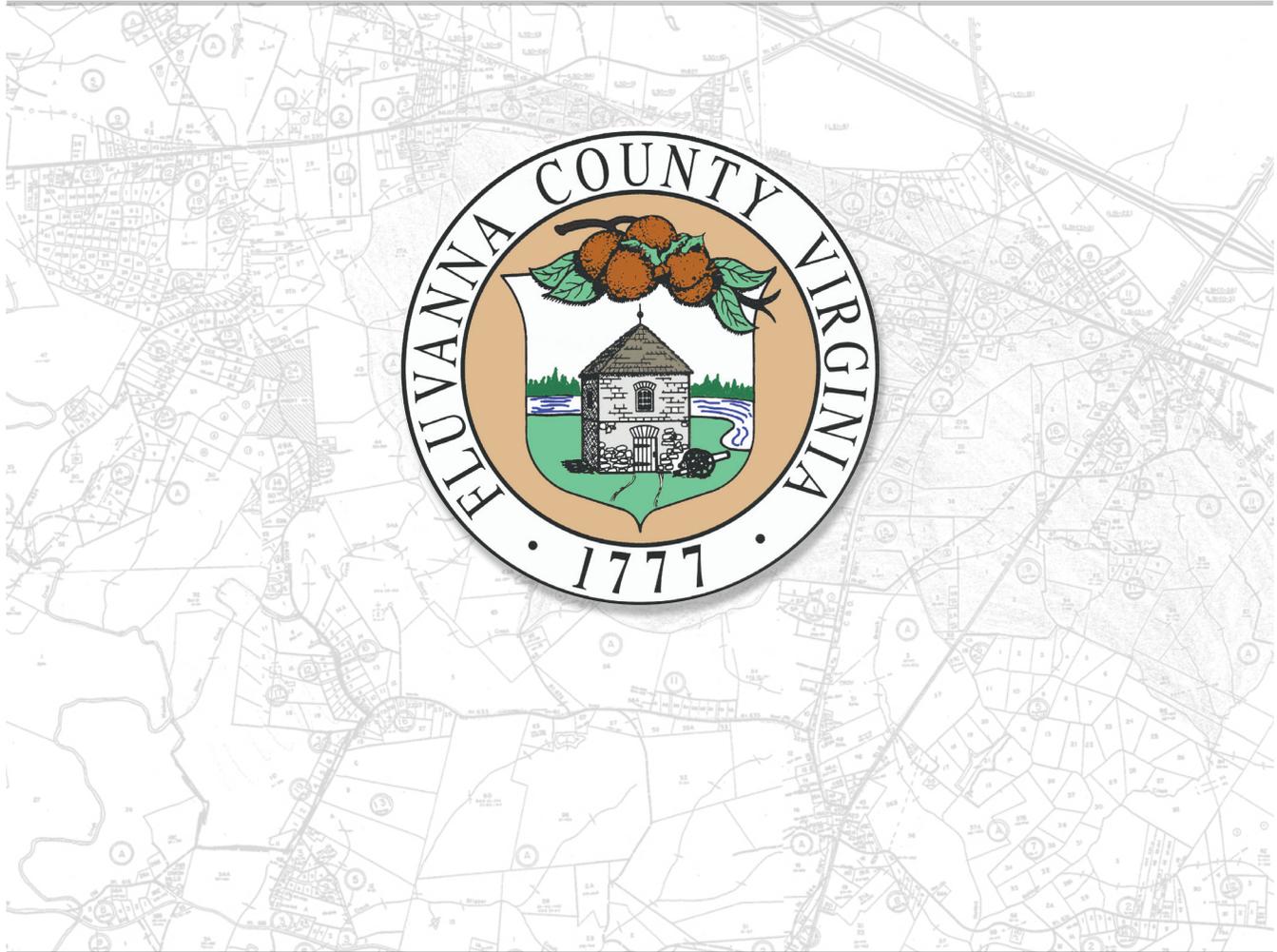


FLUVANNA COUNTY: Return on Investment Study

Water and Sewer Infrastructure in Zion Crossroads • May 2012



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Executive Summary:

In January 2012, Fluvanna County requested that the Thomas Jefferson Planning District Commission (TJPDC) develop a fiscal impact analysis on a proposed water and sewer-line project in the Zion Crossroads area. The proposed waterline would extend to the Fluvanna Correctional Center for Women on US Route 250, from the Lake Monticello water system. That line would expand to the remainder of Fluvanna County's Zion Crossroads Community Planning Area (CPA). Through an agreement with the Department of Corrections, the County would also provide sewer service for the Zion Crossroads CPA from the extra capacity in the system at the correctional center.

To assess the financial implications of the water and sewer-line proