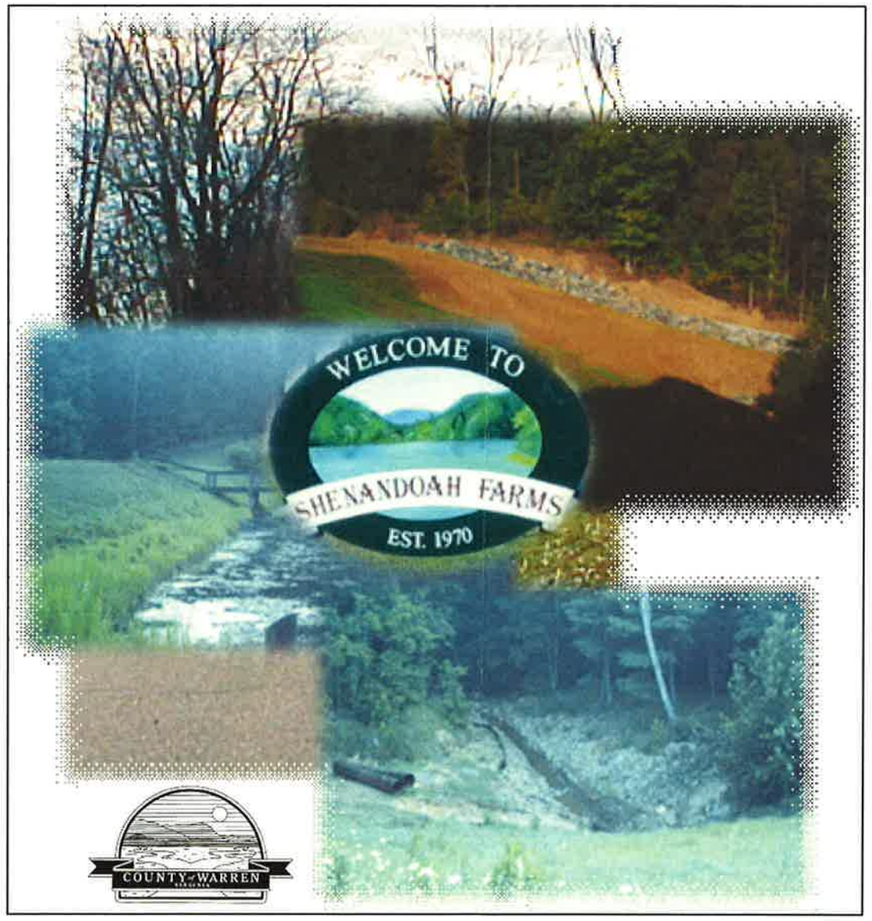
TITLE
# LARGE DRAINAGE AREAS PLAN

Patton Harris Rust & Associates
Engineers. Surveyors. Planners. Landscape Architects.
PHR+A
117 East Piccadilly Street
Winchester, VA 22601–5002
T 540.667.2139
F 540.665.0493

CO. PLAN #

| | |
|---|---|
| DESIGN RAM | SURVEY SURV |
| DRAWN KLM | DATE 01–16–12 |
| CHECKED RAM | SCALE 1"=1200' |
| SHEET 1 OF 1 | FILE NO. 12972–2–0 |

# Warren County
# Shenandoah Farms Sanitary District
# Road and Drainage Study




## LEGEND

- EXISTING PIPE
- PIPE NEEDED
- PIPE POSSIBLE
- DRAINAGE DIVIDES
- DITCHES
- OUTLET PROTECTION (OP)
- STREAM
- ROAD STATIONING (1+00, 2+00, 3+00)
- CULVERT NAME AND DRAINAGE AREA (WC 7+50 R, 6.88 AC.)
- SHENANDOAH FARMS SUBDIVISION BOUNDARY

## DITCH LININGS

- GRASS
- EC-2
- EC-3-A
- EC-3-B
- SPECIAL DESIGN

NOTE: FOR DITCH DETAILS SEE DETAIL SHEETS.

**Patton Harris Rust & Associates**
Engineers. Surveyors. Planners. Landscape Architects.

PHR+A A Pennoni Company

117 East Piccadilly Street, Suite 200
Winchester, Virginia 22601
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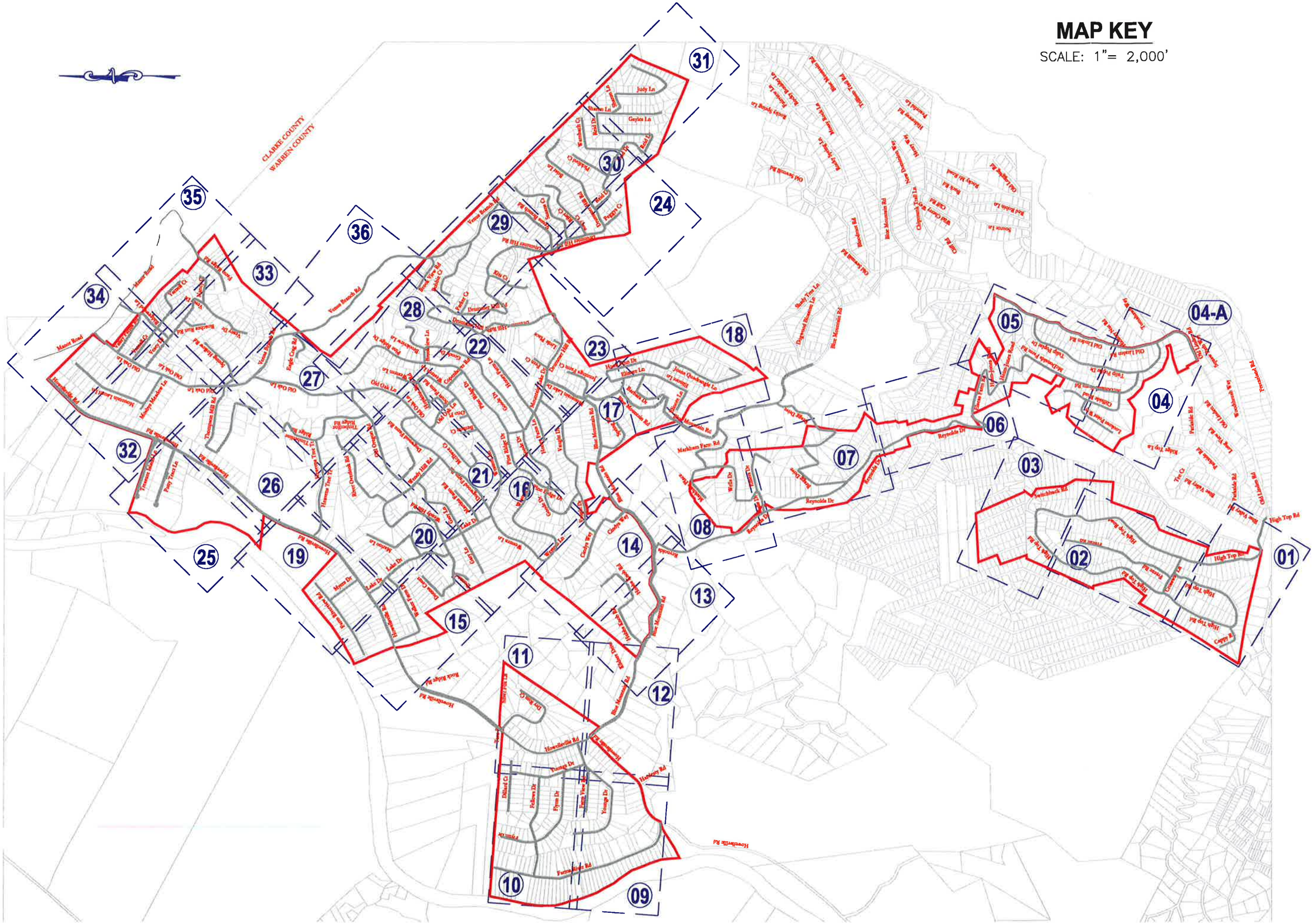
**February 25, 2012**

*PROJECT NO. 1297220*

# MAP KEY

SCALE: 1"= 2,000'




2000 1000 0 2000 4000

1 inch = 2000 ft.


PHRA
Permar Company
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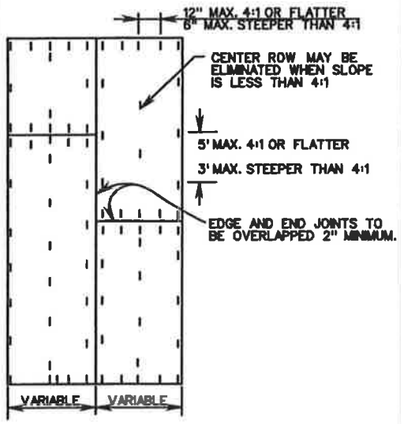
Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

SCALE 1"=2000'

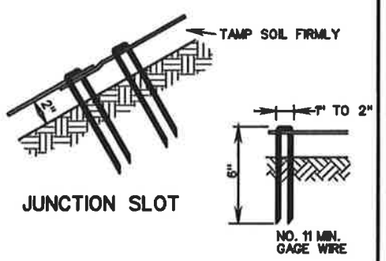
DRAWN BY: PHRA
PROJECT NO. 1297220
DATE Feb. 25, 2012

MAP KEY

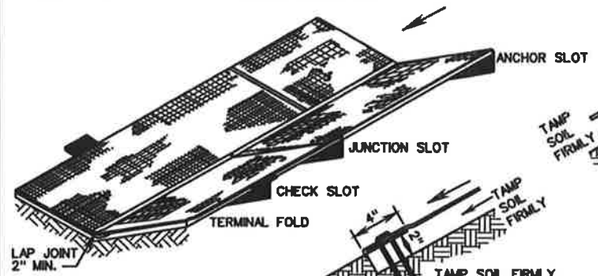
EC-2

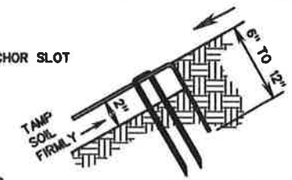



SOIL RETENTION MAT

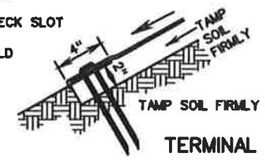



JUNCTION SLOT

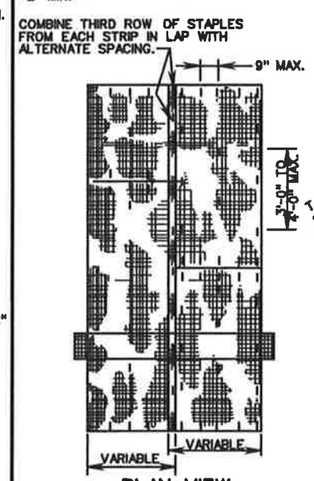


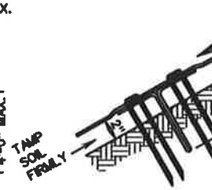

ANCHOR SLOT



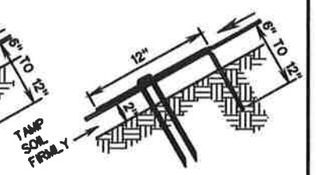

TERMINAL FOLD



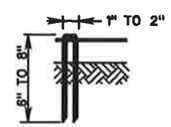

PLAN VIEW
STAPLING DIAGRAM




CHECK SLOT




JUNCTION SLOT




JUTE MESH

NOTES:

1. APPROXIMATE 200 STAPLES REQUIRED PER 4' X 225' ROLL.
2. ANCHOR SLOTS, JUNCTION SLOTS AND CHECK SLOTS TO BE BURIED 6" TO 12" AND VARIABLE.
3. MAX. SPACING C-C CHECK SLOTS 100' SLOPE 4% OR LESS 50' SLOPE STEEPER THAN 4%.
4. STAPLES FORMED FROM NO. 8 STEEL WIRE 8" STAPLE MINIMUM LENGTH FOR SANDY SOIL 6" STAPLE MINIMUM LENGTH FOR OTHER SOIL.

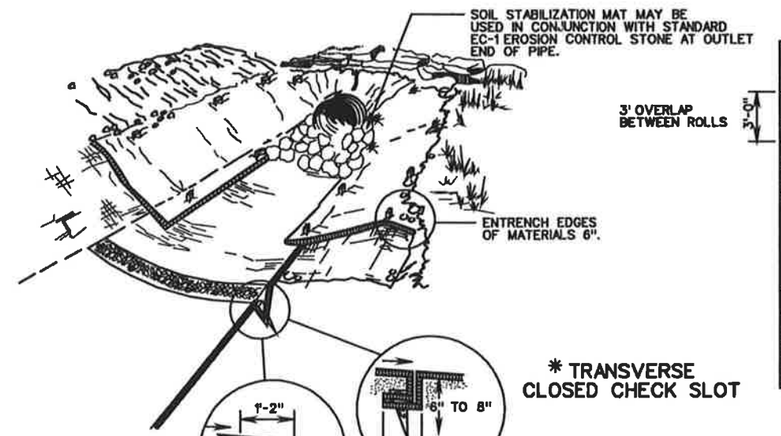
GENERAL NOTES:

1. BASIS OF PAYMENT TO BE SQUARE YARDS OF PROTECTIVE COVERING COMPLETE IN PLACE. PROTECTIVE COVERING IS TO BE LOCATED AS INDICATED ON THE PLANS IN ACCORDANCE WITH THE DIMENSIONS SPECIFIED ON TYPICAL SECTION.
2. "T-TOP" STAPLES OR OTHER MANUFACTURER'S DESIGN APPROVED BY THE ENGINEER MAY BE SUBSTITUTED FOR THE STAPLES SHOWN.
3. JUTE MESH OR SOIL RETENTION MAT IN ACCORDANCE WITH THE SPECIFICATIONS MAY BE USED AT THE OPTION OF THE CONTRACTOR.
4. WIDTH OF MATERIAL MAY VARY FROM MINIMUM DIMENSION BY INCREMENTS OF 4 OR 5 FEET.
5. FOR SOURCES OF APPROVED MATERIAL SEE VDOT'S APPROVED PRODUCTS LIST FOR ST'D. EC-2 MATERIAL.

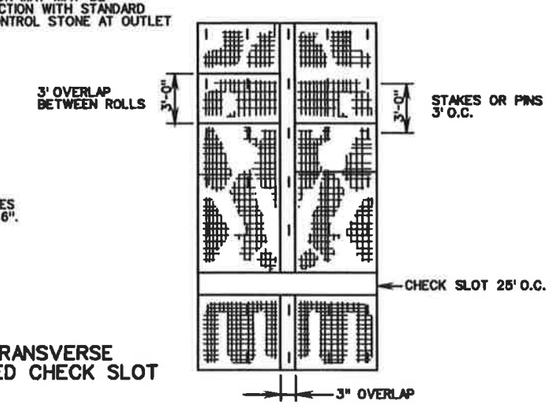
| VDOT ROAD AND BRIDGE STANDARDS | | PROTECTIVE COVERING INSTALLATION CRITERIA | SPECIFICATION REFERENCE |
|---|---|---|---|
| SHEET 1 OF 1 | REVISION DATE | VIRGINIA DEPARTMENT OF TRANSPORTATION | 244 608 |
| 113.02 | | EC-2 | |

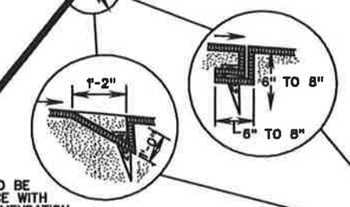
EC-3

TYPICAL INSTALLATION AT END OF PIPE




STAKING DETAIL



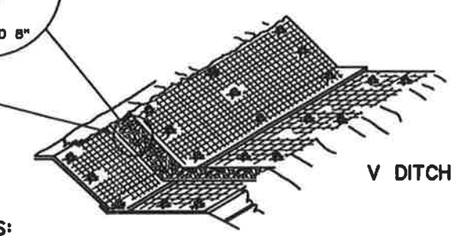




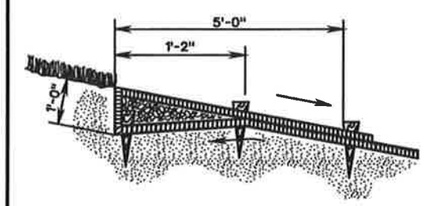
* TRANSVERSE CLOSED CHECK SLOT

* TRANSVERSE CHECK SLOT TO BE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION FOR PREFERRED INSTALLATION.

* TRANSVERSE OPEN CHECK SLOT



V DITCH




UPSTREAM AND DOWNSTREAM TERMINAL

NOTES:

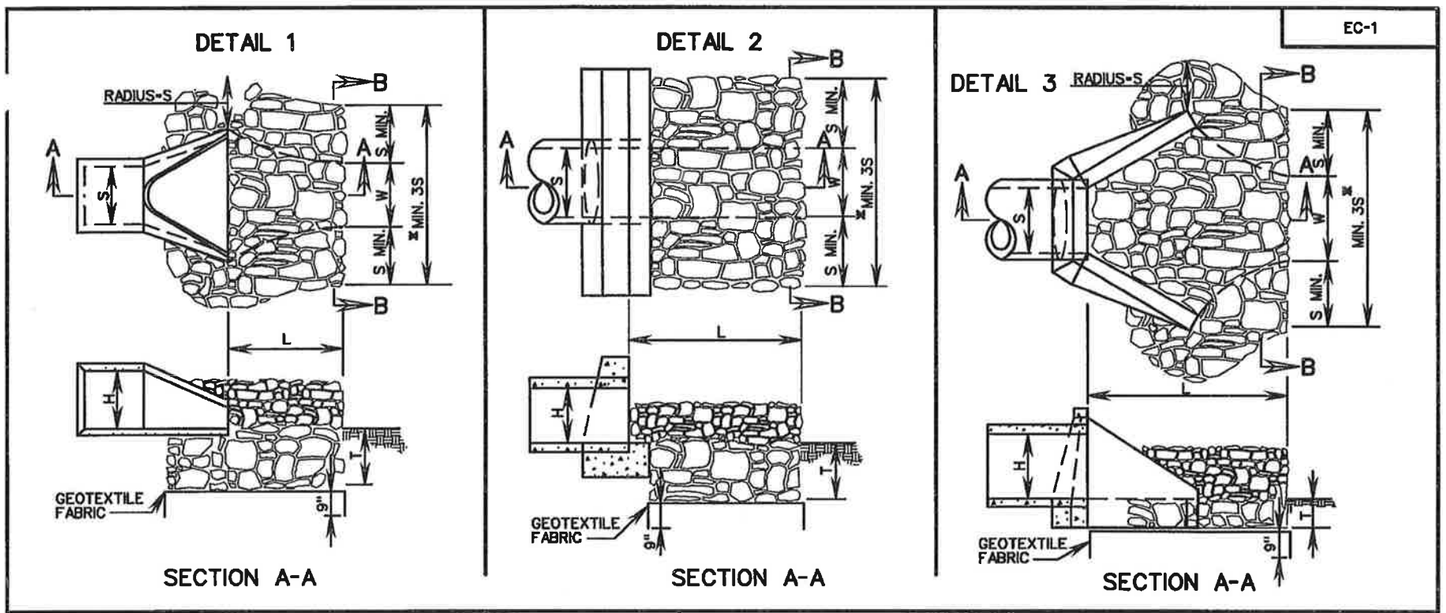
1. STAKES SHALL BE WOOD OR METAL AS RECOMMENDED BY THE MANUFACTURER AND SHALL BE A MINIMUM OF 12" IN LENGTH. IN SANDY SOILS METAL STAKES A MINIMUM OF 18" IN LENGTH SHALL BE USED.
2. SOIL STABILIZATION MAT TYPE A AND B ARE TO BE IN ACCORDANCE WITH THE APPROVED PRODUCTS LIST.
3. SOIL STABILIZATION MAT SHOULD BE INSTALLED TO THE SHOULDER BREAK POINT OR EXISTING GROUND THEN EMBEDDED 6". MATERIAL ON BOTH SIDES OF THE DITCH SHALL BE INSTALLED TO THE SAME ELEVATIONS.
4. IF MORE THAN 3 LINES OF MATERIAL ARE REQUIRED PARALLEL TO THE ℄ OF THE DITCH, MATERIAL SHALL BE INSTALLED PERPENDICULAR TO THE CENTER LINE OF THE DITCH, STARTING AT THE LOWEST ℄ ELEVATION OF THE DITCH.
5. FOR SOURCES OF APPROVED MATERIALS SEE VDOT'S APPROVED PRODUCTS LIST FOR ST'D. EC-3, TYPE A OR B.

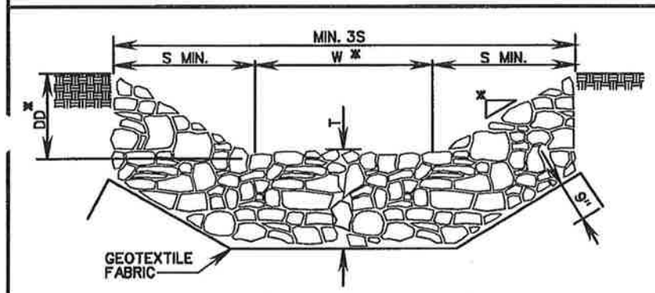
| SPECIFICATION REFERENCE | SOIL STABILIZATION MAT DITCH INSTALLATION TYPE A OR B | | VDOT ROAD AND BRIDGE STANDARDS | |
|---|---|---|---|---|
| 244 608 | VIRGINIA DEPARTMENT OF TRANSPORTATION | EC-3-A EC-3-B | REVISION DATE | SHEET 1 OF 3 |
| | | | | 113.03 |

# DETAILS

PROJECT NO. 1297220

EC-1




| TYPE OF OUTLET PROTECTION MATERIAL | | MAXIMUM OUTLET VELOCITY (FOR DESIGN STORM) | MINIMUM "T" (INCHES) |
|---|---|---|---|
| CLASS A1 | CLASS A1 DRY RIPRAP | 8 fps | 18 |
| CLASS I | CLASS I DRY RIPRAP | 14 fps | 24 |
| CLASS II | CLASS II DRY RIPRAP | 19 fps | 36 |

## NOTES:

1. FOR MULTIPLE LINE INSTALLATIONS, DIMENSION S IS TO GOVERN THE PROTECTION OUTSIDE THE CHANNEL WIDTH (W).
2. ON ANY INSTALLATION REQUIRING CULVERT OUTLET PROTECTION WHERE NO ENDWALL OR ENDSECTION IS SPECIFIED ON THE PLANS, CONSTRUCTION IS TO BE IN ACCORDANCE WITH DETAIL 2 SHOWN ABOVE.
3. GEOTEXTILE FABRIC TO BE INSTALLED UNDER CLASS A1, I, AND II MATERIALS IN ACCORDANCE WITH THE SPECIFICATIONS.
4. S - DIAMETER OF CIRCULAR CULVERT OR SPAN FOR BOX, ELLIPTICAL OR ARCH CULVERT. H - DIAMETER OF CIRCULAR CULVERT OR RISE/HEIGHT FOR BOX, ELLIPTICAL OR ARCH CULVERT.

* USE TYPICAL SECTION SHOWN ON PLANS FOR SIDE SLOPE, BOTTOM WIDTH AND DEPTH OF CHANNEL OR MATCH EXISTING DITCH OR NATURAL GROUND.

| OUTLET PROTECTION MINUMUM LENGTH (L) | |
|---|---|
| TYPE A INSTALLATION | 3H |
| TYPE B INSTALLATION | 5H |

| SPECIFICATION REFERENCE |
|---|
| 204<br>245<br>303<br>414 |

# CULVERT OUTLET PROTECTION

VIRGINIA DEPARTMENT OF TRANSPORTATION

VDOT ROAD AND BRIDGE STANDARDS

| REVISION DATE | SHEET 1 OF 1 |
|---|---|
| | 113.01 |

**TABLE 3.32-C**
(Revised June 2003)
**PERMANENT SEEDING SPECIFICATIONS FOR APPALACHIAN/MOUNTAIN AREA**

| SEED[1] | | |
|---|---|---|
| LAND USE | SPECIES | APPLICATION RATES |
| Minimum Care Lawn (Commercial or Residential) | Tall Fescue[1]<br>Perennial Ryegrass[2]<br>Kentucky Bluegrass[1] | 90-100%<br>0-10%<br>0-10%<br>TOTAL: 200-250 lbs. |
| High-Maintenance Lawn | Minimum of three (3) up to five (5) varieties of Kentucky Bluegrass from approved list for use in Virginia[1] | TOTAL: 125 lbs. |
| General Slope (3:1 or less) | Tall Fescue[1]<br>Red Top Grass or Creeping Red Fescue<br>Seasonal Nurse Crop[3] | 128 lbs.<br>2 lbs.<br>20 lbs.<br>TOTAL: 150 lbs. |
| Low-Maintenance Slope (Steeper than 3:1) | Tall Fescue[1]<br>Red Top Grass or Creeping Red Fescue<br>Seasonal Nurse Crop[3]<br>Crownvetch[4] | 108 lbs.<br>2 lbs.<br>20 lbs.<br>20 lbs.<br>TOTAL: 150 lbs. |

1 - When selecting varieties of turfgrass, use the Virginia Crop Improvement Association (VCIA) recommended turfgrass variety list. Quality seed will bear a label indicating that they are approved by VCIA. A current turfgrass variety list is available at the local County Extension office or through VCIA at 804-746-4884 or at http://sudan.cses.vt.edu/html/Turf/turf/publications/publications2.html

2 - Perennial Ryegrass will germinate faster and at lower soil temperatures than Tall Fescues, thereby providing cover and erosion resistance for seedbed.

3 - Use seasonal nurse crop in accordance with seeding dates as stated below:

| | |
|---|---|
| March, April - May 15th | Annual Rye |
| May 16th - August 15th | Foxtail Millet |
| August 16th - September, October | Annual Rye |
| November - February | Winter Rye |

4 - All legume seed must be properly inoculated. If Flatpea is used, increase to 30 lbs/acre. If Weeping Lovegrass is used, include in any slope or low maintenance mixture during warmer seeding periods, increase to 30 -40 lbs/acre.

**FERTILIZER & LIME**

- Apply 10-20-10 **fertilizer** at a rate of **500** lbs. / acre (or 12 lbs. / 1,000 sq. ft.)
- Apply **Pulverized Agricultural Limestone** at a rate of 2 tons/acre (or 90 lbs. / 1,000 sq. ft.)

**NOTE:**

- A soil test is necessary to determine the actual amount of lime required to adjust the soil pH of site.
- Incorporate the lime and fertilizer into the top 4 – 6 inches of the soil by disking or by other means.
- When applying Slowly Available Nitrogen, use rates available in Erosion & Sediment Control Technical Bulletin # 4, 2003 Nutrient Management for Development Sites at http://www.dcr.state.va.us/sw/e&s.htm#pubs

# DETAILS

*PROJECT NO. 1297220*

High Top Rd

Blue Valley Rd

Cappy Rd

HTR 115+00 D

HTR 115+00 R

HTR 115+00 L

HTR 118+50 D

HTR 118+50 L

HTR 121+50 D

HTR 121+50 L

HTR 132+00 D

HTR 132+00 R

HTR 23+00 L

HTR 23+00 R

HTR 19+00 L

HTR 19+00 R

HTR 15+50 L

HTR 15+50 R

HTR 12+00 R

CR 0+50 D

CR 0+50 R

CR 3+50 R

CL 4+00 U

CL 8+80

STATION 115+00
EX. (30') 15" CMP

STATION 121+50
POSSIBLE PIPE LOCATION

ADDITIONAL CROSS PIPES OR DITCH RECONSTRUCTION NEEDED BTWN 115+00 AND 127+00 POSSIBLE LOCATION FOR CROSS CULVERT @ 118+00

STATION 132+00
POSSIBLE PIPE LOCATION

STATION 23+00
EX. (30') 15" HDPE

STATION 19+00
EX. (30') 15" CMP

STATION 15+50
EX. 2-(35') 18" CMP

STATION 12+00
POSSIBLE PIPE LOCATION

STATION 3+50
EX. (30') 15" CMP

STATION 0+50
POSSIBLE PIPE LOCATION

# 2162

# 2727
LEFT STATION 144+00
PIPE NEEDED

# 2702
RIGHT STATION 143+00
PIPE NEEDED

# 2682
RIGHT STATION 141+50
PIPE NEEDED

# 2691
LEFT STATION 142+00
PIPE NEEDED

# 2239
LEFT STATION 141+50
PIPE NEEDED

# 2239
LEFT STATION 117+50
PIPE NEEDED

# 2628
RIGHT STATION 138+50
PIPE NEEDED

# 25
LEFT STATION 1+00
EX. (30') 12" CMP

HTR 4'
1.32

HTR 115+00 R
5.90 AC.

HTR 41+00 D
0.21 AC.

HTR 118+50 R
6.67 AC.

HTR 39+50 D
0.38 AC.

HTR 30+00 D
2.39 AC.

HTR 27+75 R
2.72 AC.

HTR 23+00 R
4.07 AC.

HTR 19+00 R
6.09 AC.

HTR 121+50 R
4.58 AC.

HTR 132+00 R
2.26 AC.

HTR 12+00 R
1.52 AC.

HTR 15+50 R
82.02 AC.

CR 0+50 R
7.14 AC.

1 inch = 200 ft.

PANEL 01

Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

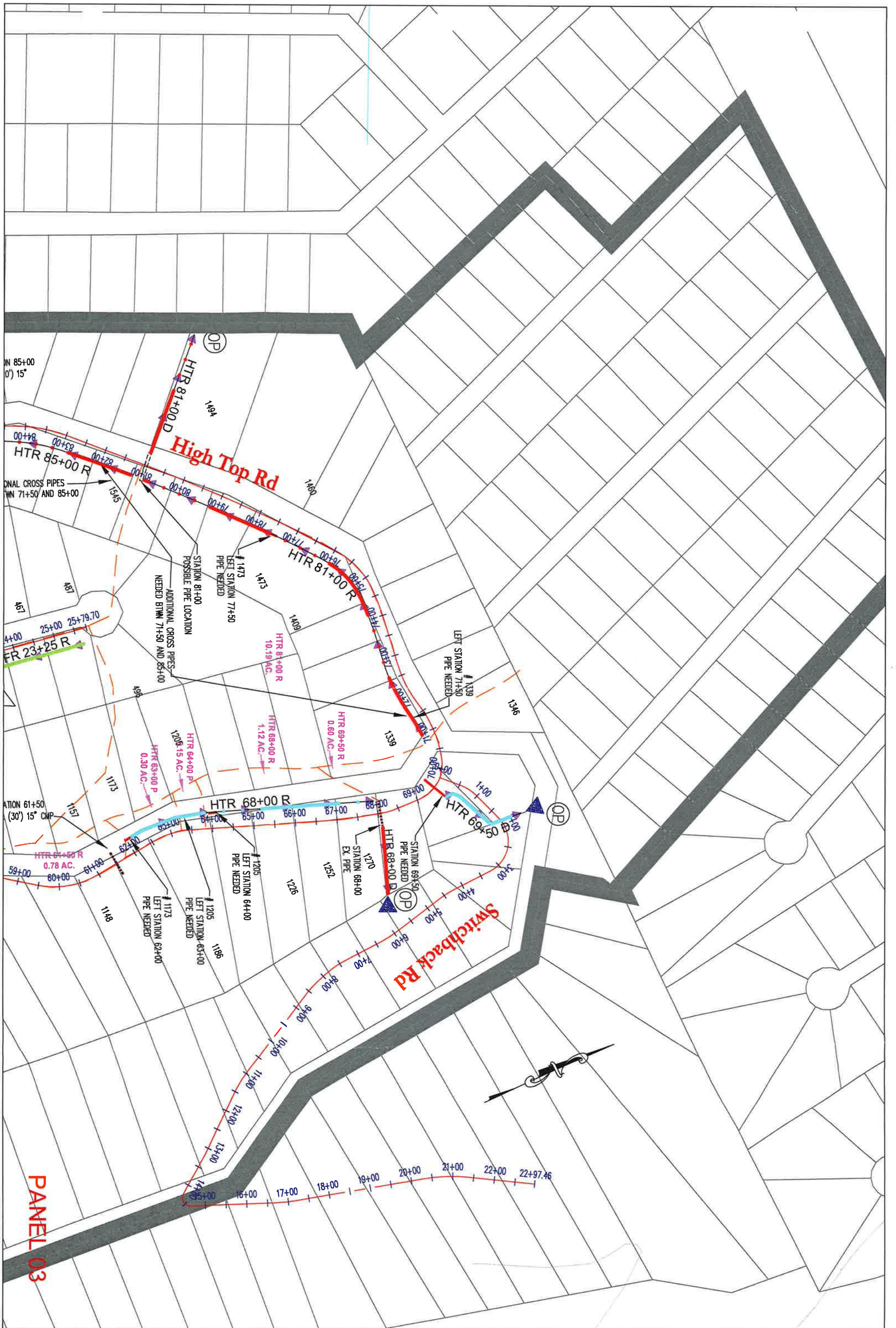
PHRA
A Pennoni Company
117 East Piccadilly St.
Suite 200
Winchester, VA 25401
T 540 667 7139
F 540 665 0493

SCALE 1"=200'

DRAWN BY: PHRA
PROJECT NO. 7291720
DATE Feb. 25, 2012

SHEET 1 OF 36

High Top Rd
Crossway Ln
Freeze Rd
High Top Road
HTR 115+00 D
HTR 115+00 R
HTR 109+50 D
HTR 109+50 L
HTR 109+50 U
HTR 103+00 L
HTR 103+00 D
HTR 99+50 L
HTR 97+50 D
HTR 97+50 L
HTR 89+50 D
HTR 89+50 L
HTR 85+00 D
HTR 85+00 L
HTR 85+00 R
FR 4+00 D
FR 4+00 L
FR 10+50 D
FR 10+50 L
FR 20+50 D
FR 20+50 L
FR 20+50 R
FR 23+25 D
FR 23+25 L
FR 23+25 R
CL 4+00 U
CL 8+80 L
CL 8+80 U
HTR 40+00 R
HTR 40+00 L
HTR 49+00 R
HTR 49+00 L
HTR 51+75 D
HTR 10+00 D
HTR 109+50 R 4.47 AC.
HTR 103+00 R 4.89 AC.
HTR 99+50 R 3.12 AC.
HTR 97+50 R 1.14 AC.
HTR 89+50 R 4.91 AC.
HTR 89+25 P 5.42 AC.
HTR 85+00 R 7.88 AC.
HTR 4+00 R 1.32 AC.
FR 4+00 R 1.27 AC.
FR 10+50 R 6.12 AC.
FR 20+50 R 8.04 AC.
FR 23+25 R 8.46 AC.
HTR 8+50 R 3.98 AC.
HTR 40+00 R 3.80 AC.
HTR 10+00 D 0.63 AC.
HTR 47+75 P 2.87 AC.
HTR 50+75 P 0.48 AC.
HTR 52+00 R 0.34 AC.
HTR 49+00 R 1.30 AC.
HTR 61+50 R 0.78 AC.
HTR 30+00 D 2.39 AC.
STATION 109+50 EX. (40') 15" CMP
STATION 115+00 EX. (30') 15" CMP
STATION 103+00 EX. (30') 15" CMP
STATION 99+50 EX. (30') 15" CMP
STATION 97+50 EX. (30') 15" CMP
STATION 89+50 EX. (30') 12" CMP
STATION 85+00 EX. (20') 15"
ADDITIONAL CROSS PIPES NEEDED BTWN 71+50 AND 85+00
STATION 4+00 EX. (30') 15" CMP
STATION 4+00 POSSIBLE PIPE LOCATION
STATION 10+50 EX. (30') 15" CMP
STATION 20+50 POSSIBLE PIPE LOCATION
STATION 23+25 EX. (30') 15" CMP
STATION 61+50 EX. (30') 15" CMP
STATION 8+50 POSSIBLE PIPE LOCATION
STATION 33+75 EX. (40') 18" CMP
STATION 40+00 EX. (30') 15" CMP
STATION 49+00 EX. (30') 15" CMP
STATION 50+75 POSSIBLE PIPE LOCATION
STATION 52+00 EX. (30') 15" CMP
STATION 56+00 EX. (30') 15" CMP
# 2727 LEFT STATION 144+00 PIPE NEEDED
# 2775 LEFT STATION 146+50 PIPE NEEDED
# 2702 RIGHT STATION PIPE NEEDED
# 2028 RIGHT STATION 107+50 PIPE NEEDED
# 1722 RIGHT STATION 91+ PIPE NEEDED
# 1745 LEFT STATION 94+00 PIPE NEEDED
# 1679 LEFT STATION 89+25 PIPE NEEDED
# 157 LEFT STATION 7+50 PIPE NEEDED
# 125 LEFT STATION 6+50 PIPE NEEDED
# 125 LEFT STATION 5+50 PIPE NEEDED
# 292 RIGHT STATION 15+25 PIPE NEEDED
# 903 LEFT STATION 47+75 PIPE NEEDED
# 1005 LEFT STATION 53+00 PIPE NEEDED
# 971 LEFT STATION 51+75 PIPE NEEDED
PANEL 02
1 inch = 200 ft.
Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study
PHRA
117 East Piccadilly St.
Suite 200
Winchester, VA 22601
T 540.667.7139
F 540.665.0463
SCALE: 1"=200'
DRAWN BY: PHRA
PROJECT NO. 7291220
DATE: Feb. 25, 2012
SHEET 2 OF 36




SCALE: 1"=200'

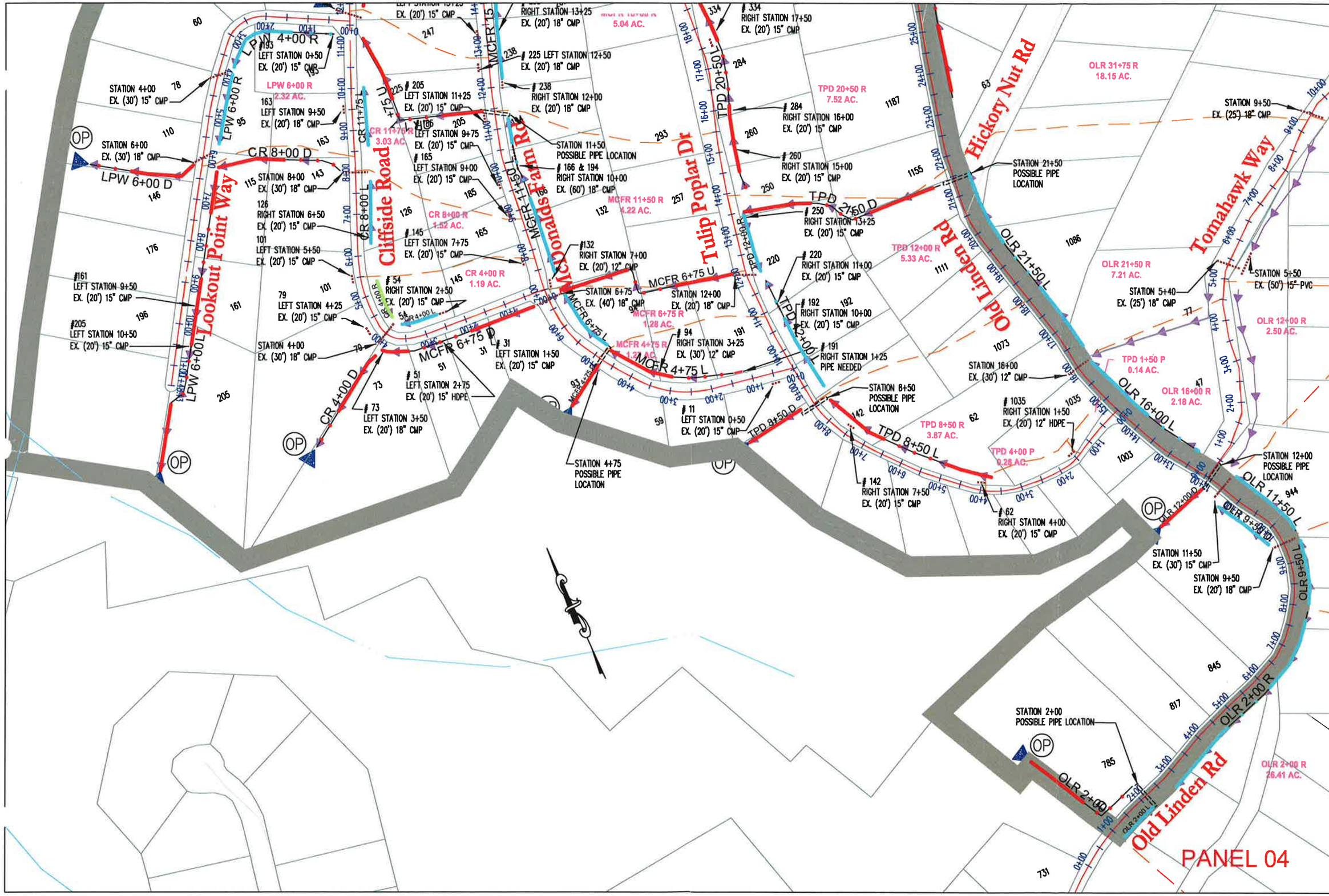
DRAWN BY: PHRA
PROJECT NO. 1297220
DATE: Feb. 25, 2012

SHEET 3 OF 36

Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

PHRA
A Pennoni Company
117 East Piccadilly St.
Suite 200
Winchester, VA 25401
T 540.667.2139
F 540.665.0493

200 100 0 200 400
1 inch = 200 ft.




117 East Piccadilly St.
Suite 200
Winchester, VA 25401
T 540.667.2139
F 540.665.0493

PHRA
A Pennoni Company

Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

SCALE 1"=200'
DRAWN BY: PHRA
PROJECT NO. T297220
DATE Feb. 25, 2012
SHEET 4 OF 36

Old Linden Rd
Hickory Nut Rd
Tulip Poplar Dr
Old Linden Rd
Tomahawk Way
Warbler Way
May Apple Way
Mt. Oriole Ln

TPD 25+50 R
TPD 24+00 R
5.86 AC.
TPD 20+50 R
7.52 AC.
TPD 12+00 R
5.33 AC.
MCFR 16+00 R
5.04 AC.
MCFR 11+50 R
4.22 AC.
MCFR 6+75 R
1.28 AC.
MCFR 4+75 R
1.37 AC.
OLR 31+75 R
18.15 AC.
OLR 21+50 R
7.21 AC.
OLR 16+00 R
2.18 AC.
OLR 12+00 R
2.50 AC.
OLR 11+50 R
12.27 AC.
TPD 1+50 P
0.14 AC.
TPD 8+50 R
3.87 AC.
TPD 4+00 P
0.26 AC.
TW 17+25 R
4.01 AC.
TW 15+25 R
1.86 AC.
TW 9+50 R
12.06 AC.
TW 5+40 R
3.82 AC.

STATION 31+75 POSSIBLE PIPE LOCATION
STATION 25+50 EX. (20') 15" CMP
STATION 24+00 EX. (20') 15" CMP
# 438 RIGHT STATION 26+50 EX. (20') 15" CMP
# 432 RIGHT STATION 22+00 EX. (20') 15" CMP
# 396 RIGHT STATION 20+50 EX. (20') 15" CMP
# 309 LEFT STATION 20+00 EX. (20') 12" CMP
STATION 20+50 POSSIBLE PIPE LOCATION
# 364 RIGHT STATION 19+50 EX. (20') 15" CMP
# 334 RIGHT STATION 17+50 EX. (20') 15" CMP
# 284 RIGHT STATION 16+00 EX. (20') 15" CMP
# 260 RIGHT STATION 15+00 EX. (20') 15" CMP
STATION 11+50 POSSIBLE PIPE LOCATION
# 166 & 194 RIGHT STATION 10+00 EX. (60') 18" CMP
# 250 RIGHT STATION 13+25 EX. (20') 15" CMP
STATION 21+50 POSSIBLE PIPE LOCATION
# 132 RIGHT STATION 7+00 EX. (20') 12" CMP
STATION 6+75 EX. (40') 18" CMP
STATION 12+00 EX. (20') 18" CMP
# 220 RIGHT STATION 11+00 EX. (20') 15" CMP
# 192 RIGHT STATION 10+00 EX. (20') 15" CMP
# 94 RIGHT STATION 3+25 EX. (30') 12" CMP
# 191 RIGHT STATION 1+25 PIPE NEEDED
STATION 16+00 EX. (30') 12" CMP
STATION 8+50 POSSIBLE PIPE LOCATION
# 11 LEFT STATION 0+50 EX. (20') 15" CMP
# 1035 RIGHT STATION 1+50 EX. (20') 12" HDPE
STATION 4+75 POSSIBLE PIPE LOCATION
# 142 RIGHT STATION 7+50 EX. (20') 15" CMP
# 62 RIGHT STATION 4+00 EX. (20') 15" CMP
STATION 12+00 POSSIBLE PIPE LOCATION
STATION 9+50 EX. (25') 18" CMP
STATION 5+40 EX. (25') 18" CMP
STATION 5+50 EX. (50') 15" PVC
RIGHT STATION 18+00 PIPE NEEDED
STATION 21+75 EX. (20') 12" CMP
STATION 22+00 EX. PIPE
RIGHT STATION 17+25 PIPE NEEDED
LEFT STATION 14+50 PIPE NEEDED
STATION 15+25 EX. 24' CMP
RIGHT STATION 13+50 PIPE NEEDED

1 inch = 200 ft.

PANEL 04A

Tomahawk Way (Original Station No.)

117 East Piccadilly St.
Suite 200
Winchester, VA 25401
T 540.667.7139
F 540.665.0493

Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

SCALE: 1"=200'
DRAWN BY: PHRA
PROJECT NO. 1297220
DATE: Feb. 25, 2012
SHEET 4A OF 36

Old Linden Rd
Hickory Nut Rd
Tulip Poplar Dr
McDonalds Ln
Warbler Way
May Apple Way
Tomahawk Way
Mt. Oriole Ln

RIGHT STATION 26+50
EX. (20') 15" CMP
STATION 25+50
EX. (20') 15" CMP
STATION 24+00
EX. (20') 15" CMP
RIGHT STATION 22+00
EX. (20') 15" CMP
RIGHT STATION 20+50
EX. (20') 15" CMP
LEFT STATION 20+00
EX. (20') 12" CMP
STATION 20+50
POSSIBLE PIPE LOCATION
RIGHT STATION 19+50
EX. (20') 15" CMP
RIGHT STATION 17+50
EX. (20') 15" CMP
RIGHT STATION 16+00
EX. (20') 15" CMP
RIGHT STATION 15+00
EX. (20') 15" CMP
RIGHT STATION 13+25
EX. (20') 15" CMP
RIGHT STATION 11+00
EX. (20') 15" CMP
RIGHT STATION 10+00
EX. (20') 15" CMP
RIGHT STATION 1+25
PIPE NEEDED
STATION 8+50
POSSIBLE PIPE LOCATION
LEFT STATION 0+50
EX. (20') 15" CMP
RIGHT STATION 7+50
EX. (20') 15" CMP
RIGHT STATION 4+00
EX. (20') 15" CMP
STATION 4+75
POSSIBLE PIPE LOCATION
STATION 11+50
POSSIBLE PIPE LOCATION
166 & 194
RIGHT STATION 10+00
EX. (60') 18" CMP
STATION 6+75
EX. (40') 18" CMP
STATION 12+00
EX. (20') 18" CMP
RIGHT STATION 7+00
EX. (20') 12" CMP
RIGHT STATION 3+25
EX. (30') 12" CMP
STATION 31+75
POSSIBLE PIPE LOCATION
STATION 21+50
POSSIBLE PIPE LOCATION
STATION 16+00
EX. (30') 12" CMP
RIGHT STATION 1+50
EX. (20') 12" HDPE
STATION 9+50
EX. (25') 18" CMP
STATION 5+40
EX. (25') 18" CMP
STATION 5+50
EX. (50') 15" PVC
STATION 12+00
POSSIBLE PIPE LOCATION
LEFT STATION 8+00
PIPE NEEDED
RIGHT STATION 4+60
PIPE NEEDED
STATION 1+00
EX. (20') 12" CMP
STATION 0+50
EX. PIPE
RIGHT STATION 5+50
PIPE NEEDED
STATION 7+50
EX. 24' CMP
RIGHT STATION 9+00
PIPE NEEDED

TPD 25+50 R
TPD 24+00 R
5.86 AC.
MCFR 16+00 R
5.04 AC.
TPD 20+50 R
7.52 AC.
MCFR 11+50 R
4.22 AC.
TPD 12+00 R
5.33 AC.
MCFR 6+75 R
1.28 AC.
MCFR 4+75 R
OLR 31+75 R
18.15 AC.
OLR 21+50 R
7.21 AC.
TPD 1+50 P
0.14 AC.
OLR 16+00 R
2.18 AC.
TPD 8+50 R
3.87 AC.
TPD 4+00 P
0.26 AC.
TW 17+25 R
4.01 AC.
TW 15+25 R
1.86 AC.
TW 9+50 R
12.06 AC.
TW 5+40 R
3.82 AC.
OLR 12+00 R
2.50 AC.
OLR 11+50 R
12.27 AC.

PANEL 04A(A)
Tomahawk WAY (REVERSED
Stationing

1 inch = 200 ft.

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Shenandoah Farms Sanitary District
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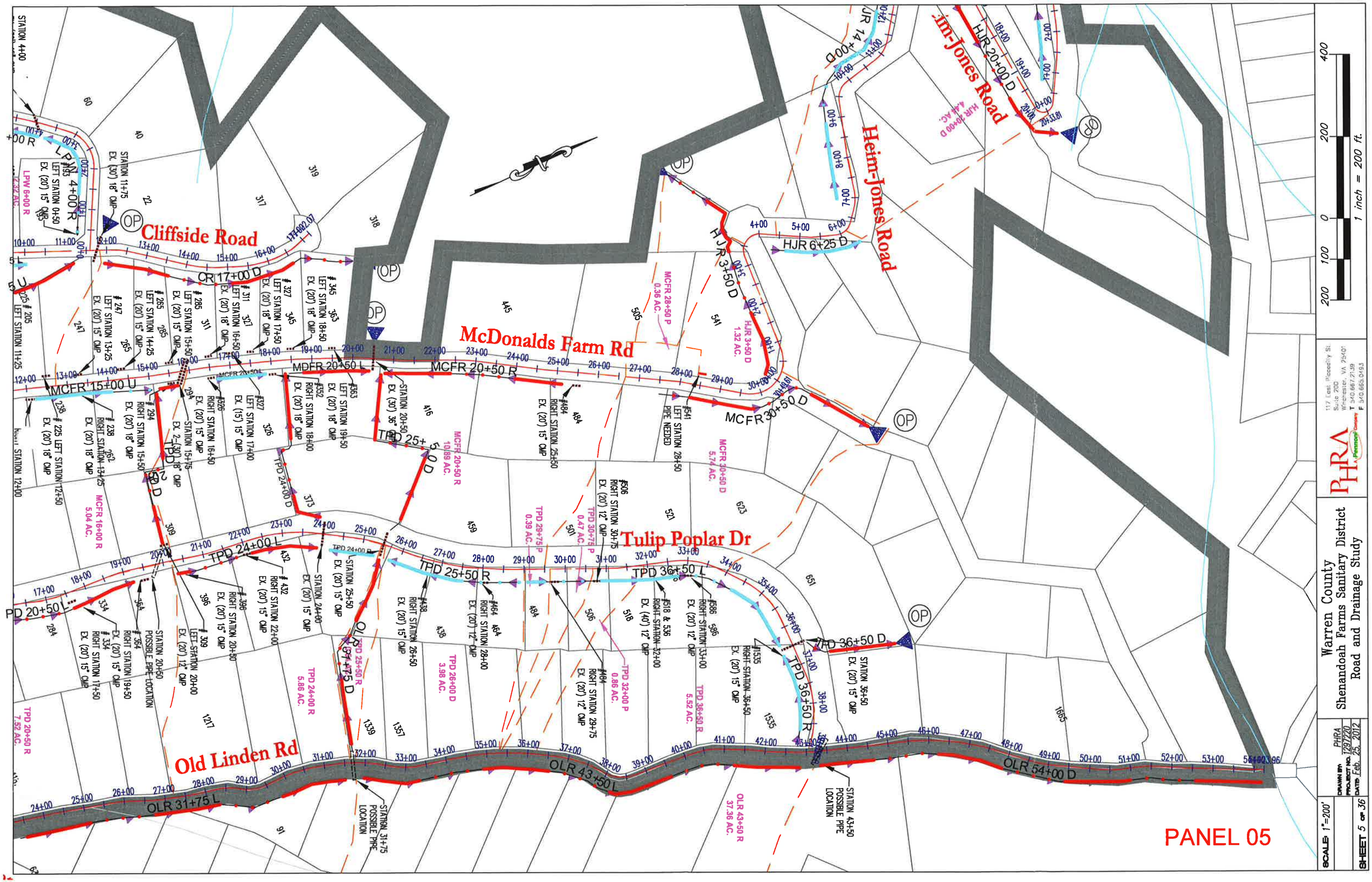
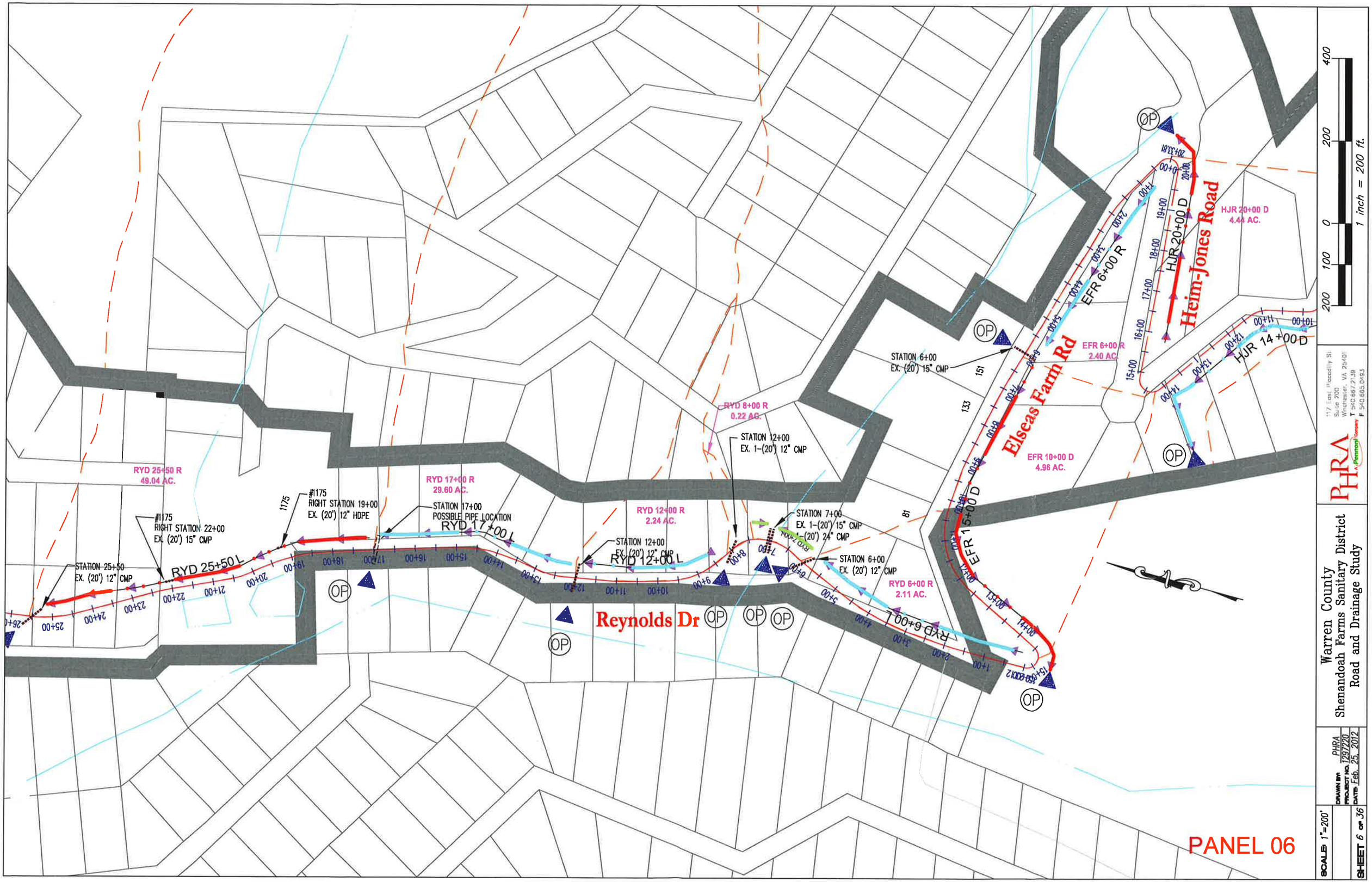
DRAWN BY: PHRA
PROJECT NO. 7297220
DATE: Feb. 25, 2012
SCALE: 1"=200'
SHEET 44 OF 36


Cliffside Road
McDonalds Farm Rd
Heim-Jones Road
Tulip Poplar Dr
Old Linden Rd
PANEL 05
1 inch = 200 ft.
Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study
PHRA
SCALE 1"=200'
SHEET 5 OF 36

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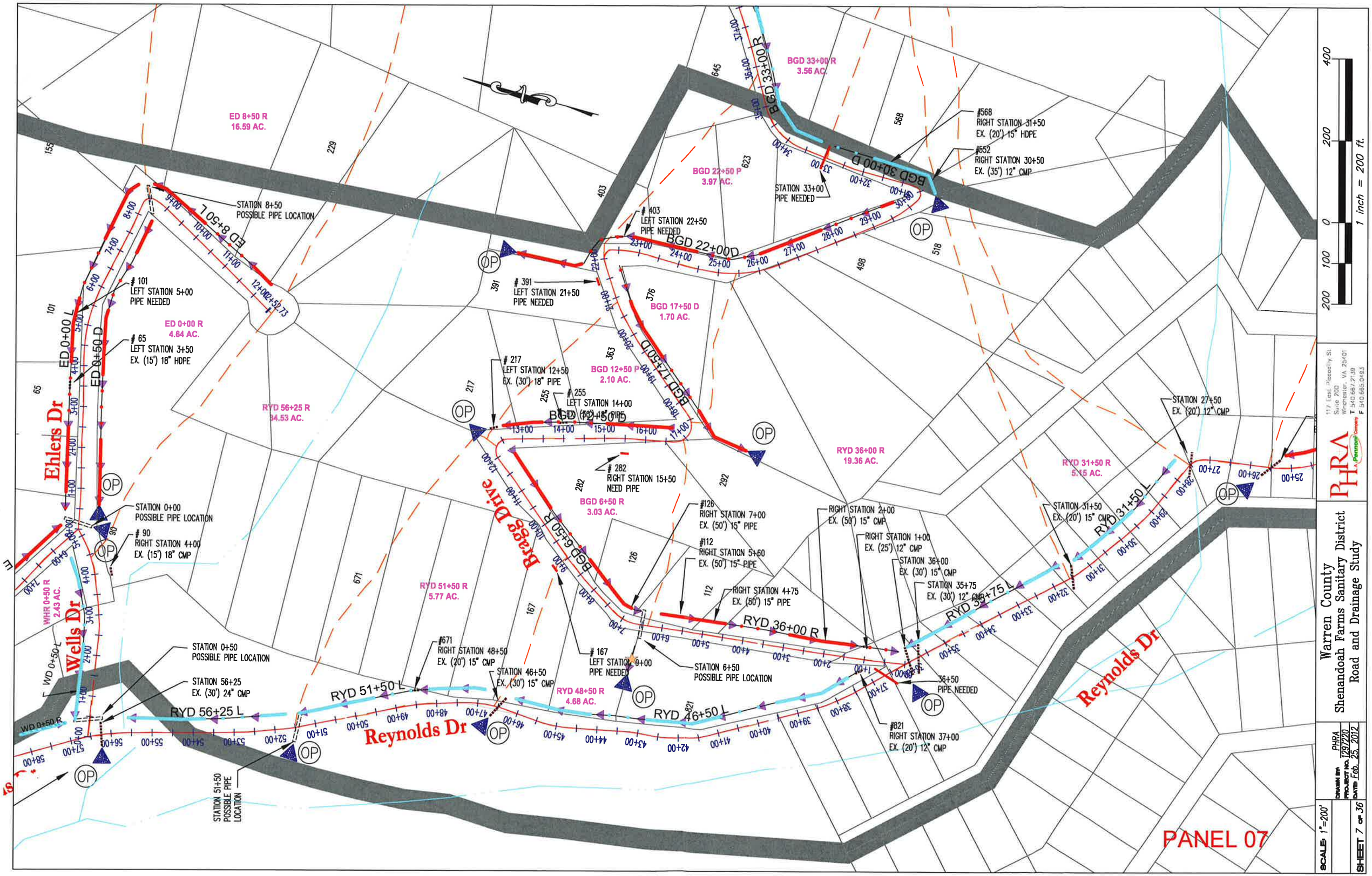
SHEET 6 OF 36

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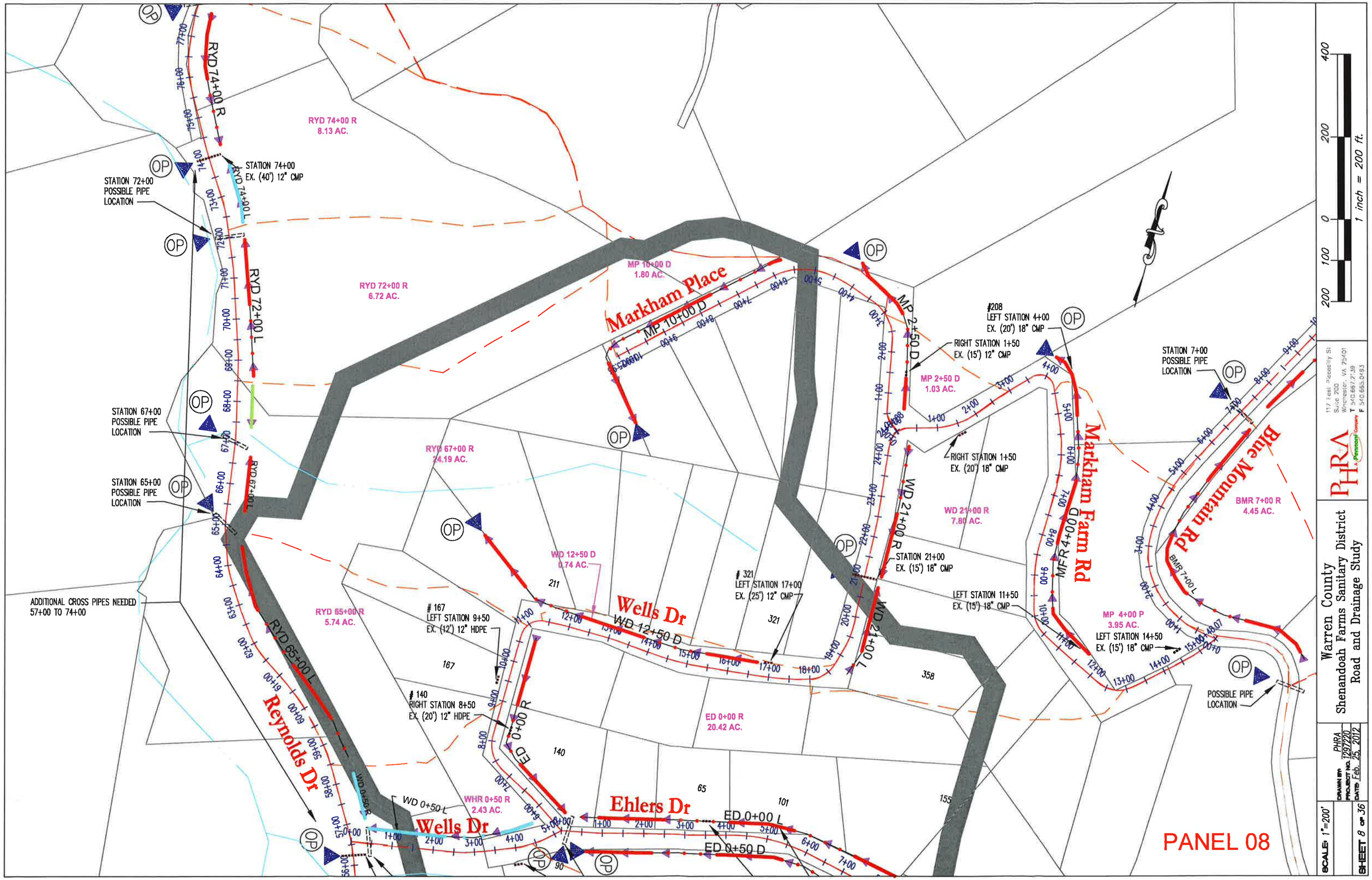
SCALE: 1"=200'

SHEET 7 OF 36

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SHEET 8 OF 36

Farms River Rd

Farm View Rd

Youngs Dr

Hardesty Rd

FRRD 19+00 R
17.85 AC.

FRRD 19+00 L

FRRD 19+00 R

FRRD 0+50 R
23.69 AC.

FRRD 0+50 L

FRRD 0+50 R

YD 24+50 D
0.89 AC.

YD 24+50 D

YD 20+00 R
0.36 AC.

YD 20+00 L

FVR 16+00 D

FVR 16+00 D
0.72 AC.

YD 5+00 D

YD 12+00 R
1.35 AC.

YD 12+00 L

HR 11+00 R
2.37AC.

HR 11+00 L

HR 4+00 R
7.34 AC.

HR 4+00 L

HR 4+00 D

HR 1+50 D
2.46 AC.

HR 1+50 D

#416
RIGHT STATION 22+00
PIPE NEEDED

STATION 19+00
POSSIBLE PIPE LOCATION

#342
RIGHT STATION 18+00
PIPE NEEDED

#266
RIGHT STATION 13+50
EX. (12') 12" PVC

STATION 20+00
EX. 12" CMP

# 712
RIGHT STATION 20+00
EX. 2-(12') 12" CMP

# 289
LEFT STATION 16+00
EX. (12') 15" CMP

# 275
LEFT STATION 14+75
PIPE NEEDED

# 234
RIGHT STATION 12+00
EX. 12" CMP

# 196
RIGHT STATION 10+50
EX. (20') 12" CMP (APPEARS TO BE)

STATION 6+50
EX. (20') 15" CMP

STATION 12+00
POSSIBLE PIPE LOCATION

# 481
LEFT STATION 7+50
EX. (12') 12" CMP

STATION 11+00
POSSIBLE PIPE LOCATION

STATION 4+00
POSSIBLE PIPE LOCATION

LOT 2989
RIGHT STATION 3+50
PIPE NEEDED

STATION 0+50
EX. (22') 12" CMP

1 inch = 200 ft.

PANEL 09

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SHEET 9 OF 36

Dillard Ct

Flynn Dr

Fellows Dr

Youngs Dr

Farms River Rd

Farm View Rd

PANEL 10

FRRD 38+00 R
7.02 AC.

FRRD 27+75 R
7.00 AC.

FRRD 33+50 R
4.29 AC.

FRRD 27+75 R
46.24 AC.

FND 26+00 D

FND 23+50 R
1.30 AC.

FND 19+00 R
2.83 AC.

FND 19+00 D
0.58 AC.

FND 20+00 R
5.77 AC.

FND 9+75 R
11.53 AC

DC 5+50 D
2.82 AC.

DC 3+00 D
0.52 AC.

YD 15+00 R
2.83 AC.

YD 24+50 D
0.89 AC.

FRRD 38+00 R

FRRD 27+75 R

FRRD 27+75 L

FRRD 32+25 D

FND 27+75 L

FND 23+50 D

FND 20+00 L

FND 20+00 R

FND 11+00 R

FND 11+00 D

FND 9+75 L

DC 9+00 D1

DC 9+00 D

DC 5+00 D

YD 15+00 R

YD 15+00 L

YD 24+50 D

STATION 38+00
EX. (25') 18" CMP

722
RIGHT STATION 38+75
EX. (20') 15" CMP

668
RIGHT STATION 36+00
EX. (20') 15" CMP

STATION 27+75
EX. (46') 15" CMP

59
RIGHT STATION 25+50
EX. (20') 15" CMP

STATION 32+25
EX. (23') 15" PVC

# 74
RIGHT STATION 31+00
PIPE NEEDED

STATION 27+75
EX. (23') 24" CMP

STATION 23+60
PIPE NEEDED

STATION 18+75
EX. (20') 15" CMP

222
LEFT STATION 17+00
EX. (25') 15" CMP

STATION 20+00
EX. (70') 15" CMP

LOT 215
RIGHT STATION 17+25
EX. (15') 15" CMP

LOT 255
RIGHT STATION 14+50
PIPE NEEDED

LOT 270
LEFT STATION 14+50
EX. PIPE

LOT 292
LEFT STATION 12+75
EX. PIPE

# 242
RIGHT STATION 12+75
EX. (15') CMP

# 194
RIGHT STATION 10+00
EX. PIPE

# 136
RIGHT STATION 7+00
EX. (15') 15" CMP

# 102
RIGHT STATION 5+00
EX. (15') 15" CMP

STATION 9+75
EX. (20') 15" CMP

STATION 11+00
POSSIBLE PIPE LOCATION

STATION 5+50
PIPE NEEDED

# 192
LEFT STATION 3+00
EX. (12') 12" CMP

STATION 15+00
EX. (18') 12" CMP

# 185
RIGHT STATION 0+50
EX. (12') 12" CMP

STATION 11+50
PIPE NEEDED

STATION 5+50
EX 18" CMP

STATION 5+00
EX 18" CMP

1 inch = 200 ft.

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Shenandoah Farms Sanitary District
Road and Drainage Study

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SHEET 10 OF 36

Tara Rd

Silver Fox Ln

Dry Run Ct

Howellsville Rd

Youngs Dr

STATION 1+25
EX. (15') 24" STEEL PIPE

STATION 1+50
EX. 2-(15') 60" RCP

RIGHT STATION 7+50
EX. (30') 12" CMP

RIGHT STATION 4+50
PIPE NEEDED

RIGHT STATION 4+00
EX. (15') 16" CMP

LEFT STATION 4+00
EX. (22') 16" CMP

STATION 6+50
EX. (38') 18" CMP

RIGHT STATION 20+00
EX. (12') 12" CMP

STATION 18+60
EX. (20') 18" PVC

LEFT STATION 10+50
EX. (15') 12" CMP

LEFT STATION 12+00
EX. (12') 12" PVC

RIGHT STATION 15+75
POSSIBLE EX. PIPE

RIGHT STATION 11+50
EX. (12') 12" CMP

RIGHT STATION 12+00
EX. (12') 12" CMP

RIGHT STATION 14+50
EX. (12') 12" CMP

RIGHT STATION 14+75
EX. (12') 12" CMP

STATION 5+00
EX 18" CMP

DC 3+00 D
0.52 AC.

HR 46+50 R
9.92 AC.

HR 46+50 D

YD 15+00 R
2.83 AC.

YD 15+00 L

YD 11+50 R
1.71 AC.

SFL 1+25 R
1.13 AC.

SFL 1+25 L

SFL 1+25 D
31.34 AC.

DRC 6+50 R
4.06 AC.

DRC 6+50 L

DRC 18+60 R
8.00 AC.

DRC 18+60 L

DRC 9+00 D

DRC 9+00 R
1.18 AC.

FD 5+00 R
10.29 AC.

FND 3+50 D

YD 0+50 R
0.76 AC.

YD 0+50 L

PANEL 11

400 200 0 100 200

1 inch = 200 ft.

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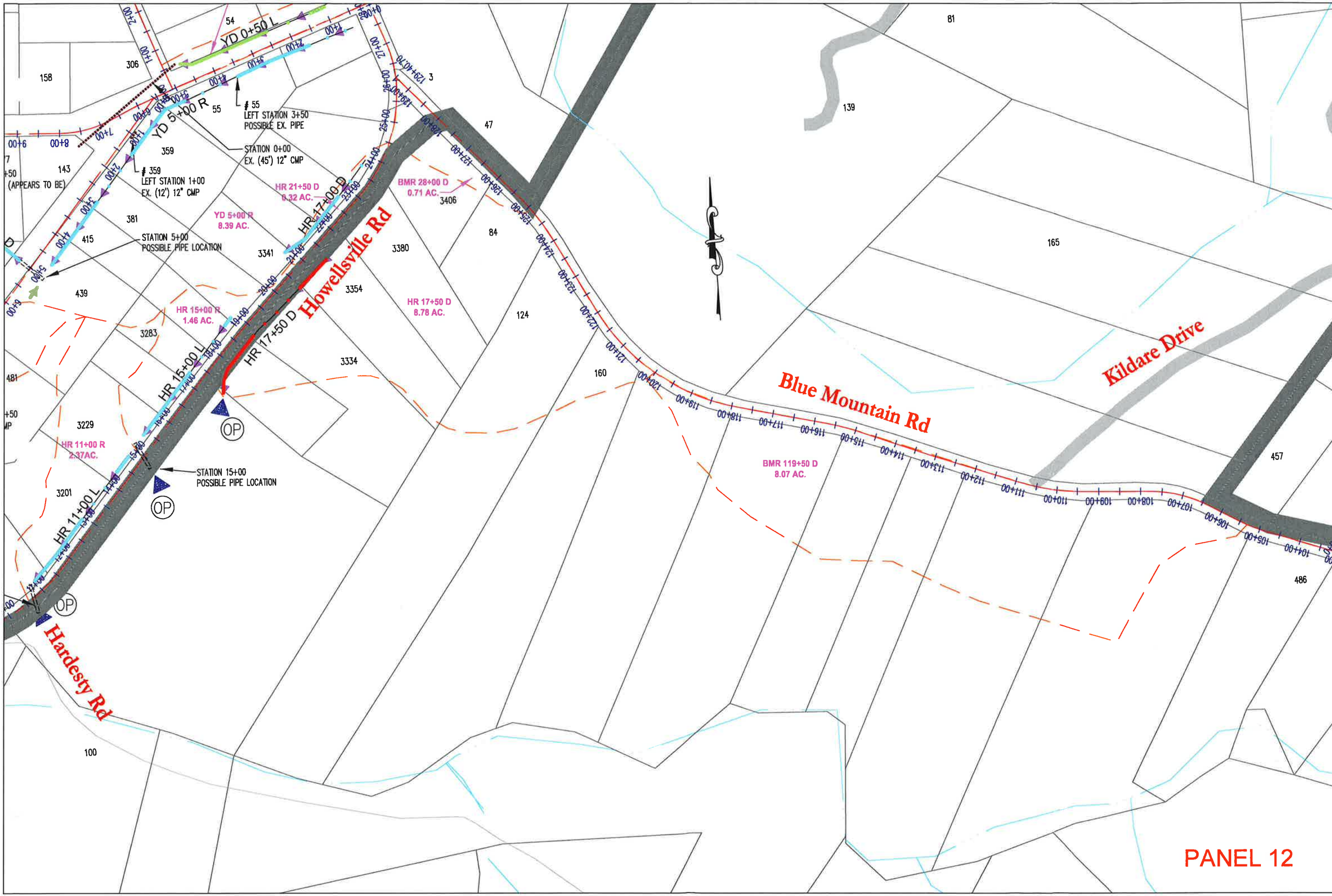
SCALE: 1"=200'

SHEET 11 OF 36

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Shenandoah Farms Sanitary District
Road and Drainage Study

SCALE: 1"=200'
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DATE: Feb. 25, 2012
SHEET 12 OF 36

Hobbs Knob Rd

Kildare Drive

Blue Mountain Rd

Reynolds Dr

STATION 16+50
EX. (20') 24" CMP

HKR 16+50 R
7.09 AC.

HKR 16+50 D

HKR 14+00 L

STATION 14+00
POSSIBLE PIPE
LOCATION

HKR 14+00 R
3.65 AC.

STATION 8+50
POSSIBLE PIPE
LOCATION

HKR 8+50 R
1.91 AC.

STATION 7+00
EX. (25') 16" CMP

HKR 2+00 R

64
RIGHT STATION 4+25
EX. (35') 12" CMP

HKR 2+00 R
4.45 AC.

STATION 2+00
EX. (25') 12" CMP

BMR 87+00 R
2.81 AC.

BMR 87+00 R

BMR 87+00 L

BMR 82+00 R

STATION 82+00
POSSIBLE PIPE
LOCATION

STATION 87+00
POSSIBLE PIPE
LOCATION

BMR 89+50 R
2.26 AC.

BMR 89+50 R

STATION 89+50
POSSIBLE PIPE
LOCATION

BMR 96+50 R
3.12 AC.

BMR 96+50 L

BMR 96+50 R

STATION 96+50
POSSIBLE PIPE
LOCATION

LEFT STATION 80+00
PIPE NEEDED

RYD 78+00 R
3.15 AC.

RYD 79+00 R

RYD 78+00 D

RYD

STATION 78+00
POSSIBLE PIPE
LOCATION

1 inch = 200 ft.

PANEL 13


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SCALE: 1"=200'

SHEET 13 OF 36

Western Ln
Vaught Dr
Cindys Way
Blue Mountain Rd
Hobbs Knob Rd
PANEL 14
STATION 23+00
EX. (25') 15" PIPE
# 488
RIGHT STATION 26+00
EX. (15') 15" CMP
# 497
LEFT STATION 26+00
PIPE NEEDED
# 461
LEFT STATION 24+50
EX. (12') 12" CMP
#447
LEFT STATION 23+00
EX. (12') 12" CMP
CW 13+50 R
35.00 AC.
CW 20+00 R
5.94 AC.
CW 10+50 D
0.41 AC.
CW 13+50 R
0.99 AC.
CW 8+50 R
2.51 AC.
CW 2+50 R
50.73 AC.
BMR 67+50 D
0.42 AC.
CW 8+50 L
CW 13+50 L
CW 2+50 L
CW 8+50 D
CW 2+50 D
# 40
STATION 4+50
PIPE NEEDED
STATION 2+50
EX. (20') 24" CMP
STATION 8+50
EX. (20') 15" CMP
#408
RIGHT STATION 21+50
EX. (40') 12" CMP
CW 20+00 R
CW 20+00 L
CW 13+50 R
STATION 13+50
EX. (25') 60" CMP
# 277
LEFT STATION 14+50
PIPE NEEDED
# 419
LEFT STATION 22+00
PIPE NEEDED
STATION 20+00
EX. (30') 12" PVC
# 317
LEFT STATION 16+35
PIPE NEEDED
BMR 69+00D
STATION 72+50
POSSIBLE PIPE
LOCATION
BMR 72+50 R
BMR 72+50 R
2.77 AC.
HKR 25+00 R
HKR 25+00 L
STATION 25+00
EX. (25') 12" CMP
HKR 16+50 R
STATION 16+50
EX. (20') 24" CMP
HKR 16+50 D
HKR 16+50 L
HKR 16+50 R
7.09 AC.
BMR 82+00 R
4.00 AC.
BMR 82+00 L
BMR 82+00 R
BMR 87+00 L
STATION 82+00
LEFT STATION 80+00
PIPE NEEDED
RYD 78+00 R
3.15 AC.
RYD 79+00 R
1 inch = 200 ft.

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Shenandoah Farms Sanitary District
Road and Drainage Study

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SCALE 1"=200'
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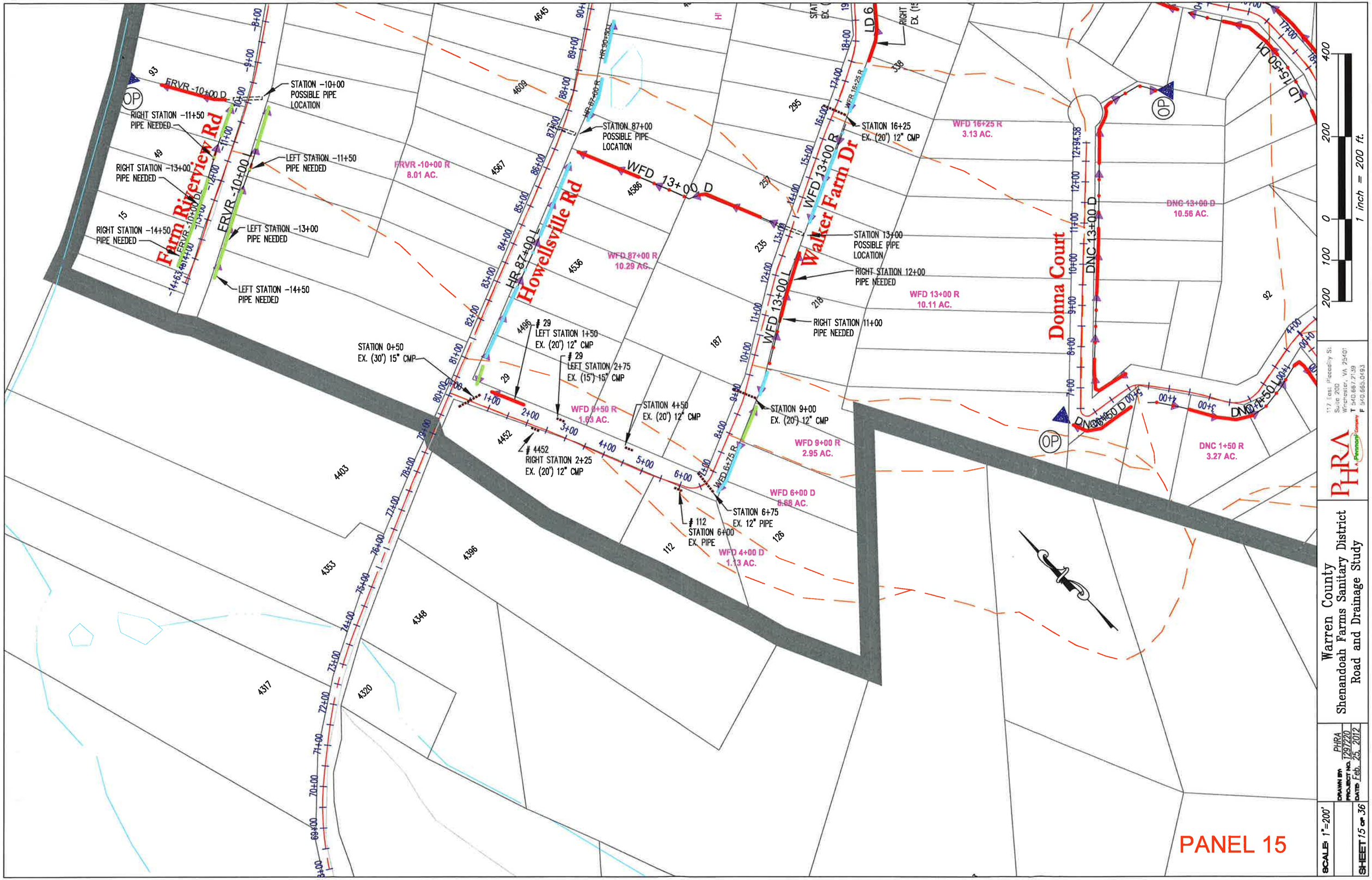
SHEET 14 OF 36

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DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 15 OF 36

Lake Dr
Western Ln
Pine Ridge Dr
Gary Ln
Donna Ct
Goode Dr
Vaught Dr
PANEL 16
1 inch = 200 ft.
400
200
0
100
200
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SCALE: 1"=200'
SHEET 16 OF 36

Vaught Dr
Blue Mountain Rd
Spring Rd
Barbara Dr
Elinore Ln
Grimm Dr
Ridge Dr

STATION 23+50
EX. (20') 16" CMP
# 467
LEFT STATION 23+50
EX. (12') 12" CMP
# 421
LEFT STATION 22+50
EX. (15') 12" CMP
# 415
LEFT STATION 22+50
PIPE NEEDED
# 339
LEFT STATION 18+50
EX. (12') 16" CMP
STATION 17+50
EX. (18') CMP
# 371
LEFT STATION 19+50
EX. (15') 12" CMP
STATION 18+25
EX. (20') 24" CMP
# 267
LEFT STATION 15+00
EX. (12') 12" CMP
# 257
LEFT STATION 13+75
EX. (12') 12" CMP
# 12
LEFT STATION 11+00
EX. (12') 12" CMP
STATION 9+75
EX. PIPE
STATION 21+50
POSSIBLE PIPE LOCATION
STATION 17+50
POSSIBLE PIPE LOCATION
STATION 27+00
EX. (23') 15" CMP
STATION 24+50
POSSIBLE PIPE LOCATION
#92 RIGHT STATION 7+00
PIPE NEEDED
STATION 6+00
PIPE NEEDED
#49
RIGHT STATION 3+50
EX. (30") 12" CMP
STATION 3+75
PIPE NEEDED
STATION 1+00
EX. (30") 12" CMP
STATION 11+00
EX. (20") 15" CMP
STATION 31+25
POSSIBLE PIPE LOCATION
STATION 30+50
POSSIBLE PIPE LOCATION
STATION 5+00
EX. (15') 18" CMP
#176
RIGHT STATION 10+00
EX. (15') 12" CMP
#140
RIGHT STATION 7+50
EX. (12') 12" CMP
#136
RIGHT STATION 7+00
EX. (15') 12" CMP
#65
RIGHT STATION 22+75
PIPE NEEDED
#54
RIGHT STATION 3+00
EX. (20') 12" CMP
STATION 15+75
POSSIBLE PIPE LOCATION

VD 21+50 R
3.22 AC.
GD 17+50 R
3.30 AC.
GD 17+50 R
17.02 AC.
PRD -17+69 D
0.41 AC.
VD 10+50 R
2.72 AC.
VD 9+75 R
0.89 AC.
SR 5+00 R
15.95 AC.
SR 2+00 D
0.43 AC.
SR 6+00 D
3.87 AC.
JFC 0+50 D
6.11 AC.
HFD 6+00 R
0.14 AC.
HFD 4+00 D
1.25 AC.
BMR 31+25 R
1.16 AC.
BMR 30+50 R
6.45 AC.
BD 11+00 R
3.41 AC.
BMR 22+75 R
1.21 AC.
BMR 65+00 D
2.03 AC.
CW 6+50 R

PANEL 17

1 inch = 200 ft.

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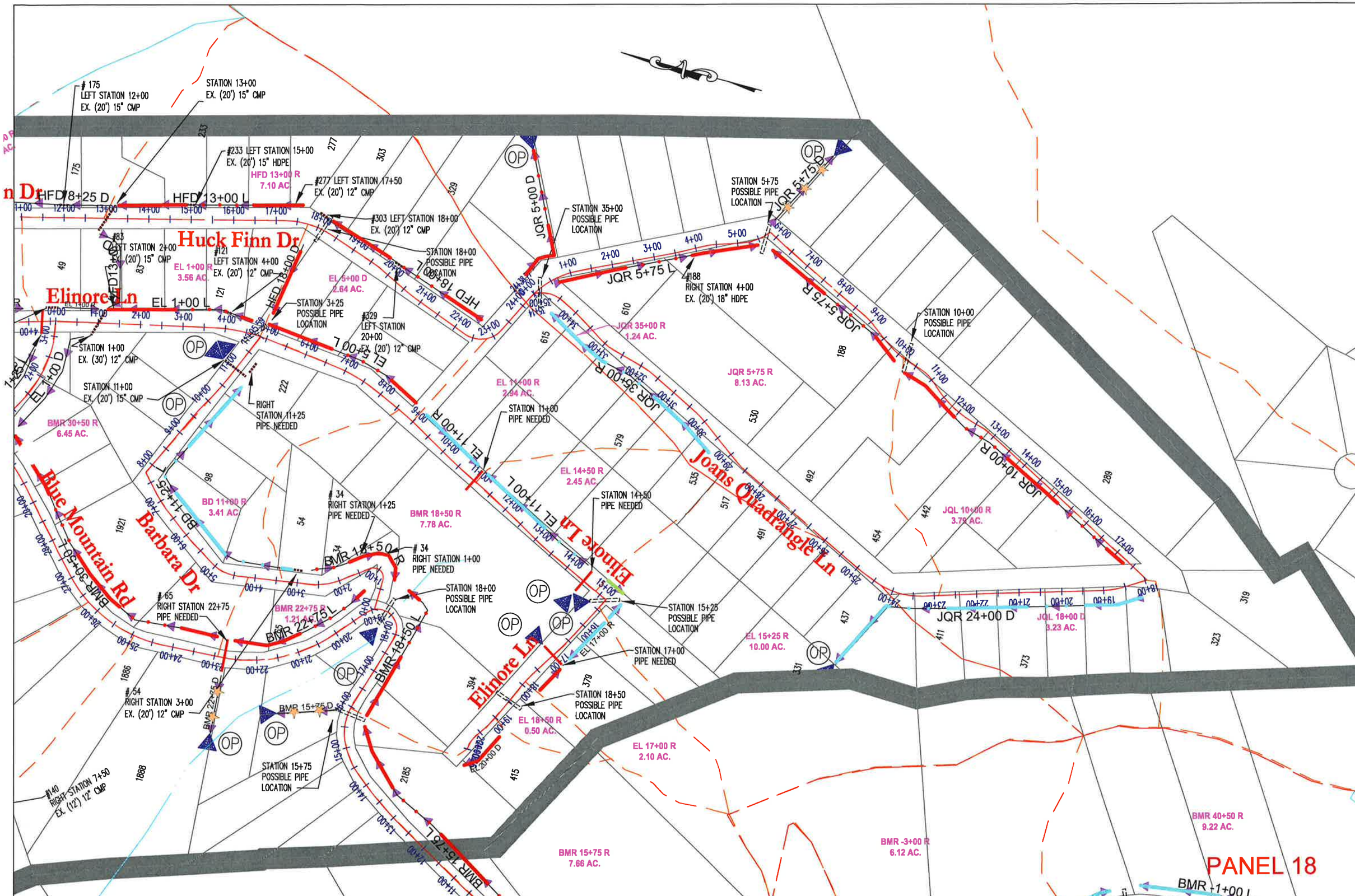
SHEET 17 OF 36

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DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 18 OF 36

Farm Riverview Rd

Myers Dr

Lake Dr

Howellsville Rd

Heavens Tree Tr

# 305
LEFT STATION 1+75
PIPE NEEDED

# 122
RIGHT STATION 6+00
PIPE NEEDED

# 378
RIGHT STATION 5+00
PIPE NEEDED

STATION 5+00
EX. 2-(20') 18" CMP

STATION 90+50
POSSIBLE PIPE
LOCATION

STATION 0+00
EX. (50') 18" CMP

STATION 1+00
EX. (24') 18" CMP

STATION 95+50
POSSIBLE PIPE
LOCATION

STATION 99+00
POSSIBLE PIPE
LOCATION

STATION 103+00
POSSIBLE PIPE
LOCATION

STATION 107+00
POSSIBLE PIPE
LOCATION

STATION 112+00
POSSIBLE PIPE LOCATION

STATION 22+50
POSSIBLE PIPE LOCATION

STATION -10+00
POSSIBLE PIPE
LOCATION

MD 5+00 R
13.92 AC.

LD 0+00 R
0.63 AC.

HW 90+50 R
7.07 AC.

LD 1+00 R
1.77 AC.

HR 90+50 D

HR 90+50 R

LD 0+00 D

HT 22+00 D

HT 22+50 D

FRVR -10+00 D

1 inch = 200 ft.

PANEL 19

Warren County
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SCALE: 1"=200'

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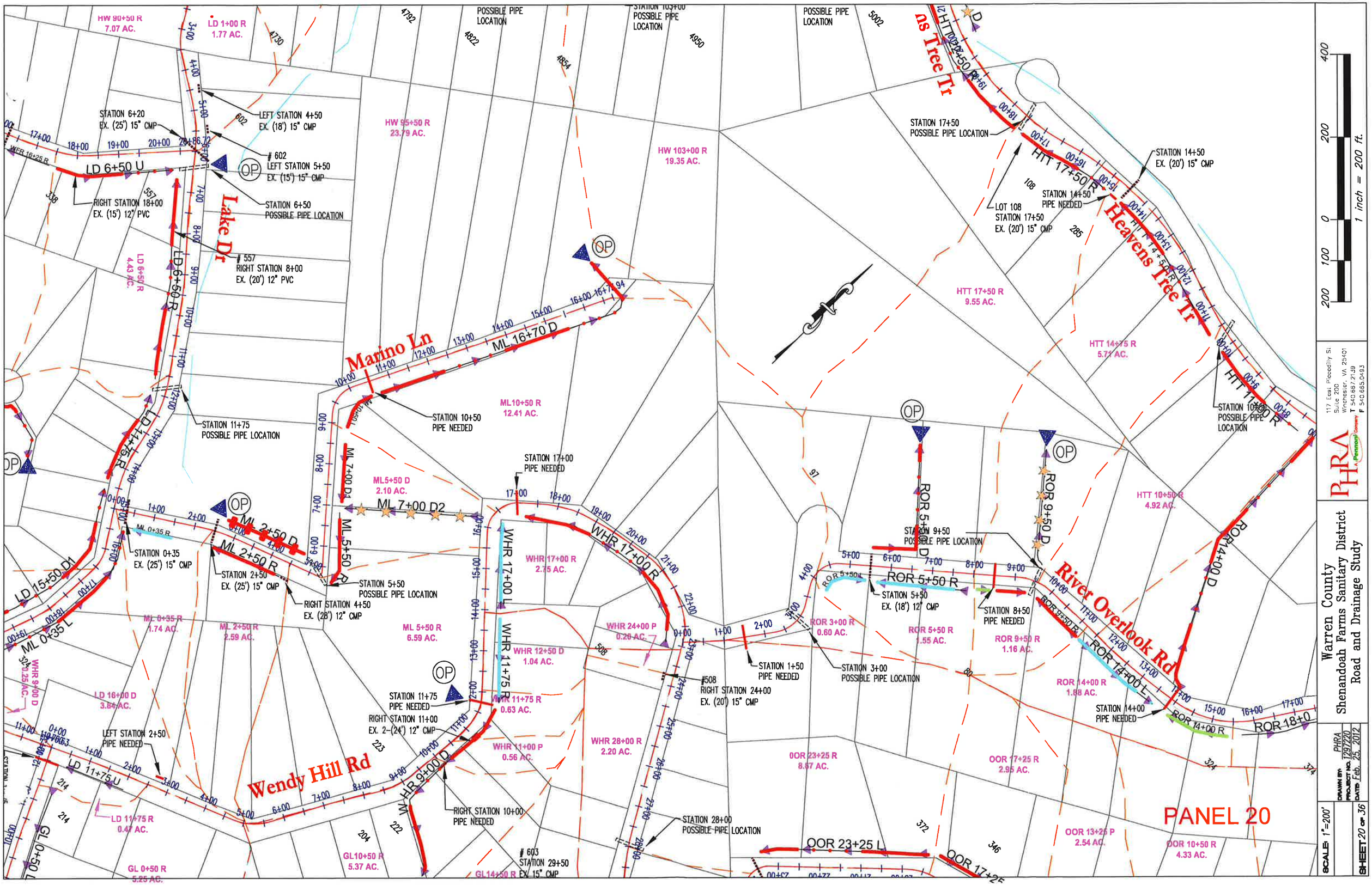
DATE: Feb. 25, 2012

SHEET 19 OF 36


Lake Dr
Marino Ln
Heavens Tree Tr
River Overlook Rd
Wendy Hill Rd
LD 6+50 U
LD 6+50 R
LD 11+75 R
LD 15+50 D1
ML 0+35 L
ML 2+50 D
ML 2+50 R
ML 5+50 R
ML 7+00 D2
ML 16+70 D
WHR 17+00 R
WHR 17+00 L
WHR 11+75 R
WHR 9+00 D
LD 11+75 U
GL 0+50 L
HTT 17+50 R
ROR 5+50 R
ROR 9+50 D
ROR 14+00 L
ROR 14+00 R
ROR 18+0
ROR 4+00 D
OOR 23+25 L
OOR 17+25
PANEL 20
1 inch = 200 ft.
117 East Piccadilly St.
Suite 200
Winchester, VA 25401
T 540.667.2139
F 540.665.0493
Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study
DRAWN BY: PHRA
PROJECT NO. 1797220
DATE: Feb. 25, 2012
SCALE: 1"=200'
SHEET 20 OF 36

Gary Ln
Martins Farm Rd
Dogwood Farm Rd
Wendy Hill Rd
Old Oregon Rd
McIlwee Ct
Western Ln
Benson Ct
Old Oak Ln
Hopkins Bluff Rd
Scott Farm Rd
PANEL 21

GL 0+50 R 5.25 AC.
GL10+50 R 5.37 AC.
GL14+50 R 2.64 AC.
GL 10+50 R 10.26 AC.
MFR 8+75 R 5.43 AC.
DFR 11+00 R 8.46 AC.
DFR 17+25 R 6.16 AC.
DFR 19+00 L
OOR 27+50 R 2.44 AC.
OOR 26+60 D
OOR 23+25 L
OOR 17+25 R
OOR 10+50 R 4.33 AC.
OOR 26+00 R 21.22 AC.
OOR 32+50 D
OOR 10+50 D
OOL 32+50 D
DFR 30+00 P 0.14 AC.
DFR 32+50 D 2.46 AC.
OOL 13+00 R 8.92 AC.
OOL 12+00 L
OOL 12+00 R 4.01 AC.
OOL 19+50 L
OOL 19+50 R 7.75 AC.
OOL 5+00 R 4.12 AC.
MC 5+50 D 15.69 AC.
MC 10+50 R 1.54 AC.
MC 10+50 L
MC 6+75 L
MC 0+50 L
MC 0+50 R 8.92 AC.
MC 6+75 D 6.13 AC.
MC 16+50 R 3.53AC.
WL 56+00
WL 56+00 R
WL 45+50 R
WL 45+50 L
TRR

# 603 STATION 29+50 EX. 15" CMP
STATION 30+00 POSSIBLE PIPE LOCATION
STATION 10+50 EX. (18') 12" CMP
STATION 14+50 EX. (12') 12" STEEL PIPE
# 672 STATION 33+00 EX. (12') 12" CMP
# 684 STATION 34+00 EX. (20') 12" CMP
# 667 STATION 33+00 EX. (20') 18" CMP
STATION 23+25 EX. (25') 15" CMP
STATION 26+60 POSSIBLE PIPE LOCATION
STATION 27+50 EX. (25') 15" CMP
STATION 28+75 PIPE NEEDED
STATION 28+50 PIPE NEEDED
STATION 17+25 EX. (30') 15" CMP
# 242 STATION 13+25 EX. (30') 15" CMP
STATION 10+50 EX. (30') 15" CMP
STATION 04+25 EX. (18') 15" CMP
# 129 STATION 7+50 EX. (15') 12" CMP
STATION 8+75 EX. (15') 12" CMP
# 115 & # 129 STATION 6+25 EX. (20') 18" PVC
# 181 STATION 9+50 EX. (12') 8" PLASTIC PIPE
STATION 11+00 POSSIBLE PIPE LOCATION
STATION 17+00 EX. (15') 12" CORR. PLASTIC PIPE
STATION 17+25 EX. PIPE
# 361 LEFT STATION 19+00 PIPE NEEDED
# 476 STATION 25+00 PIPE NEEDED
STATION 27+75 EX. (18') 12" CMP
# 241 LEFT STATION 12+00 EX. (15') 18" CMP
# 884 STATION 30+50 PIPE NEEDED
# 191 LEFT STATION 11+00 EX. (15') 12" CMP
STATION 10+50 POSSIBLE PIPE LOCATION
# 195 LEFT STATION 9+50 EX. (15') 12" CMP
STATION 12+00 EX. (20') 24" CMP
STATION 0+50 EX. (24') 24" PVC
LEFT STATION 13+00 EX. 2-(35') 24" CMP
STATION 19+50 EX. (24') 15" CMP
# 978 RIGHT STATION 52+00 EX. (12') 12" CMP
# 978 RIGHT STATION 52+50 EX. (12') 12" CMP
# 1032 RIGHT STATION 55+50 EX. (12') 12" CMP
STATION 16+50 POSSIBLE PIPE LOCATION
STATION 17+50 EX. (20') 18" CMP
# 122 RIGHT STATION 7+25 EX. (18') 24" CMP
LEFT STATION 10+00 EX. (12') 12" CMP
# 57 LEFT STATION 4+00 EX. (50') 24" CMP
STATION 7+25 POSSIBLE PIPE LOCATION
# 127 LEFT STATION 5+00 EX. (30') 18" CMP
STATION 5+00 EX. (25') 18" CMP
# 31 LEFT STATION 1+50 EX. (22') 12" CMP
STATION 2+00 EX. (22') 18" CMP
STATION 56+00 POSSIBLE PIPE LOCATION
# 1072
STATION 71+00 POSSIBLE PIPE

400 200 0 100 200
1 inch = 200 ft.

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F 540 665 0493
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Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

DRAWN BY: PHRA
PROJECT NO. 1297220
DATE: Feb. 25, 2012
SCALE: 1"=200'
SHEET 21 OF 36

Pine Ridge Dr
Goode Dr
Honey Farm Ln
Vaught Dr
Mountain Lake Dr
Benson Ct
Otto Pl
Old Oak Ln
Scott Farm Rd
Western Ln
Copenhover Rd
PANEL 22

1 inch = 200 ft.

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DRAWN BY PHRA
PROJECT NO. 1297220
DATE Feb. 25, 2012

SCALE 1"=200'

SHEET 22 OF 36

Mountain Lake Dr
Fern Ct
Drummer Hill Rd
Jennings Farm Ct
Little Place
Kits Ct
Huck Finn Dr

MLD 16+00 D
MLD 24+00 D
MLD 24+50 D
MLD 17+00 L
MLD 17+00 R
DHR 1+50 D
DHR 1+50 R
DHR 8+50 L
DHR 8+50 R
DHR 12+00 L
DHR 12+00 R
DHR 14+00 D
DHR 15+50 L
DHR 17+00 D
DHR 24+00 R
DHR 27+50 D
DHR 27+50 R
DHR 27+50 D1
DHR 31+50 D
DHR 31+00 D
DHR 31+50 R
DHR 37+00 L
DHR 37+00 R
DHR 61+50 D
DHR 61+50 R
DHR 66+50 D
DHR 66+50 L
DHR 66+50 R
DHR 67+50 D
JFC 9+00 D
JFC 0+50 R
JFC 0+50 L
JFC 0+50 D
HFD 6+00 R
HFD 8+25 D
HFD 9+50
HFD 4+00 D
KC 4+50 D
KC 4+50 L
KC 9+00 D
KC 9+00 R
KC 9+50 D

MLD 21+00 R 5.47 AC.
MLD 16+00 R 2.08 AC.
DHR 1+50 R 2.13 AC.
DHR 8+50 R 1.85 AC.
JFC 4.16 AC.
JFC 0+50 D 6.11 AC.
HFD 6+00 R 0.14 AC.
HFD 9+50 3.30 AC.
DHR 12+00 R 20.31 AC.
DHR 24+00 R 1.51 AC.
DHR 27+50 R 3.37 AC.
DHR 18+00 D 3.20 AC.
DHR 37+00 R 4.03 AC.
DHR 31+50 R 8.70 AC.
DHR 66+50 R 0.48 AC.
KC 9+00 R 1.33 AC.
KC 9+50 D 8.87 AC.
1.39 AC.

STATION 24+50 POSSIBLE PIPE
STATION 19+00 EX. (30') 18" CMP
#208 STATION 15+00 EX. (15') 15" CMP
STATION 16+00 POSSIBLE PIPE LOCATION
# 38 RIGHT STATION 2+50 EX. (20') 12" CMP
STATION 20+50 EX. (15') 15" CMP
#114 STATION 18+50 EX. (15') 12" CMP
STATION 21+25 EX. (15') 12" CMP
STATION 21+00 POSSIBLE PIPE LOCATION
#27 LEFT STATION 1+00 EX. (20') 12" CMP
#83 LEFT STATION 3+00 PIPE NEEDED
STATION 1+50 EX. (20') 12" CMP
RIGHT STATION 4+00 PIPE NEEDED
# 30 STATION 1+00 PIPE NEEDED
STATION 4+50 PIPE NEEDED
STATION 8+50 EX. (20') 12" CMP
#76 RIGHT STATION 3+50 EX. (20') 12" CMP
#50 RIGHT STATION 2+50 EX. (30') 12" CMP
#92 RIGHT STATION 7+00 PIPE NEEDED
STATION 6+00 PIPE NEEDED
STATION 12+00 EX. (30') 18" CMP
STATION 15+50 EX. 2-(30') 60" CMP
STATION 9+50 PIPE NEEDED
# UNKNOWN LEFT STATION 10+00 EX. (20') 12" CMP
LEFT STATION 12+00 EX. (20') 15" CMP
STATION 27+50 POSSIBLE PIPE LOCATION
STATION 24+00 EX. (20') 12" CMP
# 474 RIGHT STATION 24+00 PIPE NEEDED
STATION 31+50 EX. (20') 15" CMP
# 628 RIGHT STATION 34+50 EX. (20') 18" CMP
STATION 66+50 EX. (20') 18" CMP
STATION 61+50 POSSIBLE PIPE LOCATION
STATION 9+00 POSSIBLE PIPE LOCATION

1 inch = 200 ft.
400 200 0 100 200

PANEL 23

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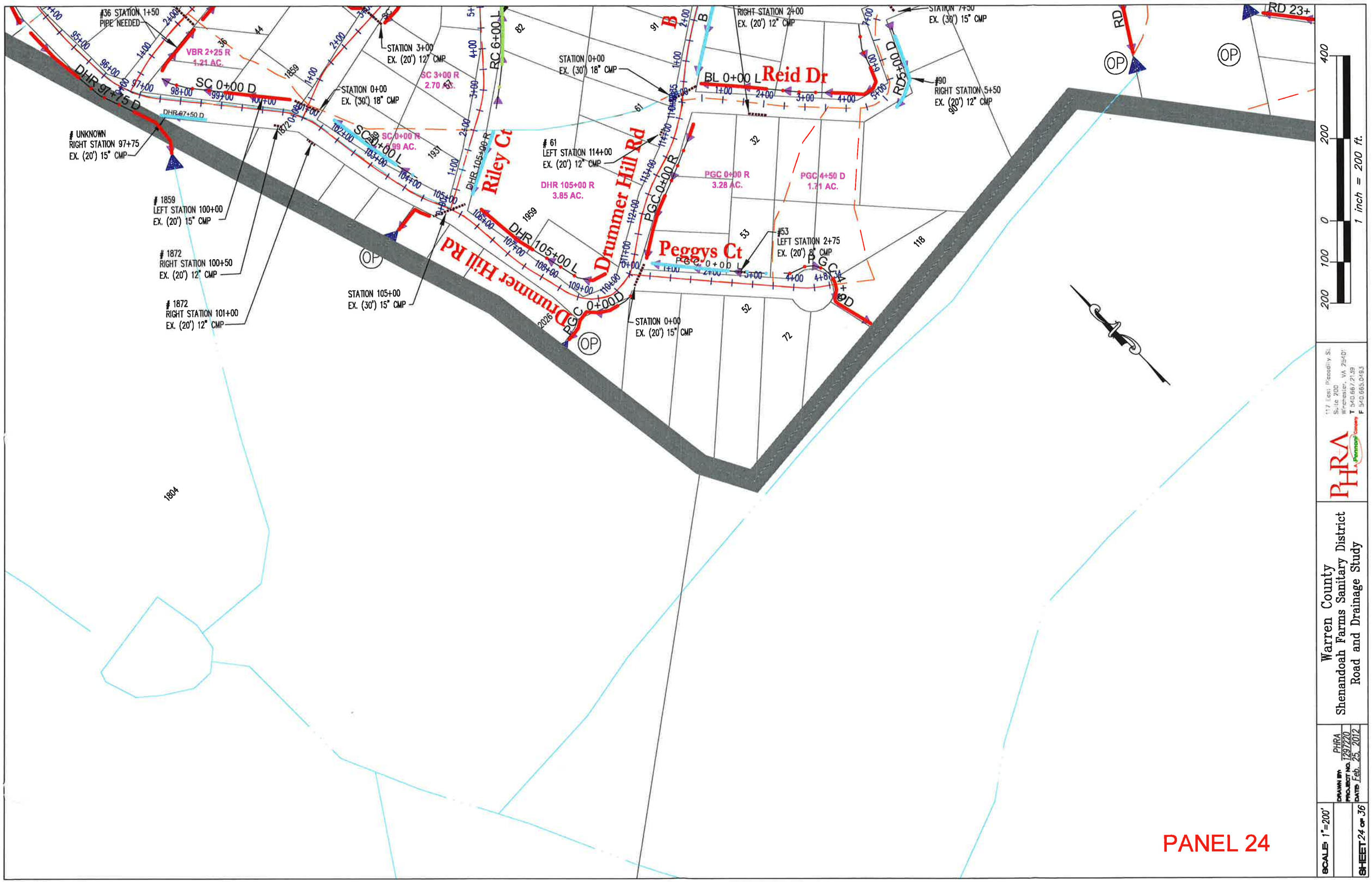
SCALE: 1"=200'

SHEET 23 OF 36





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Road and Drainage Study

DRAWN BY: PHRA
PROJECT NO. 129720
DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 24 OF 36

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PROJECT NO. 1297220
DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 25 OF 36

Howellsville Rd

Thompson Mill Rd

TMR 14+00 D

STATION 14+50
EX. (30') 12" CMP

HR 114+00
55.85 AC.

TMR 14+50 L

TMR 17+00 D

TMR 14+50 R

TMR 14+50 R
2.61 AC.

STATION 11+00
POSSIBLE PIPE
LOCATION

TMR 17+00 D
3.58 AC.

TMR 11+00 D

TMR 22+00 D

TMR 11+00 R

TMR 11+00 R
1.31 AC.

TMR 6+50 D

TMR 6+50 L

# 167
LEFT STATION 8+50
PIPE NEEDED

TMR 6+50 R
5.54 AC.

STATION 22+00
POSSIBLE PIPE
LOCATION

TMR 22+00 R

STATION 25+00
EX. (25') 15" CMP

STATION 6+50
POSSIBLE PIPE LOCATION

STATION 1+00
EX. 5-(32')
60" CMP

HR 121+00
61.11 AC.

TMR 22+00 R
9.76 AC.

TMR 25+00 R
0.89 AC.

TMR 6+50 R

# 545
LEFT STATION 2+50
PIPE NEEDED

TMR 29+25 L

# 502
RIGHT STATION
27+00
PIPE NEEDED

TMR 1+00 R
0.64 AC.

TMR 29+25 R
4.41 AC.

TMR 29+25 R

STATION 29+25
POSSIBLE PIPE LOCATION

HTT 15+50 R
7.57 AC.

TRR 25+50 R

HTT 7+00 D

STATION 23+50

STATION 57+00

EX. (30') 15" CMP

PANEL 26

1 inch = 200 ft.


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Road and Drainage Study

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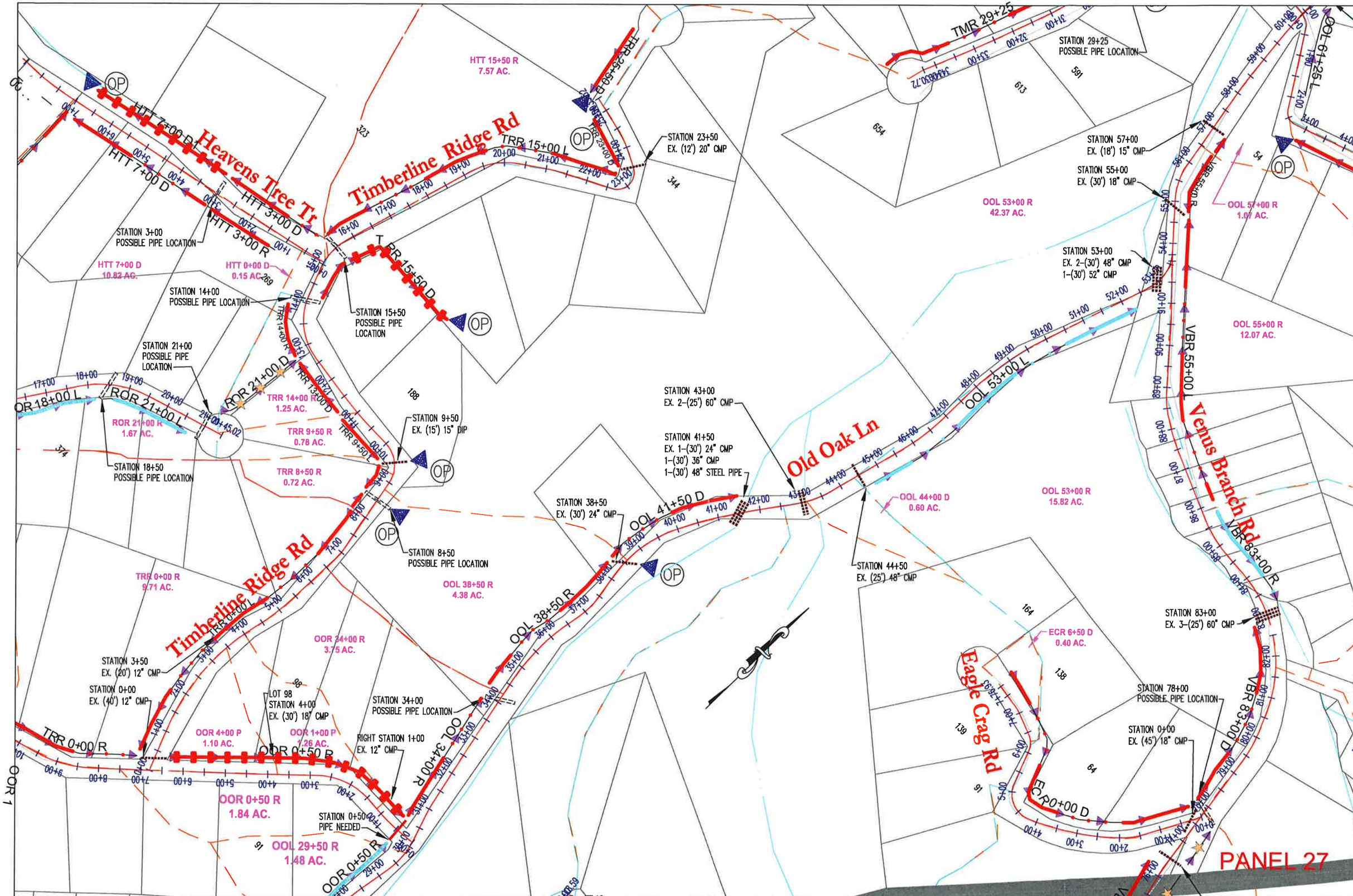
PROJECT NO. 1797220
DATE: Feb. 25, 2012
SCALE: 1"=200'
SHEET 26 OF 36

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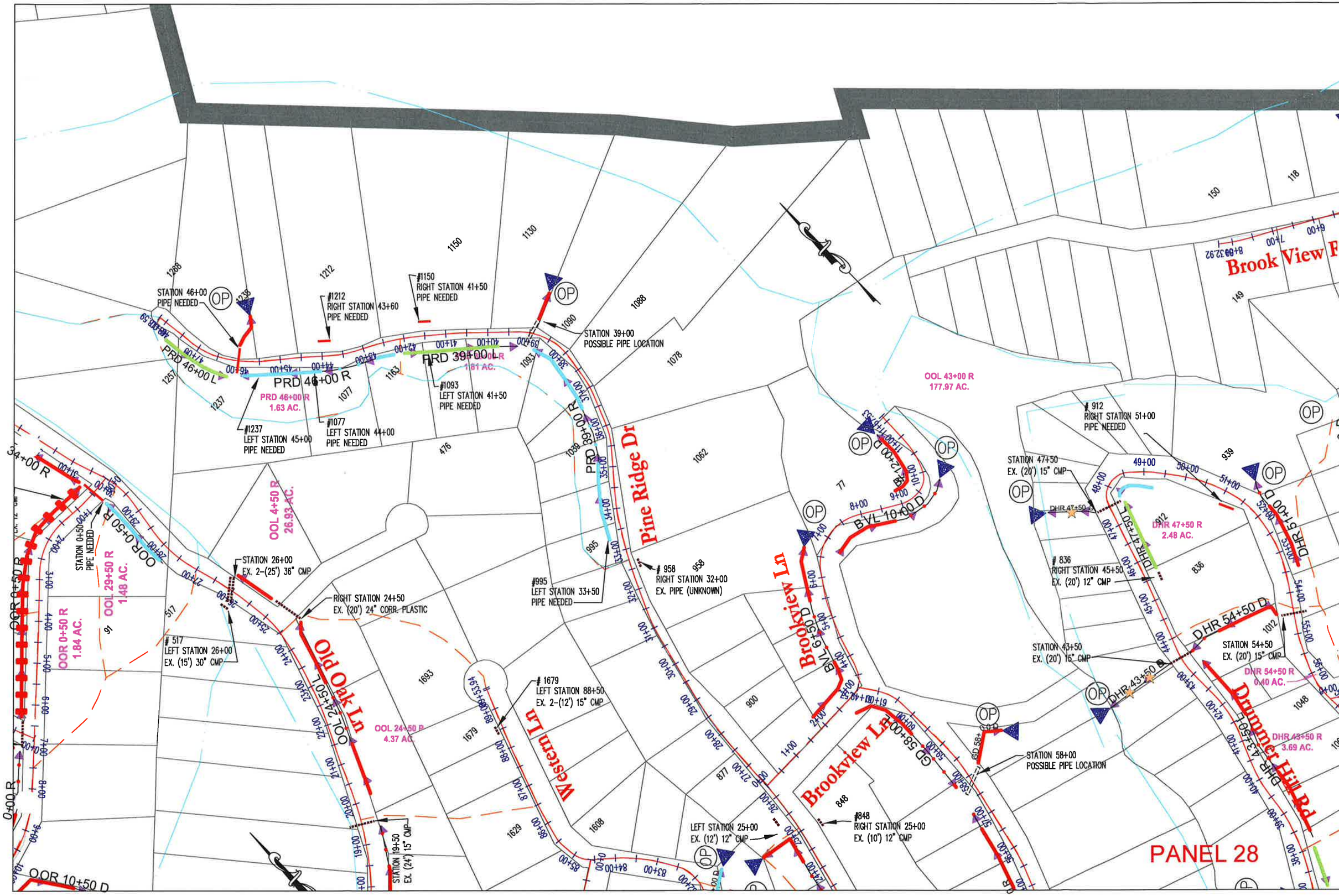
DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 27 OF 36

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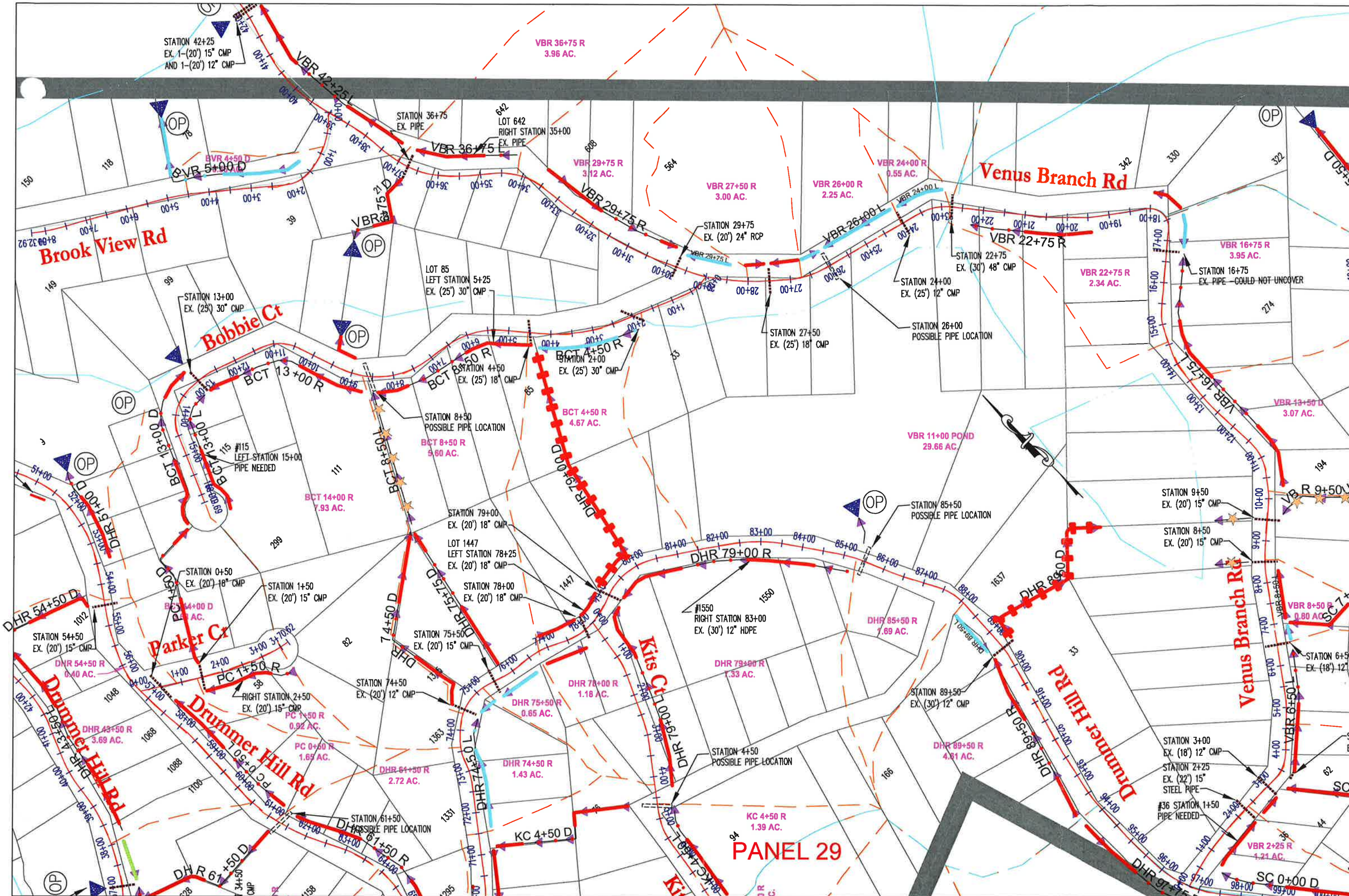
SCALE: 1"=200'

SHEET 28 OF 36

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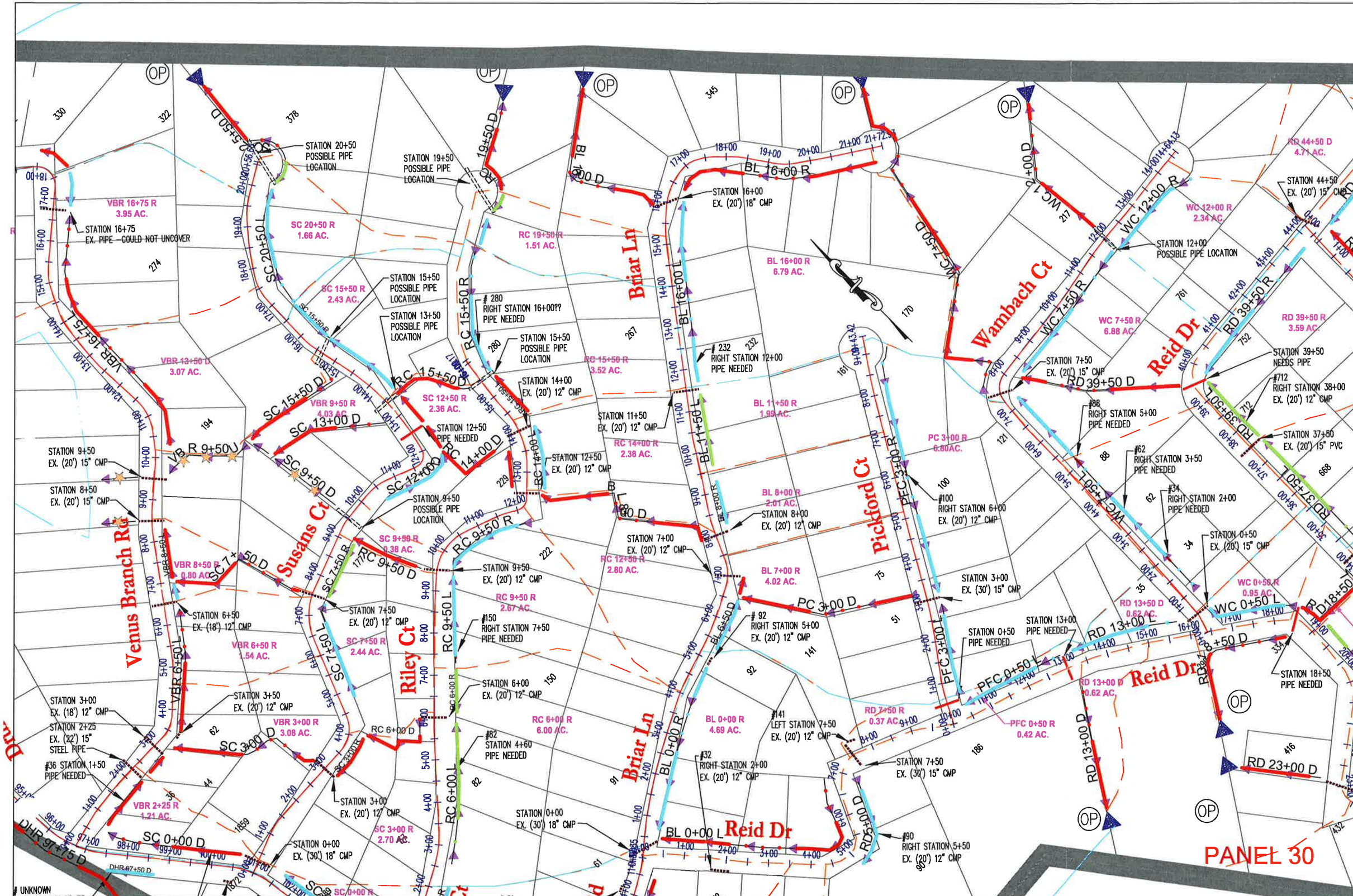
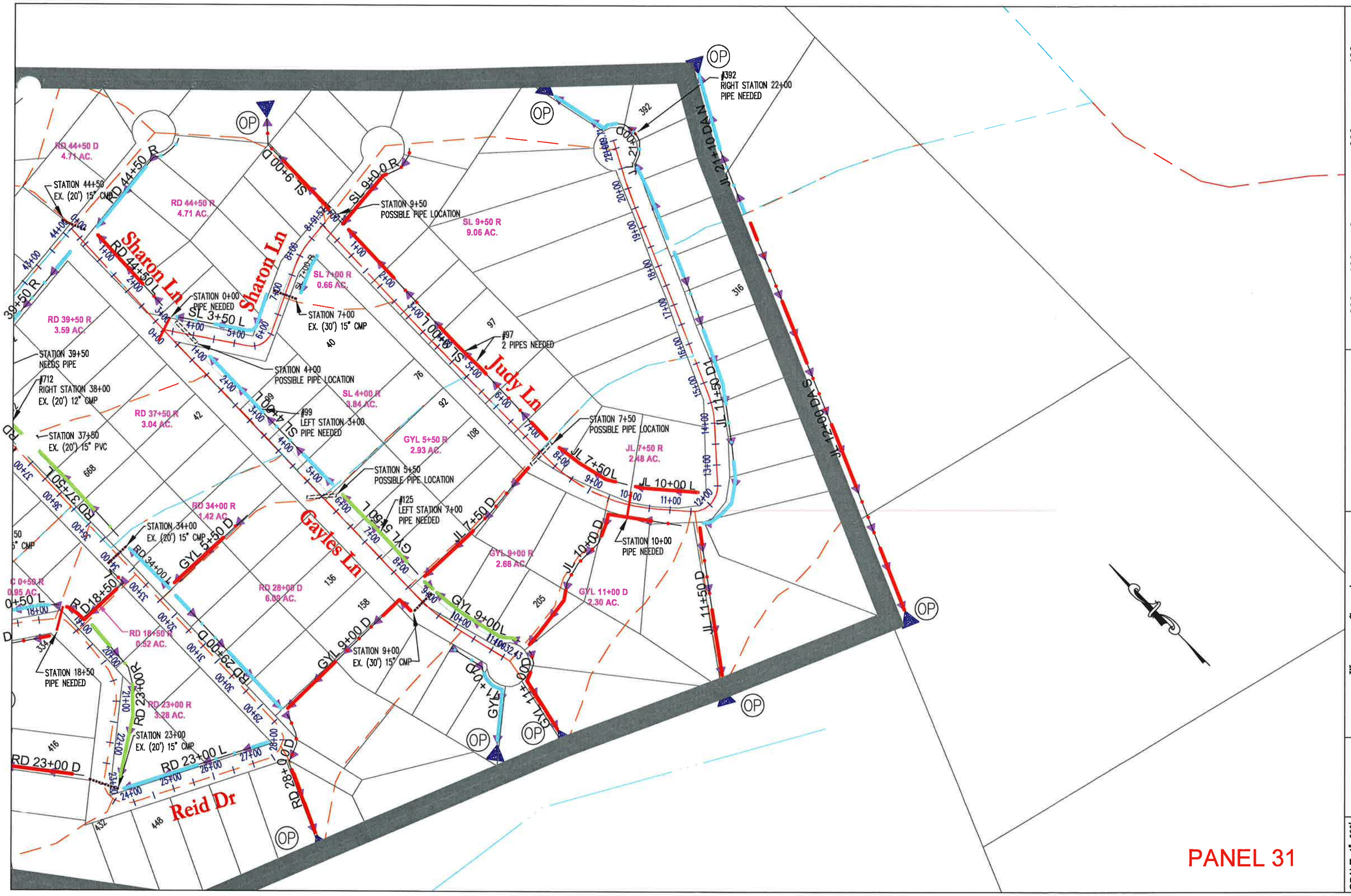
SHEET 29 OF 36


Briar Ln
Wambach Ct
Reid Dr
Pickford Ct
Susans Ct
Venus Branch Rd
Riley Ct
Reid Dr
Briar Ln
PANEL 30
1 inch = 200 ft.
Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study
PHRA
SCALE 1"=200'
DRAWN BY: PHRA
PROJECT NO. 1297220
DATE: Feb. 25, 2012
SHEET 30 OF 36




1 inch = 200 ft.

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Road and Drainage Study

SCALE 1"=200'

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DATE Feb. 25, 2012

SHEET 31 OF 36

Yarnell Ct
Vesey Dr
Old Oak Ln
Mountain Laurel Ln
Mosbys Meadow Ln
Howellsville Rd
MLL 11+00 D
5.90 AC.
HR 161+50 R
7.59 AC.
MLL 0+50 R
10.58 AC.
MML 1+00 D
0.42 AC.
OOL 72+50 R
2.33 AC.
OOL 79+75 R
4.93 AC.
OOL 78+50 R
5.25 AC.
OOL 76+75 D
3.04 AC.
YC 7+50 R
2.19 AC.
OOL 63+50 R
8.53 AC.
MML 9+26 D
8.90 AC.
HR 148+50 D
11.63 AC.
STATION 83+00
PIPE NEEDED
STATION 82+00
EX. PIPE
STATION 79+75
EX. (25') 15" CMP
STATION 78+50
EX. (20') 12" CMP
STATION 161+50
POSSIBLE PIPE LOCATION
STATION 8+00
EX. (15') 12" CMP
STATION 0+50
EX. (12') 12" CMP
STATION 1+00
PIPE NEEDED
STATION 72+50
EX. (20') 12" CMP
STATION 64+50
POSSIBLE PIPE
LOCATION
#64
RIGHT STATION 81+25
EX. (25') 12" PLASTIC
LEFT STATION 2+00
PIPE NEEDED
#1522
RIGHT STATION 80+25
EX. (15') 12" CMP
#38
RIGHT STATION 0+50
EX. (15') 12" CMP
#92
RIGHT STATION 5+00
EX. (15') 12" CMP
LOT 276
RIGHT STATION 8+00
EX. (15') 12" CMP
#74
RIGHT STATION 4+00
EX. (15') 12" CMP
EX. 15" CMP
PANEL 32

1 inch = 200 ft.

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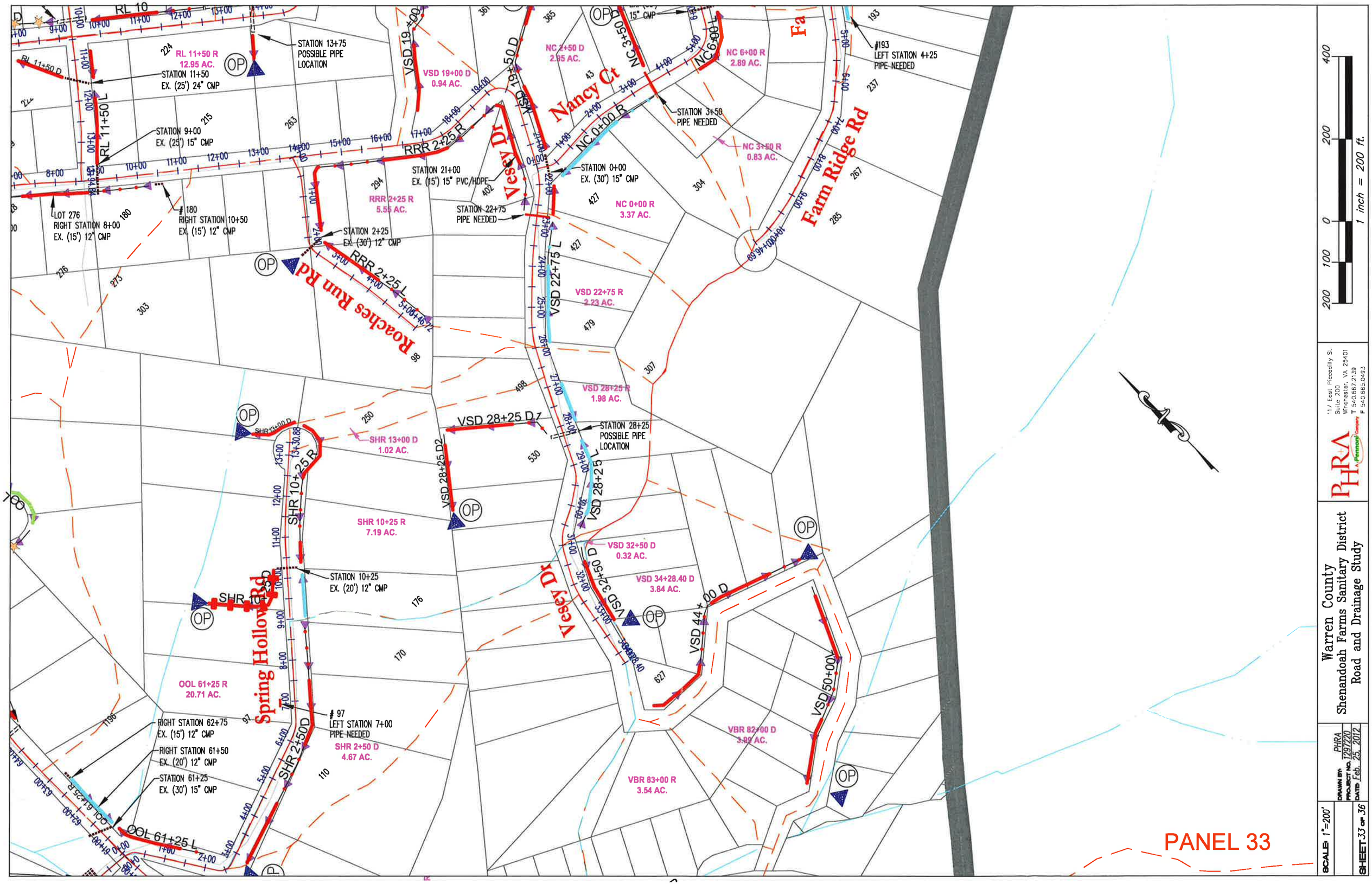
DATE Feb. 25, 2012

SCALE 1"=200'

SHEET 32 OF 36

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Road and Drainage Study

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DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 33 OF 36

PANEL 34

Manor Road

Howellsville Rd

Valley Farms Rd

Yarnell Ct

Ridgewood Ln

STATION 0+00
COULD NOT LOCATE EX. PIPE

STATION 92+00
EX. (22') 12" CMP

STATION 89+50
EX. (20') 15" CMP

STATION 87+50
EX. (25') 18" PLASTIC

STATION 13+25
EX. (20') 15" CMP

STATION 11+25
EX. (20') 15" CMP

STATION 173+50
POSSIBLE PIPE LOCATION

STATION 0+00
EX. 13"X17" CMP SQUASH

STATION 85+25
EX. (30') 24" CMP

STATION 2+00
EX. 15" CMP

STATION 83+00
PIPE NEEDED

STATION 10+25
PIPE NEEDED

STATION 10+00
POSSIBLE PIPE LOCATION

STATION 7+50
POSSIBLE PIPE LOCATION

# 1668
PIPE NEEDED

# 672
LEFT STATION 4+00
PE-1 NEEDED

# 64
RIGHT STATION 84+25
LEFT STATION 2+00

OOL 92+00 R
2.62 AC.

OOL 89+50 R
5.11 AC.

OOL 87+50 R
0.61 AC.

OOL 85+25 R
9.28 AC.

OOL 82+00 R

MLL 18+59 D
1.83 AC.

MLL 11+25 R
13.43 AC.

MLL 11+00 D
5.90 AC.

HR 180+50 D
12.34 AC.

HR 173+50 R
2.03 AC.

VFR 10+25 R
0.36 AC.

RL 10+00 R
2.66 AC.

YC 7+50 R
2.19 AC.

1 inch = 200 ft.

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Road and Drainage Study

DRAWN BY: PHRA
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DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 34 OF 36

Manor Road

Ridgewood Ln

Yarnell Ct

Nancy Ct

Farm Ridge Rd

RL 6+25 R
23.26 AC.

VFR 10+25 R
0.36 AC.

STATION 6+25
EX. (25') 15" CMP

RL 7+50

RIGHT STATION
6+50
PIPE NEEDED

RL 10+00 R
2.66 AC.

STATION 13+00
POSSIBLE PIPE
LOCATION

RL 10+00 L

YC 13+00 R

YC 14+00 L

YC 14+00 R
0.62 AC.

YC 18+00 D
1.24 AC.

YC 18+25 D

YC 18+25 D
2.06 AC.

# 418
RIGHT STATION 22+50
PE-1 W/ PIPE NEEDED

# 402
RIGHT STATION 21+90
PE-1 NEEDED

STATION 13+75
POSSIBLE PIPE
LOCATION

RL 11+50 R
12.95 AC.

STATION 11+50
EX. (25') 24" CMP

VSD 19+00 D
0.94 AC.

NC 2+50 D
2.95 AC.

NC 6+95.16 D
2.47 AC.

NC 6+95 D
6.60 AC.

STATION 6+00
EX. (30')
15" CMP

NC 6+00 R
2.89 AC.

STATION 3+50
PIPE NEEDED

STATION 0+00
POSSIBLE PIPE LOCATION

FRR 0+00 R
1.65 AC.

#163
LEFT STATION 2+50
2 PIPES NEEDED

#193
LEFT STATION 4+25
PIPE NEEDED

PANEL 35

400
200
0
100
200
1 inch = 200 ft.

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DRAWN BY PHRA
PROJECT NO. 1297220
DATE Feb. 25, 2012

SCALE 1"=200'

SHEET 35 OF 36

PANEL 36

STATION 76+50
EX. (20') 15" CMP

VBR 78+00 R
13.70 AC.

VBR 76+50 D

VBR 76+50 R

STATION 72+50
POSSIBLE PIPE LOCATION

VBR 76+50 R
4.08 AC.

VBR 72+50 D

VBR 72+50 R

VBR 72+50 R
3.13 AC.

Venus Branch Rd

VBR 66+00 D

VBR 66+00 D
15.77 AC.

VBR 66+50 R

STATION 66+50
EX. (30') 15" CMP

VBR 66+50 R
1.84 AC.

VBR 62+00 D

VBR 62+00 R

VBR 62+00 R
1.48 AC.

STATION 62+00
EX. (30') 15" CMP

VBR 56+50 R

VBR 56+50 R
2.29 AC.

STATION 52+25
EX. (25') 15" CMP

STATION 56+50
POSSIBLE PIPE LOCATION

VBR 52+25 R
0.25 AC.

VBR 48+00 R

VBR 48+00 R
16.00 AC.

STATION 48+00
EX. (18') 15" CMP

VBR 48+00 L

VBR 42+25 R
16.00 AC.

VBR 42+25 R

STATION 42+25
EX. 1-(20') 15" CMP
AND 1-(20') 12" CMP

OP

1 inch = 200 ft.

200 100 0 200 400

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F 540.665.0493

Warren County
Shenandoah Farms Sanitary District
Road and Drainage Study

DRAWN BY: PHRA
PROJECT NO. 1297220
DATE: Feb. 25, 2012

SCALE: 1"=200'

SHEET 36 OF 36

# APPENDIX F

## Geotechnical Pavement Evaluations
## (Old Oak lane, Drummer Hill Road & High Top Road)

**REPORT OF**

**EXISTING PAVEMENT EVALUATION**
**SHENANDOAH FARMS SANITARY DISTRICT**
**WARREN COUNTY, VIRGINIA**

**ECS PROJECT NO. 21:10137**

**FOR:**

**MR. MICHAEL A. HAMMER**
**CONSTRUCTION MANAGER**
**PHR&A – A PENNONI COMPANY**
**117 EAST PICCADILLY STREET**
**WINCHESTER, VIRGINIA 22601**

**AND**

**MR. ROBERT CHILDRESS**
**DEPUTY COUNTY ADMINISTRATOR**
**WARREN COUNTY**
**220 NORTH COMMERCE STREET, SUITE 100**
**FRONT ROYAL, VIRGINIA 22630**

**APRIL 16, 2012**

April 16, 2012

Mr. Michael A. Hammer
Construction Manager
PHR&A – A Pennoni Company
117 East Piccadilly Street
Winchester, Virginia 22601

AND

Mr. Robert Childress
Deputy County Administrator
Warren County
220 North Commerce Street, Suite 100
Front Royal, Virginia 22630

ECS Project # 21:10137

Reference: Existing Pavement Evaluation
Planned Shenandoah Farms Sanitary District Roadway Improvements
Warren County, Virginia

Gentlemen:

As authorized by acceptance of our proposal No. 18766, dated February 23, 2012 and authorized on March 1, 2012, ECS – Mid-Atlantic, LLC (ECS) has completed the Scope of Service in general accordance with the authorized proposal. This summary letter describes our methodology and provides the results of this evaluation.

**Project Description**

As requested, portions of three roadways were evaluated due to existing pavement and subgrade failures. Existing pavements and subgrades were evaluated by means of asphalt coring and Dynamic Cone Penetromter (DCP) testing of subgrade soils to document in-situ conditions. Pavement coring locations were selected by PHR&A and Warren County staff. The sections evaluated included locations along Drummer Hill Road, Old Oak Lane and High Top Road, as follows:

Old Oak Lane:

1) Sta. 75+00 (intersection w/ Mosby Meadow Lane)
2) Sta. 82+75 (intersection w/ Yarnell Court )
3) Sta. 86+00
4) Sta. 91+30

Drummer Hill Road:

1) Sta. 3+50 (intersection w/Fern Court)
2) Sta. 9+50 (intersection w/Little Place)
3) Sta. 17+50
4) Sta. 22+00

High Top Road:

1) Sta.9+00
2) Sta.14+00

**Results and Conclusions**

The tables below detail the results of the evaluation. Pavement thicknesses ranged from approximately 1-inch to 5-inches. It should be noted that the pavement core at Sta. 75+00 on Old Oak Lane encountered dual pavement layers separated by approximately 1-inch of gravel. In our engineering judgment, this appears to be an anomaly which may be the result a pothole repair or some residual gravel from the adjacent roadway. The core at the station 75+00 is not indicative of standard construction practices for pavement construction and therefore is being treated as an anomaly. DCP values at depths immediately below the base stone layer generally exceeded 15 blows per 1.75-inch increment, indicating a medium dense in-situ density.

| LOCATION | ASPHALT THICKNESS | BASE STONE THICKNESS | SUBGRADE DESCRIPTION | DCP BLOWS PER INCREMENT |
|---|---|---|---|---|
| OLD OAK LANE | | | | |
| 75+00 | 5” (2 layers) | 3” | Tan sandy gravel | 20+ |
| 82+75 | 2.5” | 6.5” | Tan sandy gravel | 25+ |
| 86+00 | 1” | 5” | Tan sandy gravel | 25+ |
| 91+30 | 1.4” | 1” | Tan sandy gravel | 15+ |

| LOCATION | ASPHALT THICKNESS | BASE STONE THICKNESS | SUBGRADE DESCRIPTION | DCP BLOWS PER INCREMENT |
|---|---|---|---|---|
| DRUMMER HILL ROAD | | | | |
| 3+50 | 1.75” | 1.75” | Tan brown gravelly sand and clay | 12-15+ |
| 9+50 | 4” | 3” | Tan brown sandy clay with gravel | 25+ |
| 17+50 | 3.5” | 4.5” | Tan brown gravelly sand | 25+ |
| 22+00 | 1” | 7” | Tan brown gravelly sand | 25+ |

| LOCATION | ASPHALT THICKNESS | BASE STONE THICKNESS | SUBGRADE DESCRIPTION | DCP BLOWS PER INCREMENT |
|---|---|---|---|---|
| HIGH TOP ROAD | | | | |
| 9+00 | 1.5” | 5.5” | Tan brown sandy clay with gravel | 12-12-13 |
| 14+00 | 1.75 | 4.75” | Tan brown gravelly sand | 15-20+ |

We appreciate the opportunity to be of service to you. If you have any questions with regard to the information contained in this report, or if we can be of further assistance to you during this project, please do not hesitate to contact us.

Respectfully,

**ECS MID-ATLANTIC, LLC**

COMMONWEALTH OF VIRGINIA
MICHAEL S. STICKLEY
Lic. No. 031162
03/28/2012
PROFESSIONAL ENGINEER

M. Scott Stickley, P.E.
Senior Project Engineer

Timothy E. Price, VP
Winchester Branch Manager

# APPENDIX G

## Public Notices and News Releases

# PUBLIC NOTICE

Shenandoah Farms Sanitary District
Road & Drainage Study
Citizens Information Meeting

A citizens information meeting will be held on Thursday, July 19, 2012 at 7:00 PM at the Warren County Government Center located at 220 North Commerce Avenue, 22630. The purpose of the meeting is to present a draft copy of the Shenandoah Farms Sanitary District Road and Drainage Study and solicit public feedback. Copies of the final draft study are available for public review at the Warren County Government Center, Suite 100, the Property Owners of Shenandoah Farms Board office located at 6401 Howellsville Road, and at the Samuels Public Library located at 330 East Criser Road, Front Royal, Virginia 22630.

Any citizen needing special accommodations at the meeting location should call the Warren County Administration Office at 540-636-4600.

NEWS RELEASE

Warren County officials are pleased to announce completion of the Shenandoah Farms Sanitary District Road and Drainage Study. The Sanitary District, located in the Northeast part of the County, includes approximately 2.984 residential lots of which 1,090 are improved with approximately 42.5 miles of predominately gravel roads This long awaited study was completed at a cost of $76,000 and will be used as a guiding tool in the future maintenance and construction activities within the District.

A citizen's information meeting on the Road and Drainage Study will be held on Thursday, July 19, 2012 at 7:00 PM at the Warren County Government Center located at 220 North Commerce Avenue, Suite 601, Front Royal, Virginia 22630. Copies of the final draft study are available for public review at the Warren County Government Center, Suite 100, the Property Owners of Shenandoah Farms Board office located at 6401 Howellsville Road, and at the Samuels Public Library located at 330 East Criser Road, Front Royal, Virginia 22630.

Warren County Deputy County Administrator, Bob Childress, encourages citizens of the community to review the document and attend the citizens' information meeting. Resident feedback will be in instrumental in finalizing the study.

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or Angie Buterakos at angie@warrencountyreport.com - 540-683-9197



# Shenandoah Farm's Road and Drainage Study completed

Warren County Officials are pleased to inform the citizens of the Shenandoah Farms community that the long-awaited Road and Drainage Study has been completed. The Study will be used as a guiding tool in the future maintenance and construction activities within the Sanitary District. Since taking over the operations of the Sanitary District on July 1, 2010, one of the goals of the County has been to take a comprehensive look at the infrastructure of the subdivision to help to determine a path forward.

The Sanitary District includes approximately 2,984 lots (As of 2010 1,090 were improved and 1,894 unimproved). The subdivision, platted in phases starting circa 1960, has approximately 1,020 homes (2010) currently built or under construction in the subdivision. It is anticipated that the ultimate build-out of the subdivision will result in a total of 1,500-2,000 homes. The subdivision has been developed in phases over the years. The current road system consists of approximately 42.5 miles of road; most of which have a gravel surface.

According to County Administrator Doug Stanley, "Unfortunately, particular attention and detail was not paid to drainage issues and storm-water management in the development of the road system and the layout of the lots in the subdivision. The result is that we are constantly faced with washed out roads and ditches. As the subdivision builds out, problems with the existing drainage conveyance system are becoming more and more apparent. The County of Warren, acting as the governing body of the Sanitary District, desired to procure an engineering study to evaluate these issues and to provide a plan to repair/construct appropriate drainage structures and to plan and construct/reconstruct adequate roads in order to accommodate the ultimate build-out of the subdivision and to provide a safe and efficient road system."

Stanley added that the County has been blessed with having Deputy County Administrator Robert "Bob" Childress on board. Childress joined the County in July 2010 at the same time the County was taking on management of the District. "Mr. Childress formerly served as Assistant Residency Administrator for the Luray Residency of VDOT and has a thorough understanding of road maintenance, design and construction. Having previously worked with Bob for more than a decade at VDOT on transportation issues in the County, he brought with him a tremendous amount of knowledge about roads that is proving invaluable in the management of the Sanitary District."

According to Childress, The Road and Drainage Study will be an invaluable tool in moving forward with making improvements to the subdivision. We have been able to identify the drainage areas for the subdivision, the condition of existing culverts, sizing and location for additional culverts, condition of existing roads, and projected traffic for each segment of roadway. Most importantly, based on the projected traffic and topography of the roads, we will be able to develop a long-term improvement plan to identify which roads can be upgraded to meeting minimum State standards and taken into the State system, which roads will not be eligible but,

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# County

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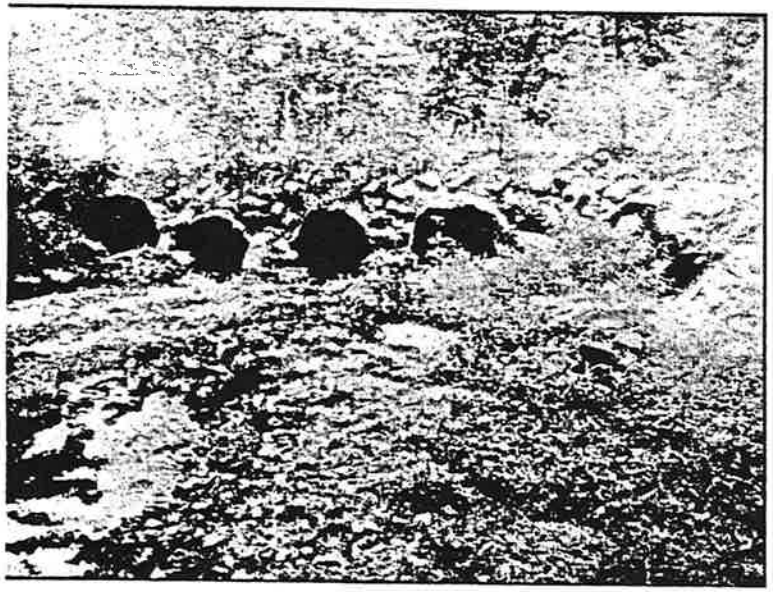

based on projected traffic, need to be hard-surfaced to provide a high-level of surface for residents of the area.

The Road and Drainage Study has been completed at a cost of $76,000 by PHR+A, A Pennoni Company out of Winchester, Virginia. Childress also gave a lot of credit for the efforts of the study to Chris Fisher, former Sanitary District Manager who, during his 18 months at the helm, helped to inventory the road system with PHR+A and document deficiencies.

A Final Draft has been provided to the Property Owners of Shenandoah Farms Board to be made available for residents review. Additionally, a copy is available for public inspection at the County Administration Office in the Warren County Government Center, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630, Monday – Friday 9:00 AM - 5:00 PM and at Samuels Public Library located at 330 E. Criser Road. A copy of the text of the document (without project maps and backup data) is available on the County's website at www.warrencountyva.net under the Shenandoah Farms Sanitary District.

Any interested citizens are encouraged to review the document and provide feedback. Comments can be submitted to Deputy County Administrator, Robert B. Childress at the above address or at rchildress@warrencountyva.net. A final citizen's information meeting on the Road and Drainage Study will be held on Thursday evening, July 19, 2012 at 7:00 PM at the Government Center. At that time a brief overview of the Study will be presented and any final comments considered for possible inclusion into the final document. The County will accept comments through August 15, 2012 on the draft.

*(Info from a release)*

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Jeannie Henry
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Nails by Terri
Wed 10 - 5 • Thurs 10 - 6
10-A Cloud St. Front Royal
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Sports, C1

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Weather, A6

Wednesday

July 18, 2012

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WARREN COUNTY

# Input sought on Shenandoah Farms study

## Official: Some subdivision roads could be upgraded to state standards

By Alex Bridges

abridges@nvdaily.com

Shenandoah Farms residents could see some roads in the subdivision upgraded to state standards, according to Warren County officials.

A long-awaited study recently completed and available for the public looked into the conditions of roads and stormwater systems in the Shenandoah Farms Sanitary District. The county recently announced the completion of the Shenandoah Farms Sanitary District Road and Drainage Study.

Warren County took over management of the Shenandoah Farms community July 1, 2010 and contracted Patton, Harris, Rust & Associates to conduct the study that year.

**SHENANDOAH FARMS**

- Warren County took over management of the Shenandoah Farms community July 1, 2010.
- Shenandoah Farms consists of 2,984 residential lots, of which 1,090 contain single-family homes. Approximately 90 roads — predominantly surfaced with gravel — stretch 42.5 miles through the subdivision.

The study cost $76,000 and will be used by the county for future maintenance and construction needs.

"It's a road map for the future for the subdivision and will provide a blueprint for moving forward and improving the infrastructure," County Administrator Douglas Stanley said Tuesday.

Now the county plans to collect more input from residents as local officials and the Shenandoah Farms advisory board work to address issues illustrated by the study. An informational meeting on the study is scheduled for 7 p.m. Thursday in the government center, 220 N. Commerce Ave., suite 601, Front Royal. The public also may review final draft copies of the study at the government center, the Property Owners of Shenandoah Farms Board Office, 6401 Howellsville Road, and at the Samuels Public Library, 330 E. Criser Road. The public comment period will remain in effect for 30 days after the meeting.

Once the study is

STUDY, A2

# Study

Continued from A1

finalized, the county and Shenandoah Farms representatives on the advisory board will try to prioritize the needs of the subdivision, create a list of projects and move forward on making improvements, according to Stanley.

Warren County has eight sanitary districts, but Shenandoah Farms is the only one which the locality possesses and maintains, Stanley explained. Before Warren County took over Shenandoah Farms, officials toured the Shawneeland sanitary district in Frederick County. Prior to the study, Warren County conducted a survey of the property owners in the district and asked questions about the subdivision. Officials looked into concerns by residents and found some had merit but others did not, according to Stanley. But county officials decided to hire a firm to conduct a more thorough study of the district.

Shenandoah Farms consists of 2,984 residential lots, of which 1,090 contain single-family homes. Approximately 90 roads — predominantly surfaced with gravel — stretch 42.5 miles through the subdivision. Blue Mountain, Freezeland and Howellsville roads serve as access points to Shenandoah Farms.

"Some of the roads in the subdivision could be upgraded to state standards and turned over to the state to maintain," Stanley said. "All of them won't be and that's part of what the study was to look at — which roads can be, which ones can't be. But as far as systemwide, what are the necessary pipe sizes, where do we need culverts where we currently don't have any?"

With the possibility that parts of the Shenandoah Farms may not rise to the level for state maintenance, Stanley noted the county continues to set aside funds to work on in-house projects. As Stanley explained, the county plans to look at where it spends money on recurring repairs to roads and other parts of the subdivision, such as road surfaces which wash away during heavy storms. But the administrator noted the county could save money on road maintenance by paving some sections rather than constantly replacing gravel.

The builders of the subdivision did not design the district's stormwater or roads using an engineer's plans.

"So part of this is coming up with that design that was never there to start with," Stanley said. "So you're looking at every single pipe or every culvert."

For example, the county will look at the size of the culverts as needed, not just for current water flows but also at the build-out of the subdivision, according to Stanley.

The county sent 1,900 surveys to Shenandoah Farms residents in August 2011, of which 152, or 8 percent of the forms, were returned completed. The majority of the respondents stated they felt the subdivision needed better road surfaces and dust control, improved sight distance, as well as culverts installed, ditches graded and pipes cleaned.

Visit www.warrencountyva.net to download a copy of the draft of the study.

## on the net

- More information online at **www.warrencountyva.net.**

## THE STUDY

- The county recently announced the completion of the Shenandoah Farms Sanitary District Road and Drainage Study.
- The county contracted Patton, Harris, Rust & Associates to conduct the study that year. The study cost $76,000 and will be used by the county for future maintenance and construction needs.

The Warren Sentinel
Your hometown newspaper
143rd Year No. 17 Established in 1869
July 19, 2012

SHENANDOAH FARMS

# County holding info meeting on road and drainage

By BROOKE GILLILAND
*The Warren Sentinel*

**FRONT ROYAL** — A citizens' information meeting to discuss the long-awaited completion of the Shenandoah Farms Sanitary District Road and Drainage Study will be held tonight.

The Sanitary District is located in the northeast part of the county and includes 2,984 residential lots, of which 1,090 are improved with 42.5 miles of gravel roads.

**IF YOU GO**

**WHAT:** Citizens Information meeting on Road and Drainage Study
**WHERE:** Warren County Government Center, 220 N. Commerce Ave., Suite 601
**WHEN:** July 19, 7 p.m.

The $76,000 study began in September 2010 to evaluate the conditions of existing road and

See **MEETING** Page A6

# Meeting

*Continued from Page A1*

stormwater conveyance systems within the road right of ways in the Shenandoah Farms Sanitary District. The scope of the project included evaluating and recording existing conditions of roadway surface, shoulder and ditch lines, culvert and drainage systems and safety items.

"We now have a comprehensive plan on current infrastructure, traffic counts and drainage data that we can use as a guiding tool when making decisions on future maintenance needs and construction projects," said Warren County Deputy Administrator Bob Childress.

The push for the study came about a couple years ago when property owners at Shenandoah Farms were still in control of maintaining the road system. Citizens began claiming mismanagement and misuse of funds, generating a push for the county to take over the responsibility of the roads and conduct a formal study, said Childress.

Before the study was conducted, contractors would be hired to replace deteroriated or collapsed pipes without any engineering data to back up the replacements.

"It was basically an educated guess back then," said Childress. "It's important to have engineering data to back up what you're doing and show the community that you're spending the allotted funds wisely."

As a result of the study, the county can be less "reactionary" in dealing with infrastructure improvements or maintenance needs. Before this study, if a drainage culvert collapsed, it would have to be replaced immediately to restore traffic without having the benefit of drainage calculations to support the size of the replacement pipe. Today, if a pipe needs to be replaced in an emergency situation, the county can simply refer to the study instead of guessing.

"Ever since we took over the road system two years ago, we have put a lot of time in on the roads to see where the problem areas are," said Childress. "We've developed a list of substandard pipes and I can take a crew and start replacing them. This gives us immediate results."

Copies of the final draft study are available for public review at the Warren County Government Center, Suite 100, the Property Owners of Shenandoah Farms Board office located at 6401 Howellsville Road and at the Samuels Public Library located at 330 East Criser Road.

"This is a very comprehensive road and drainage study that we've conducted to benefit the community," said Childress. "No one knows the road system better than the residents who live there, which is why it's so important for us to hear from the community and incorporate concerns into a final document. It's your community."

Photo courtesy / County of Warren

**Photo of culverts in the Shenandoah Farms subdivision shows the kind of substandard road construction residents there have been complaining about for some time. The county took over the road system there two years ago.**

B The Northern Virginia Daily
Contact Editor Linda Ash at 800-296-5137, lash@nvdaily.com or fax 465-6152.

Saturday
July 21, 2012

Region
nvdaily.com/news

# Residents of Shenandoah Farms respond to recent study

By Alex Bridges
abridges@nvdaily.com

FRONT ROYAL – A study of Shenandoah Farms shows some of its roads need upgrades but a few residents in the Warren County subdivision say paved streets would draw speeding drivers.

Nearly 20 people from the Shenandoah Farms Sanitary District attended a meeting Thursday night to hear information on the study. Maps of the sanitary district on display at the meeting showed the road network through the subdivision. Deputy County Administrator Robert Childress led the presentation and discussion about the study, its results and plans for the district.

"Since you all live in the Farms and drive the roads every day we want your input," Childress said. "It's imperative."

The county will continue to collect comment forms from residents through Aug. 19. Then the county will finalize the study with the input and set about planning the upgrades for the district.

James and Candi Pennifill, who moved into Shenandoah Farms in 1997, raised concerns at the meeting about speeding vehicles through the district and asked what the county needed to do to enforce speed limits in the subdivision. James Pennifill said he thought the study was, in some ways, a positive step. But if the county paves some of the roads, the Pen-

STUDY, B2

## Study

Continued from B1

nifills said they feared it would inspire more motorists to drive even faster.

"It's a double-edged sword," James Pennifill said after the meeting. "I want the roads better. I think the county's doing a great job with the study and everything.

"But if you can't control the speed on the roads what good does it do to try to improve them," he added. "There's no real way for any enforcement."

Beside inclement weather, vehicles are blamed for the deterioration of the predominantly gravel roads in the district. Pennifill noted the county will not enforce the speed limit inside the district. Childress explained in the meeting that the state puts the unposted speed limit on gravel roads such as those in the district at 35 miles per hour.

Candi Pennfill commented that some residents who expressed a need for paved roads may find they don't want that when motorists start to drive faster along those routes.

Like many of the longtime Farms residents, the Pennifills moved to the district to live away from more urban areas. The Pennifills said many people who come to the Farms still want urban amenities.

Other residents saw the study as a good step. Karolyn Weaver, a resident of the Farms for 35 years, called the study "long overdue." She and her husband, Terry Weaver, live on Youngs Drive, one of the roads eyed for some upgrades.

Officials did not give an estimated time of when the county may start to work on the roads. The Farms participates in revenue-sharing projects through the state by which the district and the county each would pay 25 percent of the cost while VDOT covers the remaining 50 percent. Several Farms projects already have been selected, according to Childress.

The county has a goal of beginning work on either Tomahawk Way or Fellows Drive this fall but it may not happen until the spring, Childress said. Another project – a section of Mountain Lake from Drummer Hill Road to Pine Ridge Drive – may also see upgrades, according to Childress.

Officials were quick to warn residents the entire district would not receive an upgrade. Nor would the upgrades eventually performed be completed in the next five years, officials said.

Shenandoah Farms has 1,090 developed lots each containing a single-family home. At build-out the county official estimated the district would consist of an additional 1,500-2,000 homes.

In response to a question from a resident, Childress said building in the district likely averaged six to 12 homes per year and four or five houses are in some state of construction. County Adminsitrator Douglas P. Stanley recalled approximately 75 homes were built in the district in the early 2000s.

The current network of approximately 90 road segments spans nearly 43 miles. The county maintains the roads made up predominantly of stone or tar and chip.

The county took over the management of the Shenandoah Farms Sanitary District in July 2010 and set as a goal the development of a comprehensive review of the entire infrastructure in the district, evaluate the issues found, then plan for the future repairs and construction of the roads and drainage system. The study conducted of the district looked not only at current needs but also at full build-out.

Traffic volume and patterns would help determine how the county designs the road upgrades, according to Childress. Costs, steepness and curvature of a road also may factor into the effort, Childress said. As Childress explained, the study involved taking core samples of certain roads because VDOT would have required the county do so in order to bring the route into the state system.

# Shenandoah Farms

## Autumn 2012 Newsletter

## BALLOT ENCLOSED!
## VOTE TODAY!

*I hope everyone has had an enjoyable spring and is getting ready for the heat of summer. I know I've personally been busy with trying to juggle my normal job duties with providing management oversight of the Sanitary District as well. I've enjoyed the challenge and feel good about what we've been able to accomplish over the last few months.*

*After finally receiving some much needed rain we were able to successfully complete the spring grading operations during the month of April and early May. We graded all 43 miles of roadway and applied approx. 700 tons of new stone to areas in need. As moisture conditions allow over the summer months, we will attempt to grade and address problem pothole and washboard areas. During March and April, we started an aggressive heavy brush cutting and tree removal program. We've successfully completed the High Top Rd. area and have moved into the Huck Finn Rd. area. However, the warm temperatures have halted these operations for the summer. We will resume this effort in several areas next fall/winter. Over the summer we plan to begin our mowing operations and installing/replacing some culverts throughout the District. Please remember to be on the lookout for our road crews.*

*The Road and Drainage Study has been basically completed with a copy provided to the POSF board for review and comment. A copy is also available in the County Administrator's Office for anyone interested in taking a look at it. We plan to have a final Citizen's Informational Meeting on the Study at the Warren County Government Center on Thursday evening July 19, 2012 at 7:00 PM. Please plan on attending and providing any feedback you may have for consideration. Remember this is your plan and will be used as a guiding tool for maintenance and construction work in the Sanitary District for years to come, so please let us hear from you.*

*Lastly, the hiring of a new Sanitary District Manager has been a bit more of a challenge than what we had originally anticipated. However, we are moving forward with the process. We have already conducted several interviews and have more scheduled next week. By the time you are reading this newsletter, we hope to have already announced who your next Manager will be.*

*I hope you have a great summer and please remember to drive safely and slowly!*

*Robert Childress*
*Deputy Warren County Administrator*

**Property Owners of**
**Shenandoah Farms, Inc.**
**6401 Howellsville Rd.**
**Front Royal, VA 22630**
**540/837-2068**

www.FirewiseVirginia.org

**www.shenandoahfarms.org**

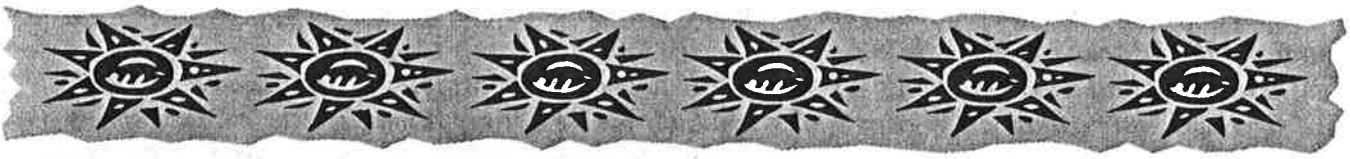
**Shenandoah Farms Is a Firewise Community**

## Message from Warren County and Shenandoah farms Sanitary District Office:

"We are pleased to inform the citizens of the Shenandoah Farms community their Road and Drainage Study has been completed. This long awaited Study will be used as a guiding tool in the future maintenance and construction activities within the Sanitary District. A Final Draft has been provided to the POSF Board for review. Additionally, a copy is available for public inspection here at the County Administration Office in the Warren County Government Center, at 220 North Commerce Ave., Suite 100, Front Royal, Va. 22630 Monday – Friday 9:00 AM - 5:00 PM. Any interested citizens are encourage to review the document and provide feedback. Comments can be submitted to Deputy County Administrator, Mr. Robert B. Childress at the above address or at rchildress@warrencountyva.net

**A final citizens information meeting**
**on the**
**Road and Drainage Study**
**will be held on**
**Thursday evening, July 19, 2012 at 7:00 PM**
**here at the Government Center.**

At that time a brief overview of the Study will be presented and any final comments considered for possible inclusion into the final document."



**Road Article**
**By Willy Surface, Chairman of Road Committee**

We have been receiving a lot of complaints regarding 4 Wheelers on or around Briar, Reid and Drummer Hill Road. Someone is riding around this area with after market exhaust which can be heard for miles and they are riding very late at night which is very disturbing to residents as it wakes them at night.
The police are monitoring this activity and are trying to catch these people. We need residents' assistance with this also. Please call the Sheriffs non emergency number 540/635-4128 to report this activity. The Sheriffs office has suspects but they need more evidence to convict these people.

Thank you,
Willy Surface
Chairman Road Committee

## Common Properties Report
Willy Surface, Chairman of Common Properties

You may have noticed that Treasure Island is closed occasionally. The reason for this is to stop people from playing in the mud. We are working towards getting a gate post put in; so we can close off the bad areas and not the entire park area.

Also as you may have noticed we now have the surveillance signs posted to help control the illegal activity, such as mud bogging, littering and vandalism.

We need the residents assistance on keeping the common areas clean and safe. This is your common areas also; so it is up to us all to maintain and report any illegal or disruptive activities. You can contact the Sheriffs office or call POSF Office and leave a message with information that can be used to control these ongoing issues.

Any resident caught getting stickers for friends, to use the common areas without the resident being present, can lose their own privileges to use the common areas. Residents are now being asked to show IDs and registration cards to obtain a sticker. We are sorry for any inconvenience this may cause but it is for the benefit of all residents to control and monitor all common areas, and prevent these areas from being used by the public and used for residents only.

Thank You, Willy Surface
Common Property Chairman

**Recreation Committee Calendar**
**Elsie Kirk-Recreation Chairman**

**Halloween Party**
**Saturday October 27, 2012**
**5:00 pm to 8:00 pm**
**$2.00 per person**

**Annual Christmas Cookie and Craft Night**
**Saturday December 1, 2012**
**5:00 pm to 8:00 pm**
**$2.00 per person**

# 2012-2013 Board of Directors Ballet

**Ridge District Sections:** - Clarke County: A, B, River, Mountain Warren County: Ridge, Meadow, Chain Sprint, Patty Tract, Venus Branch, River Park, Camel Back, Quiet Oak, Timberline

**Director (2 year term)**

Director – Elsie Kirk ☐
Director - Write In_____ ☐

**Alternate (1 year term)**

Alternate - John Theis
Alternate - Write In_____ ☐

**Riverview District Sections:** 1, 2, 3, 4, 5, 6

**Director (2 year term)**

Director – Willy Surface ☐
Director - Write In_____ ☐

**Alternate (1 year term)**

Alternate - Carolyn Cox ☐
Alternate - Write In_____ ☐

**Mountain View District Sections:** 1, 2, 2B, 3, 4, 4R, 5

**Director (2 year term)**

Director – Vacant ☐
Director - Write In_____ ☐

**Director (1 Year Term)**

Director – Vacant ☐
Director - Write In_____ ☐

**Alternate (1 year term)**

Alternate - Vacant
Alternate - Write In_____ ☐

**Mountain Lake District Sections:** 1, 2, 3, 4, 5, 6, 7

**Director (2 year term)**

Director – Cathie Johnson ☐
Director - Write In_____ ☐

**Alternate (1 year term)**

Alternate - Larry Poppek ☐
Alternate - Write In_____ ☐

**At Large:** Includes all districts and sections

**Director (2 year term)**

**Vote for Only 2 Candidates**

Director – Ralph Rinaldi ☐ Director - Write In_____ ☐

Director – Matt Pearson ☐ Director - Write In_____ ☐

**Voter Identification Form**

Date:_____ 2012

District:_____

I am the current owner of Lot(s)†:_____

Name:_____

Signature:_____

Address:_____

Phone:_____

E-mail*:_____

† - If unknown will be found using the address on the form
* - Optional field

## Election Time!!!

### Let Your Voice Be Heard

- A director on the POSF Board is a Volunteer. There is no monetary compensation for being a director or serving on a committee. However, working to make the community that you live in a better place is priceless.

### Voter Qualifications

- Completed voter identification form (located below ballot)
- Voters must be of legal age
- Deeded lot fees and Sanitary District Fees paid to date

### Voting Instructions

- Ballot and voter identification form must be completed in pen ink. If any part is not completed in pen ink, ballot will be disqualified.
- One vote per property owner. If two people own the same lot then both can vote, but only one ballot per voter. Please print a 2nd ballot if necessary.

  Property owners can vote for two At Large Directors, one District Director, and one District Alternate
  - Vote cast for District Director/Alternate must be in the same district in which the property is owned
- If property owner owns lots in multiple districts choose only one district in which to vote. The voter identification form must contain the address and/or lot number of that district
- Ballots must be mailed or hand delivered to the office, no electronic ballots will be accepted (E-Mail, Faxes)
- All completed ballots must be received before the September 12th Annual Meeting is called to order at 9AM
- Nominations will not be taken from the floor
- If a tie vote occurs for any Board of Directors position in the election the then sitting POSF Board of Directors may request a resume be presented by all parties who have received the same number of votes for the contested Director position. The sitting POSF Board of Directors may independently interview each candidate for the contested Director position in Executive Session. Based on either or both of these options the sitting POSF Board of Directors shall make the final selection for the Contested Director position.

  Any Board member running for the contested Director position shall be excluded from any voting or discussions concerning the tie breaking selection.

**If you have any questions while filling this ballot out, please call 540-837-2068**

**If an error is made while filling out the ballot please contact the POSF Office for a new blank ballot or visit the POSF Website, http://shenandoahfarms.org and download/print a new copy.**

Hi Neighbors,

It's election time again, we could really use your help in filling the vacant director and alternate seats on the board. Join us on the board to help yourself and your neighbors for the betterment of the community at large. Please read and follow the instructions to fill out the ballot and if you have any questions feel free to call or e-mail the office for assistance. The board and I would be happy to see you at our annual meeting in September.

Thank you,
Matt Pearson
Chairman
Property Owners of Shenandoah Farms, Inc

# POSF Rules and Regulations

1. The recommended safe speed for Shenandoah Farms roads is **15 mph**. Shenandoah Farms roads are dedicated as "highways" for law enforcement purposes. Therefore, they are subject to all Virginia traffic laws. The use of ATVs is prohibited. See Warren County Code 172-2-B and Virginia Code Title 46.2-915.1.
2. Warren County Code 66-32-D requires all dogs to be on a leash.
3. Release of raw or untreated sewage is a violation of Health Department and Department of Environmental Quality ordinances.
4. No dumping is allowed in Shenandoah Farms. All trash removal is the responsibility of the landowner or resident. Warren County provides a dumpster at the intersection of Howellsville Rd. and Blue Mountain Rd.
5. Warren County Code 123-2 prohibits loud or disturbing noises. Virginia Code 18.2-416 prohibits violent or abusive language tending to create a disturbance of the peace, etc.
6. Warren County Code 110-1-C prohibits hunting in Shenandoah Farms. Most Shenandoah Farms covenants prohibit the discharge of firearms except in self defense.
7. Virginia law forbids destruction or damage to any common property or recreation facility, including the cutting of timber, without written permission from POSF.

**The following rules apply to the common properties and recreational facilities as defined in the POSF's by-laws:**

1. Common properties and recreational facilities hours are from one-half hour before sunrise to one-half hour after sunset. The exception is for rental of the recreational center. Anyone in non-compliance can be charged with trespassing.
2. Guests to the Shenandoah Farms common properties and recreational facilities must be accompanied by a landowner or resident at all times. Renters must get written permission from their landowner to use the common properties and recreational facilities. A copy must be on file at the POSF office. A pass will be issued to the renter for duration of their lease.
3. Virginia Code Title 35.1 prohibits overnight camping on the common properties and recreational facilities.
4. All common properties and recreational facilities must be left clean for the next user. No glass containers allowed.
5. Swimming and boating at the Shenandoah Farms lakes is at your own risk. Only electric trolling motors are allowed in the lakes. Fishing is in accordance with Virginia law. Virginia law prohibits nude bathing.
6. Open-air fires are prohibited at the common properties and recreational facilities. Barbeques and enclosed fires are permitted. Extinguish all fires before leaving the premises.
7. All vehicles are to be parked in the designated parking areas. No parking is allowed on the grass portion of the lakes and dams. <u>ATVs and untagged dirt bikes are not allowed</u> at the recreational facilities or common properties. See Virginia Code Title 46.2-915.1.
8. <u>No alcoholic beverages</u> allowed on any POSF common properties <u>at any time</u>.
9. No mud bogging in Shenandoah Farms. No mud bogging on any Common Property.

Century 21
BRADDOCK REALTY

*Recently Sold in Shenandoah Farms Drummer Hill Road Lot 233*

Not just serving your neighborhood, but a resident as well.

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Winchester, VA 22601
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Fax: 540-667-3603
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**Fax: (540) 409-4081**
**Cell: (540) 539-3169**
**E-Mail: brendabrown@mris.com**
**brendabrownrealtor.com**

Brenda M. Brown, ABR
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Sales Associate, Licensed in VA & WV

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Front Royal

CASSANDRA BLANSETT
Owner
CHARMING CHAOS LLC
Parties & Events
201 E. Main Street
Suite 1C
Front Royal, Va 22630
540-636-2205
540-398-1577
charming_chaos@hotmail.com

SFVFD
All You Can Eat
BREAKFAST
3rd Sunday of every month
8AM-Noon
$6 Adults, $3 children 3-12 yrs
Shenandoah Farms Volunteer Fire Department
6363 Howellsville Rd
Front Royal, VA 22630
540/837-2068

**Sanitary District Manager**
**Shenandoah Farms**
**Sanitary District**
**126 East Second Street**
**Front Royal, Virginia 22630**
**Tel: (540) 636-3783**
**Fax: (540) 636-3517**

**2012 — POSF Office Hours**
Open — Thursdays
10am—2pm

Bad Weather Policy -
Office will be closed for bad weather. This will be based on school closing policy/announcements. Messages left at office 540/837-2068 will be monitored closely and many times during inclement weather.

Shenandoah Farms has a Sanitary District Manager who is responsible for road maintenance and concerns in Warren County. Please retain his contact information so you can contact him with any questions or concerns you may have.
Clarke County residents can continue to contact the POSF office with questions or concerns. Thank You.

WARREN COUNTY
BOARD OF SUPERVISORS

JUL 17 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

Property Owners of
Shenandoah Farms, Inc.
6401 Howellsville Rd.
Front Royal, VA 22630
540/837-2068

PRSRT STD
U.S. POSTAGE PAID
FRONT ROYAL, VA
PERMIT #83

Shenandoah Farms Sanitary
District
Or Current Resident
220 N Commerce Ave
Front Royal, VA 22630

## Robert Childress

**From:** POSF <shenandoahfarms@comcast.net>
**Sent:** Thursday, July 12, 2012 10:17 AM
**To:** 'Robert Childress'
**Subject:** RE: SFSD Road and Drainage Study Public Notice

Bob,

Posted in our front windows on front page of website & front page of newsletter.

Thanks, Lisa

---

**From:** Robert Childress [mailto:rchildress@warrencountyva.net]
**Sent:** Thursday, July 12, 2012 9:45 AM
**To:** shenandoahfarms@comcast.net
**Subject:** SFSD Road and Drainage Study Public Notice

Lisa,

Good morning.

Attached is a copy of the notice we are currently running in the NVD and Warren Sentinel newspapers alerting citizens of the upcoming Citizens Information Meeting.

Please feel free to post it at the POSF Office or distribute as you deem appropriate.

Thanks, Bob

Robert B. Childress
Deputy County Administrator
County of Warren, Virginia
220 North Commerce Ave., Suite 100
Front Royal, VA 22630
(540) 636-4600
(540) 636-6066
rchildress@warrencountyva.net

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---

**Total Control Panel** Login

To: rchildress@warrencountyva.net
From: shenandoahfarms@comcast.net

Message Score: 2
My Spam Blocking Level: Medium

Block this sender
Block comcast.net

High (60): Pass
Medium (75): Pass
Low (90): Pass

*This message was delivered because the content filter score did not exceed your filter level.*

# PUBLIC NOTICE

## Shenandoah Farms Sanitary District
## Road & Drainage Study
## Citizens Information Meeting

A citizens information meeting will be held on Thursday, July 19, 2012 at 7:00 PM at the Warren County Government Center located at 220 North Commerce Avenue, 22630. The purpose of the meeting is to present a draft copy of the Shenandoah Farms Sanitary District Road and Drainage Study and solicit public feedback. Copies of the final draft study are available for public review at the Warren County Government Center, Suite 100, the Property Owners of Shenandoah Farms Board office located at 6401 Howellsville Road, and at the Samuels Public Library located at 330 East Criser Road, Front Royal, Virginia 22630.

Any citizen needing special accommodations at the meeting location should call the Warren County Administration Office at 540-636-4600.

235170

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

**SIGN-IN SHEET**

| NAME | ADDRESS | TELEPHONE | EMAIL |
|---|---|---|---|
| Melissa Chappell-White | 140 Dogwood Farm Rd | | mcwh@hotmail.com |
| Anita V. Decker | 667 Wendy Hill Rd. | 540.636.6306 | nitadkr@yahoo.com |
| LARRY POPPER | 642 VENUS BRRD | 540-636-2589 | |
| Cathie Johnson | 458 Hobbs Nob Rd | 636-2346 | april20@centurylink.net |
| Judy Weaver | 712 Grump Dr | 636-5327 | |
| Terry Weaver | 712 Grump Dr | 636-5327 | Tweaver@RADackon.com |
| PATRICK SKELLEY | 88 MUSBY MEADOW LN. | 837-3055 | |
| Candi Pennifill | 1888 Blue Mtn Rd. | 635-5705 | japtj@shentel.net |
| James & Candi Pennifill | 36 Venus Branch Rd | 635 5705 | japtjp@shentel.net |
| RALPH RINALDI | 4725 HOWELLSVILLE Rd | 540 635 2980 | |
| John & KATE AVERY | 293 Dungadin Rd. | 540 636 3414 | |
| Dee Schools | 467 Freeze Rd | 631-0345 | deeschools@centurylink.net |
| Denise E. Gilley | 51 Pickford Ct | 636-2318 | |

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

**SIGN-IN SHEET**

| NAME | ADDRESS | TELEPHONE | EMAIL |
|---|---|---|---|
| Lisha Miller | 30 Otto Pl | 622-6406 | lishamiller50@gmail.com |
| Ellen Parkes | 143 Farm View Rd | 631-0883 | |
| Donald Parkes | 143 Farm View Rd | 631-0883 | |
| Tim Martin | PO Box 574 831 Bragg Dr | Fr 22630 | 540-635-6059 |

# APPENDIX H

## Public Comments and Feedback

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

## AGENDA

- Opening Remarks
  - Mr. Douglas P. Stanley, County Administrator
  - Mr. Robert B. Childress, Deputy County Administrator
- Study Overview
  - Mr. Ron Mislowsky, P.E., Patton, Harris, Rust & Associates
  - Mr. Mike Hammer, Project Manager, Patton, Harris, Rust & Associates
- Citizen's Comments
- Closing Remarks

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

**SIGN-IN SHEET**

| NAME | ADDRESS | TELEPHONE | EMAIL |
|---|---|---|---|
| Lisha Miller | 30 Otto Pl | 622-6406 | lishamiller50@gmail.com |
| Ellen Parkes | 43 Farm View Rd | 631-0883 | |
| Donald Parkes | 143 Farm View Rd | 631-0883 | |
| Tim Martin | POB574 831 Bragg Dr | Fr 22630 | 540-635-6057 |

## Robert Childress

**From:** Robert Childress <rchildress@warrencountyva.net>
**Sent:** Friday, July 20, 2012 9:59 AM
**To:** shenandoahfarms@comcast.net
**Subject:** SFSD Road & Drainage Study
**Attachments:** Resident Survey Sheet.docx

Lisa,

Good morning.

Overall the Citizens Information Meeting at the GC went pretty well last night and we received some good positive feedback.

Attached is a comment sheet which we had available for citizens use. Please feel free to make this available for use to any citizen who stops by the POSF Office and wants to make comments on the Study.

Thanks, Bob

Robert B. Childress
Deputy County Administrator
County of Warren, Virginia
220 North Commerce Ave., Suite 100
Front Royal, VA 22630
(540) 636-4600
(540) 636-6066
rchildress@warrencountyva.net

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SHENANDOAH FARMS SANITARY DISTRICT
COUNTY OF WARREN
CITIZEN'S INFORMATION MEETING
ROAD & DRAINAGE STUDY
7:00 PM, THURSDAY, JULY 19, 2012
WARREN COUNTY GOVERNMENT CENTER

Name: _____ Address: _____

Telephone: _____ Email: _____

1. Are you a resident of the Shenandoah Farms Sanitary District?
   Yes _____ No _____

2. Do you own a lot(s) in the Shenandoah Farms Sanitary District?
   Yes _____ No _____

3. How did you learn about tonight's meeting?
   Newspaper _____ County Web Site _____ Other _____

4. Have you had an opportunity to review the Road & Drainage Study prior to tonight's meeting?
   Yes _____ No _____

5. Did you participate in the original study survey/questionnaire mailed to all residents during the summer of 2011? Yes _____ No _____

6. Do you feel the Study's findings will adequately address the future maintenance, construction, and other infrastructure needs of the community?
   Yes _____ No _____ If no, please explain _____

   _____

   _____

7. Please provide any additional comments or concerns you would like to be considered for inclusion into the Final Study. _____

   _____

   _____

   _____

NOTE: Please leave or mail this comment sheet to the Warren County Government Center, Attention, Mr. Robert B. Childress, Deputy County Administrator, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630 before 5:00 p.m., Friday, August 17, 2012.

**Robert Childress**

WARREN COUNTY
BOARD OF SUPERVISORS
JUL 09 2012
RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

**From:** ms white <mcwh@hotmail.com>
**Sent:** Friday, July 06, 2012 6:20 PM
**To:** rchildress@warrencountyva.net
**Subject:** RE: Shenandoah Farms Sanitary District Road and Drainage Study

Dear Mr. Childress,

Thank you so much for forwarding the text portion of the study; I truly appreciate it. While I was able to make it to the office Monday, I couldn't stay long due to some health issues that recently arose, and I haven't been able to make it back yet.

I hadn't realized that the study takes up an entire, thick binder that looks to be at least 500 pages, so I was only able to skim it Monday, but it certainly seems to be inclusive - even publishing the original survey returns (which were also informative).

Again, thanks so much for sending this; I'll email it around with a note that folks can go see the whole study too.

Sincerely,
Melissa Chappell-White

---

From: rchildress@warrencountyva.net
To: mcwh@hotmail.com
Subject: RE: Shenandoah Farms Sanitary District Road and Drainage Study
Date: Fri, 6 Jul 2012 18:02:30 -0400

Ms. Chappell-White,

I truly apologize for all the trouble we seem to be putting you through to review this study. I understand you were in the office on Monday and had an opportunity to review it.

I revisited the issue with our consultant engineer who we've been working with on the study. They have provided me with an electronic copy of the text portion of the report, which I am attaching for your use. Please understand this information is only a small portion of the overall study. It doesn't include the background engineering data, drainage charts, specific plans/maps, etc. We have also updated and included a link to this same information on the SFSD section of the Warren County website as well.

I hope you find this information useful.

Bob

Warren County
Board of Supervisors
Received
JUL 09 2012
Shenandoah Farms
Sanitary District

Robert B. Childress
Deputy County Administrator
County of Warren, Virginia
220 North Commerce Ave., Suite 100
Front Royal, VA 22630
(540) 636-4600
(540) 636-6066

rchildress@warrencountyva.net

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---

**From:** ms white [mailto:mcwh@hotmail.com]
**Sent:** Monday, July 02, 2012 9:57 AM
**To:** rchildress@warrencountyva.net
**Subject:** RE: Shenandoah Farms Sanitary District Road and Drainage Study

Dear Mr. Childress,

Thanks so much for all the information. Still, the study should have been posted on our Shenandoah Farms Sanitary District section of the Warren County website, as other things have been in the past.

I will print out your email, take it down to the County building today, and try again to get a copy of the study.

It would have been helpful for the Administration Office to have known we were allowed to have copies, and to have your information included on the website so folks could have known the study was also available at the library during hours other than at the County building, although either way it's a long trip (as it is also for most to go to POSF, which is located in a different county and is only open four hours on Thursdays).

Sincerely,
Melissa Chappell-White

---

From: rchildress@warrencountyva.net
To: mcwh@hotmail.com
CC: shenandoahfarms@comcast.net
Subject: RE: Shenandoah Farms Sanitary District Road and Drainage Study
Date: Mon, 2 Jul 2012 07:55:45 -0400

Ms. Chappell-White,

Thank you for your recent comments.

I completely understand your concern for getting the word out about the Study, obtaining comments, and providing adequate access to it for all those interested in reviewing it. However, at this point the study is not available in an electronic format. I don't have it electronically. The layout of the study itself doesn't lend itself well for presentation in an electronic format. As an example, there are numerous tables throughout the document which contains information that is relevant to fold out/pull out plan sheets and/or map panels on different sized paper. It could be extremely difficult for someone to follow such a technical document in an electronic format at the level of detail it's in. While some of the written text could have been easily provided, without all the supporting tables, plans, and maps, we didn't want to provide incomplete data and take the chance of some citizens claiming we were withholding information.

We have been committed to get the word out about the study for the past month and will continue to do so over the coming weeks through the public meeting process. The availability of the Study here at the WC Govt. Center for public review was first posted on our SD website on June 1st. Contrary to what you've learned, citizens can make copies of the information. Additional copies have also been delivered to the POSF Office and the Samuels Public Library as well for the same purpose. The Library has Saturday hours, so this copy will be available to those who work during the week and might otherwise not be able to make it in to the Govt. Center.

The Study's status and availability has been announced at the past two Board of Supervisor meetings on June 5th and 19th. We plan to announce it again at the Board's July 17th meeting. These meetings are broadcasted on our local public television channel for public viewing. In addition, we had planned to start running advertisements next week in the local newspaper alerting citizens of the study's availability and the upcoming public meeting. It's my understanding, the POSF will be putting out their Fall newsletter soon which will have information in it about the study and meeting.

Please understand that we take your concerns seriously. We want the public to review the document and provided input. The study will have been available for public review for a full 6+ weeks before the July 19th meeting. If any citizen is truly interested in reviewing it and providing comments, we feel we are providing an ample time frame for doing so. In addition, we plan to keep the citizen comment period open for 30 days after the meeting, or until Aug. 17th to give everyone ample time to provide any feedback.

Please let me know if you have any further comments

Bob

Robert B. Childress
Deputy County Administrator
County of Warren, Virginia
220 North Commerce Ave., Suite 100
Front Royal, VA 22630
(540) 636-4600
(540) 636-6066
rchildress@warrencountyva.net

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---

**From:** ms white [mailto:mcwh@hotmail.com]
**Sent:** Friday, June 29, 2012 1:11 PM
**To:** rchildress@warrencountyva.net
**Subject:** FW: Shenandoah Farms Sanitary District Road and Drainage Study

Dear Mr. Childress,

While awaiting your reply to my request for an email copy of our road and drainage study report, I have learned that we are not being allowed to make or purchase copies at the government center office, without which having the study on view there is meaningless - especially because many, or most, Sanitary District taxpayers and residents are at work during office hours.

Surely the County does not intend to prevent the people who paid for and are the object of the study from having adequate access to it, and thus it becomes even more important that electronic copies be disseminated, in order that all Sanitary District taxpayers and residents may have full opportunity to review and comment on the report prior for the July 17th meeting.

Thank you for your kind attention to this request; the favor of prompt reply is greatly appreciated.

Sincerely,
Melissa Chappell-White
140 Dogwood Farm Road
Shenandoah Farms Sanitary District taxpayer and resident

From: mcwh@hotmail.com
To: rchildress@warrencountyva.net
Subject: Shenandoah Farms Sanitary District Road and Drainage Study
Date: Wed, 27 Jun 2012 18:21:48 +0000

Dear Mr. Childress,

It is posted on the County website that our Shenandoah Farms Sanitary Distrist Road and Drainage Study has been completed.

Unfortunately, the study itself is not posted on the County website so that we can view it, so would you be kind enough to email me a copy so that I have sufficient time to review it prior to the meeting scheduled for July 19th at 7:00pm.

Thanks so much for your kind attention to this request,

Sincerely,
Melissa Chappell-White
140 Dogwood Farm Rd
(Sanitary District taxpayer and resident)

P.S. It's a shame there wasn't any information put out to Shenandoah Farms about the Drinking Water Clinic Meeting last night; I learned about it quite by accident from a flyer at the health dept. office in town and we appeared to be the only two people from Shenandoah Farms at the meeting. Although the presenter said information went out to county administrators for dissemination, no information appears on the county SFSD website (or the POSF website). I mention this because an otherwise valuable opportunity was lost and, in the future, it would be of significant benefit to our community if better communication could be achieved. Perhaps we need a temp or volunteer for this while we await a new Sanitary District Manager?

---

**Total Control Panel** Login

To: rchildress@warrencountyva.net Remove this sender from my allow list
From: mcwh@hotmail.com

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WARREN COUNTY
BOARD OF SUPERVISORS

JUL 19 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

Warren County
Board of Supervisors
Received

JUL 19 2012

Shenandoah Farms
Sanitary District

Name: LARRY POPPER Address: 642 VENUS BR. RD

Telephone: 540-636-2589 Email: —

1. Are you a resident of the Shenandoah Farms Sanitary District?
   Yes ✓ No _____

2. Do you own a lot(s) in the Shenandoah Farms Sanitary District?
   Yes ✓ No _____

3. How did you learn about tonight's meeting?
   Newspaper ✓ County Web Site _____ Other P.O.S.F. MEETINGS.

4. Have you had an opportunity to review the Road & Drainage Study prior to tonight's meeting?
   Yes ✓ No _____

5. Did you participate in the original study survey/questionnaire mailed to all residents during the summer of 2011? Yes ✓ No _____

6. Do you feel the Study's findings will adequately address the future maintenance, construction, and other infrastructure needs of the community?
   Yes ✓ No _____ If no, please explain _____

7. Please provide any additional comments or concerns you would like to be considered for inclusion into the Final Study.
   KEEP UP THE GOOD WORK!

NOTE: Please leave or mail this comment sheet to the Warren County Government Center, Attention, Mr. Robert B. Childress, Deputy County Administrator, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630 before 5:00 p.m., Friday, August 17, 2012.

WARREN COUNTY
BOARD OF SUPERVISORS

JUL 19 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

Warren County
Board of Supervisors
Received

JUL 19 2012

Shenandoah Farms
Sanitary District

Name: PATRICK SKELLEY Address: 88 MOSBY MEADOW LANE FRONT ROYAL

Telephone: 540 837-3055 Email: R.J. SKELLEY @ GMAIL

1. Are you a resident of the Shenandoah Farms Sanitary District?
   Yes X No _____

2. Do you own a lot(s) in the Shenandoah Farms Sanitary District?
   Yes X No _____

3. How did you learn about tonight's meeting?
   Newspaper _____ County Web Site _____ Other BOARD MTG

4. Have you had an opportunity to review the Road & Drainage Study prior to tonight's meeting?
   Yes X No _____

5. Did you participate in the original study survey/questionnaire mailed to all residents during the summer of 2011? Yes X No _____

6. Do you feel the Study's findings will adequately address the future maintenance, construction, and other infrastructure needs of the community?
   Yes X No _____ If no, please explain _____

7. Please provide any additional comments or concerns you would like to be considered for inclusion into the Final Study. _____

NOTE: Please leave or mail this comment sheet to the Warren County Government Center, Attention, Mr. Robert B. Childress, Deputy County Administrator, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630 before 5:00 p.m., Friday, August 17, 2012.

WARREN COUNTY
BOARD OF SUPERVISORS

JUL 19 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

Warren County
Board of Supervisors
Received

JUL 19 2012

Shenandoah Farms
Sanitary District

# SHENANDOAH FARMS SANITARY DISTRICT
## COUNTY OF WARREN
## CITIZEN'S INFORMATION MEETING
## ROAD & DRAINAGE STUDY
## 7:00 PM, THURSDAY, JULY 19, 2012
## WARREN COUNTY GOVERNMENT CENTER

Name: Cathie Johnson Address: 458 Hobbs Knob Rd FR

Telephone: 540 636-2346 Email: april20@centurylink.net

1. Are you a resident of the Shenandoah Farms Sanitary District?
   Yes ✓ No _____

2. Do you own a lot(s) in the Shenandoah Farms Sanitary District?
   Yes ✓ No _____

3. How did you learn about tonight's meeting?
   Newspaper _____ County Web Site _____ Other POSF Board

4. Have you had an opportunity to review the Road & Drainage Study prior to tonight's meeting?
   Yes ✓ No _____

5. Did you participate in the original study survey/questionnaire mailed to all residents during the summer of 2011? Yes ✓ No _____

6. Do you feel the Study's findings will adequately address the future maintenance, construction, and other infrastructure needs of the community?
   Yes ✓ No _____ If no, please explain as long as residents' input is kept in mind; don't develop/pave just for development's sake.

7. Please provide any additional comments or concerns you would like to be considered for inclusion into the Final Study. Most people moved to SF because of its rural location/beauty. Consider some exemption from "progress".

NOTE: Please leave or mail this comment sheet to the Warren County Government Center, Attention, Mr. Robert B. Childress, Deputy County Administrator, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630 before 5:00 p.m., Friday, August 17, 2012.

**Robert Childress**

**From:** magthomp@comcast.net
**Sent:** Saturday, July 21, 2012 10:34 AM
**To:** rchildress@warrencountyva.net
**Subject:** Shenandoah Farms Road Improvements

Warren County
Board of Supervisors
Received
JUL 23 2012
Shenandoah Farms
Sanitary District

Dear Mr. Childress,

We have been following the recent developments with the Road and Drainage study the county has received for Shenandoah Farms Sanitary District. Unfortunately we were unable to attend the meeting on Thursday but we wished to comment on the process.

We are fortunate to live on the edges of the district and do not travel too deeply into the farms. The distance we do travel has caused expensive repairs to our vehicles and make it difficult to traverse in the winter. We are in favor of any improvements, great or small...sooner or later...that the county sees fit to perform.

Thank you for your hard work and attention to our needs.

Charles and Margaret Thompson
24 Western Lane
Front Royal, VA 22630
540-551-4459

---

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To: rchildress@warrencountyva.net
From: magthomp@comcast.net

Message Score: 2
My Spam Blocking Level: Medium

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Block comcast.net

High (60): Pass
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Low (90): Pass

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WARREN COUNTY
BOARD OF SUPERVISORS
JUL 23 2012
RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

**Robert Childress**

WARREN COUNTY
BOARD OF SUPERVISORS

JUL 24 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

**From:** Charles Webb [mailto:zuckiebemp@verizon.net]
**Sent:** Tuesday, July 24, 2012 8:08 PM
**To:** rchildress@warrencountyva.net
**Cc:** zuckiebemp@aol.com
**Subject:** Fellows Drive Shenandoah Farms

Mr. Childress, I conferred with you sometime back about the upgrading of Fellows Drive. This was way before the road study was completed. Early this year, surveyors put stakes all up and down Fellows Drive. I was wondering if there had been any talk or planning of paving Fellows Drive in the near future? I read all through the study report in order to maybe get a clue on something, but although the report was very detailed and informative, I could find nothing to answer my question. I figured the next best thing would be to ask the man in charge. If you can give me any insight on the future paving expectations, I would be so very appreciative. We are so tired of all the dust from the speeding cars and tired of washing our own cars all the time. Thank you for all your hard work you do overseeing this large work project. Charles Webb, 270 Fellows Drive.

---

**Total Control Panel** Login

To: rchildress@warrencountyva.net
From: zuckiebemp@verizon.net

Message Score: 2
My Spam Blocking Level: Medium

Block this sender
Block verizon.net

High (60): Pass
Medium (75): Pass
Low (90): Pass

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Warren County
Board of Supervisors
Received

JUL 24 2012

Shenandoah Farms
Sanitary District

Warren County
Board of Supervisors
Received
JUL 24 2012
Shenandoah Farms
Sanitary District

WARREN COUNTY
BOARD OF SUPERVISORS
JUL 24 2012
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WARREN COUNTY
ADMINISTRATOR'S OFFICE

**SHENANDOAH FARMS SANITARY DISTRICT**
**COUNTY OF WARREN**
**CITIZEN'S INFORMATION MEETING**
**ROAD & DRAINAGE STUDY**
**7:00 PM, THURSDAY, JULY 19, 2012**
**WARREN COUNTY GOVERNMENT CENTER**

Name: Anita V. Decker Address: 667 Wendy Hill Rd. F.R. Va. 22630

Telephone: 540-636-6306 Email: nitadkr@yahoo.com

1. Are you a resident of the Shenandoah Farms Sanitary District?
   Yes X No _____

2. Do you own a lot(s) in the Shenandoah Farms Sanitary District?
   Yes X No _____

3. How did you learn about tonight's meeting?
   Newspaper _____ County Web Site _____ Other Friend

4. Have you had an opportunity to review the Road & Drainage Study prior to tonight's meeting?
   Yes X No _____

5. Did you participate in the original study survey/questionnaire mailed to all residents during the summer of 2011? Yes X No _____

6. Do you feel the Study's findings will adequately address the future maintenance, construction, and other infrastructure needs of the community?
   Yes X No _____ If no, please explain _____

7. Please provide any additional comments or concerns you would like to be considered for inclusion into the Final Study. _____

NOTE: Please leave or mail this comment sheet to the Warren County Government Center, Attention, Mr. Robert B. Childress, Deputy County Administrator, 220 North Commerce Avenue, Suite 100, Front Royal, Virginia 22630 before 5:00 p.m., Friday, August 17, 2012.

WARREN COUNTY
BOARD OF SUPERVISORS

AUG 15 2012

RECEIVED
WARREN COUNTY
ADMINISTRATOR'S OFFICE

153 Chapman Ln
Front Royal, VA 22630
August 11, 2012

Warren County
Board of Supervisors
Received

AUG 15 2012

Shenandoah Farms
Sanitary District

Deputy County Administrator
Warren County Government Center
220 North Commerce Ave., Suite 100
Front Royal, VA 22630

Dear Mr. Childress;

Thank you for the opportunity to comment on the Warren County Shenandoah Farms Sanitary District Road and Drainage Study. As a thirty-year resident of Shenandoah Farms, I am very concerned about some of the things that I have read in the report and in newspaper coverage of related meetings. The enclosed document is a section-by-section list of concerns with the study report. The version of the report that I worked from does not include the Appendixes, so I am not able to comment on them here.

I have tried to be constructive in my criticism of aspects of the study and its recommendations with which I disagree. My greatest concern is with the reliance on VDOT in the design of the study and as arbiter of how roads in Shenandoah Farms should be maintained and used. VDOT does a fine job building and maintaining highways, but its mission to expedite vehicle flow fails to take into account all of the ways that neighborhood roads are used by residents.

As you may recall, the Warren County Shenandoah Farms Sanitary District was approved by Shenandoah Farms property owners to ensure that all owners paid their fair share of road maintenance costs. The three perennial complaints of owners to POSF have been speeding, poor drainage, and failure to clear snow from roads, and it was believed that these finally would be addressed thanks to the sanitary district's taxing authority. Unfortunately, that does not appear to be Warren County's goal for Shenandoah Farms.

I hope that your office will try harder to work with Shenandoah Farms Sanitary District tax payers. The 8% who returned the study's survey cannot be assumed to be a representative sample of owners. The board of POSF also is not representative of all owners. It was very disappointing to me that the meeting announcing the study report was held in Front Royal rather than in Shenandoah Farms, and with very short notice.

Please consider my comments and let me know if anything I've said requires clarification. I am best reached by email: wsebersberger@earthlink.net.

Sincerely,

Wendy Ebersberger

Comments on the Warren County Shenandoah Farms Sanitary District Road and Drainage Study

## I. INTRODUCTION

This section contains a misspelling of "sight distance" that recurs in other sections of the report. In the first paragraph, "right of ways" should read "right-of-ways". In the second paragraph, "locate" should read "located".

The promise of "guidelines and recommendations for maintenance" is not met in the report with respect to existing road surfaces.

## II. PROJECT DESCRIPTION

The goal of ensuring "a safe and adequate means of access" should be expanded to recognize that our roads are not used solely for entering and exiting Shenandoah Farms. Rather, the roads are a "means of access and circulation". It also should be acknowledged here and elsewhere in the report that our roads are shared by motor vehicles, cyclists, walkers, runners, and wildlife, all of which need to be taken into account in road design and maintenance.

Item 6 (or a separate item) in the list of project tasks should mention road maintenance.

## III. SITE DESCRIPTION

This section contains a misspelling of "state" and fails to acknowledge that state highway 690 (formerly Manor Road) is used by Warren County residents to access Old Oak Lane, Ridgewood Lane, Farms Ridge Road, and points beyond. If the 8300 daily vehicle trips projected for these roads were to occur, they would have an impact on Clarke County residents of Shenandoah Farms that must be taken into account in planning.

The roads in Shenandoah Farms provide access not only to residential lots but also to our common recreational properties, mailboxes, firehouse, and local businesses. Road planning must recognize that not all local trips are vehicle trips. Improvements should facilitate more non-vehicle trips to reduce vehicular traffic, road wear, and the need for parking, improve the health of residents and the environment, and conserve gas.

It should be noted that private wells supply water to our homes and that ground water and our streams and river must be protected from pollution due to runoff from impermeable surfaces such as paved roads and driveways. Our forest is a major feature of the study site, and it and our wildlife also require consideration. Finally, not all homes in Shenandoah Farms are occupied full-time, and full-time and part-time residents may have different but equally valid priorities with respect to roads.

## IV. ROADWAY INVENTORY AND FUNCTIONAL CLASSIFICATION

The average daily trips (ADT) assumptions of the study simply do not seem credible. What evidence is there that eight vehicle trips per day are being generated for any property in Shenandoah Farms or that any property owner wishes to facilitate that amount of traffic on our roads? How many current vehicle trips would be made on foot if road conditions were conducive to walking? If vehicle trip volume is to be used to justify construction decisions, it should be estimated from unbiased observations and self-report of residents rather than hypothetical values supplied by VDOT.

A functional classification of roads should take into account all of the ways that roads function and not just how much vehicular traffic they can carry. Anyone involved in neighborhood road planning in the twenty-first century should look into programs such as Complete Streets, Walkable Neighborhoods, and Livable Streets for ideas about the safe sharing of roads by all types of users.

## FIGURE 2 SHENANDOAH FARMS ROAD SECTIONS

All three proposed road sections entail coating the roads with impermeable materials, recreating the suburban esthetic that so many come to Shenandoah Farms to escape. Impermeable surfaces interfere with rain absorption and filtration, increase polluted runoff to streams, rivers, and ground water, and reflect heat into the air nearby. They also look bad, smell bad, damage knees and backs, and generate worse noise than permeable surfaces when driven on.

The proposed road sections perversely safeguard pedestrians less on higher traffic roads. Implementing these structures would effectively preclude walking as a means of getting around Shenandoah Farms, whether for exercise, enjoyment, or trips to local destinations. Local roads rebuilt to VDOT specifications for state highways have decimated the areas that they once served (e.g., Howellsville Road and Manor Road).

In this figure and later in the report, a minimum CBR of 6 is cited as a design criterion without defining "CBR".

## V. EXISTING ROADWAY CONDITIONS

1) The substandard paving that was done on Old Oak Lane should be removed and the road restored to gravel and properly ditched and shouldered. The existing asphalt covers the road all the way to the ditch on stretches that are ditched, and subgrade erosion has made driving or walking near the edge perilous. The road narrows where it runs along Venus Branch, and high-speed driving threatens other drivers, pedestrians, and wildlife.

Old Oak Lane must not become another state highway. Instead, traffic calming measures should be taken to ensure the safety of residents and others entering, crossing, or following the road, whether in a vehicle or not. This road is less than a mile and a half long and may be entered or exited at nine other roads and as many as forty-one driveways. Create a sound gravel road with a posted speed limit of 15 mph and it will take six minutes to drive from one end to the other—only three minutes longer than at 30 mph, but the gravel will stay on the road instead of chipping car paint or cracking the windshields of following vehicles.

2) A gravel road in Shenandoah Farms with 3" of stone on it? Really? That depth of stone usually is only seen here in washboard ridges, roadside ditches, and piles of gravel pushed into the woods by snowplow operators.

3) On neighborhood roads, shoulders are used by pedestrians and other non-vehicle road users. Shoulders are non-existent on many of our roads, and we must rely on each other's common sense and courtesy to avoid collisions.

4) It is not mentioned whether ditches were checked to ensure that road runoff is not being directed to our natural surface waters.

FIGURE 3 Roadway Inspection Report

"Sight Distance" is misspelled here.

Observations of the behavior of road users and its impact on the condition of roads would add validity to citations of potential problem areas. Most of the damage to our roads is caused by drivers who do not know how to drive on dirt and gravel.

There is a good guide to troubleshooting problems with gravel roads at:
http://ruralhometech.com/RoadDrivewayMaintenance/TroubleshootingGuide/tabid/80/Default.aspx
It identifies the human causes of many of the same problems found in Shenandoah Farms and describes what is needed to solve them.

## VI. ULTIMATE ROAD AND PAVEMENT SECTION

It is stated that the proposed pavement design is based on a minimum CBR value of 6. A definition of CBR, the significance of a threshold value of 6, and an estimate of the likelihood of the threshold being met by roads in Shenandoah Farms are missing.

Acceptance by VDOT is an illegitimate goal for our neighborhood roads. Ultimately, our roads should be improved to serve the needs of Shenandoah Farms owners and residents. Moreover, "improvement" is not synonymous with "pavement". There are many useful resources for designing and maintaining good unpaved roads available online, including the following:

http://www.pdhonline.org/courses/c186/c186.htm
An online course in Gravel Roads Maintenance and Design

http://www.dirtandgravel.psu.edu/Resources/resources.html
Resources from the Center for Dirt and Gravel Road Studies at Penn State University

http://water.epa.gov/polwaste/nps/gravelroads_index.cfm
Gravel Roads: Maintenance and Design Manual

http://www.epa.gov/owow/NPS/sensitive/cover.pdf
Environmentally Sensitive Maintenance for Dirt and Gravel Roads

The following news article discusses benefits and maintenance of gravel roads in the Frederick County (MD) Rural Roads Program:
http://www.wtop.com/41/2882449/Frederick-Co-celebrates-10-years-of-gravel-roads-

Because Shenandoah Farms Sanitary District tax payers can expect to be driving on gravel roads for years to come, regardless of recommendations of ultimate paving, this report should include criteria for repairing and maintaining existing gravel road surfaces. Past maintenance procedures were inadequate and must be revised.

## VII. CONSTRUCTION SCHEDULE

Construction schedules should not be finalized without notifying road users of proposed "improvements" and ensuring that these are desired. Those who live on or use a road are bound to have better insight into what would improve it than non-resident planners. The projected costs of all proposed projects should be disclosed to sanitary district tax payers before their tax dollars are committed to any project.

## VIII. RESIDENT ROADWAY SURVEY AND EVALUATION QUESTIONNAIRE & RESULTS

Road use is not limited to entering and exiting Shenandoah Farms. Residents should be asked about all of the ways that they use our roads, as well as how they would like to use them and the improvements that this would require.

The subjects of the comments received in returned surveys reflect the perennial problem of speeding in Shenandoah Farms. It is speeding that raises dust, washboards road surfaces, sends gravel into ditches and culverts, and makes entering a road from a driveway or adjoining road dangerous. POSF is correct in posting a 15 mph speed limit for our roads and should post more signs as reminders to drivers of delivery and service vehicles who are accustomed to driving on pavement. Traffic calming measures should accompany any "improvements" that might otherwise encourage high-speed driving.

## IX. STORMWATER MANAGEMENT

While managing storm water to prevent road damage is a priority, it must be done without threatening our ground water or surface waters. Runoff from roads, driveways, and lawns must not be discharged into natural waters via ditches and culverts, either intentionally or due to foreseeable failures.

In many years, snowmelt does as much damage to our roads as heavy rainfall, and attempts at snow removal often result in even more damage. This problem has not been addressed in this report.

## X. RECOMMENDATIONS

1. Because speed remains the major concern of residents with respect to our roads, all road improvements should support traffic calming.

2. It bears acknowledging here that much of the gravel that ends up in ditches and culverts is there due to speeding vehicles.

3. The recommendation to continue to maintain roadway surfaces ignores the fact that maintenance procedures up to now have been inadequate.

5. Broad-spectrum herbicides should be banned in Shenandoah Farms. Chemicals applied to roads will end up being spread to the air in dust raised by traffic and to water in runoff.

6. A. The greatest threat to our road surfaces in winter comes from snowplow operators who do not know the proper way to set a blade for plowing snow from unpaved roads. Since reopening roads following snowstorms is a priority of residents, more should be done to ensure that snow removal contractors understand the local terrain and will remove only snow from our roads.

B. Shoulders should be inspected for safe use by pedestrians and emergency use by vehicles.

C. The sight distance calculation given is incorrect. 15 mph x 5'/mph = 75'
In addition, "sight distance" is misspelled in the last sentence of the paragraph.

7. Since the views of only 8% of property owners are reflected in the study, proposed improvements should be presented to road users before proceeding. This can be done, for example, through temporary road signs describing them and announcing meetings or the availability of information online or from POSF.

## XI. CONCLUSION

The Warren County Shenandoah Farms Sanitary District exists because Shenandoah Farms property owners in Warren County believed that its taxing authority would ensure that their unmet expectations of stopping speeding, improving road drainage, and keeping roads open in winter could finally be afforded. This road and drainage study bears out the need for the requested services. Warren County planners should honor the requests of sanitary district tax payers and not substitute politically motivated projects of their own.

The roads of Shenandoah Farms must not be turned into state highways or even paved. The turf and asphalt suburbs of the second half of the twentieth century were social and environmental disasters, and many are now being rehabilitated as "neotraditional neighborhoods", "resilient communities", and "transition communities". Shenandoah Farms already has the gravel roads, trees, native plants and wildlife, common properties, clean air and water, dark skies, and bird-dominated soundscape that residents of those sterile communities have since come to value.

Shenandoah Farms has gone from being "where the sleaze meets the trees" to being at the cutting edge of neighborhood design, and we did it by resisting gentrification. The recommendations of the Warren County Shenandoah Farms Sanitary District Road and Drainage Study must not be construed by sprawl developers and realtors as commitments to help them destroy the character of our neighborhood for the sake of selling houses built on spec to buyers preferring a fast-paced suburban lifestyle. Our lots and roads were platted for a recreation and retirement community, and that remains their best use. If Warren County seeks to expand its tax base by expediting the "build-out" of Shenandoah Farms, it is in everyone's interest to attract new residents who value forests, gravel roads, and unhurried living.

WARREN COUNTY
BOARD OF SUPERVISORS

AUG 16 2012

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ADMINISTRATOR'S OFFICE

Comments on Erosion & Drainage results

| Name & contact info Phone or email | Property Owner Please check box | Comments |
|---|---|---|
| Willy Sofan | ✓ | you forgot culvert in front one 580 Youngs Dr. That crosses youngs Dr. |
| Stacey Mayle 540-622-6228 | ✓ | Any idea on time frame for work on Drummer Hill? |
| | | |
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| | | |

Warren County
Board of Supervisors
Received

AUG 16 2012

Shenandoah Farms
Sanitary District

Property Owners of Shenandoah Farms, Inc.
6401 Howellsville Road
Front Royal VA 22630
540-837-2068
Shenandoahfarms@comcast.net
www.shenandoahfarms.org

WARREN COUNTY
BOARD OF SUPERVISORS
AUG 17 2012

County of Warren
County Administrator's Office
Warren county Government Center
220 North Commerce Avenue, Suite 100
Front Royal, Virginia 22630

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WARREN COUNTY
ADMINISTRATOR'S OFFICE

Warren County
Board of Supervisors
Received
AUG 17 2012

Shenandoah Farms
Sanitary District

August 16, 2012

Bob,

As per request the Board of Directors of POSF has reviewed the road study at the committee level and director's level. We feel as many do that this study identifies the road situation very well. As we move forward with the implementation of the study there are, as discussed at various public meetings, some concerns. I feel these concerns have been addressed to the satisfaction of most residents and board members. The main concerns, right of ways, driveway culverts, road culverts, new construction disturbances to roads, speed and signage, and inspection responsibility have been discussed. We are banking that the county will follow thru with addressing these issues as we move forward.

The POSF board is able, willing, and desires to help out in any way you see fit. As an advisory board we bring years of experience for you to draw upon. We don't want to get in the way of the operation of the district, but we can be of assistance in planning the future success of our community. I truly believe we all want the same for the farms.

Willy Surface is back as road, and common properties chairman, I know there is a good working relationship with you both. I am hopeful this will continue as the new SD manager begins his duties.

Thank You,

Ralph Rinaldi
Secretary
Acting Common Property & Road Chairman of
Property Owners of Shenandoah Farms

CC: Doug Stanley, County Administrator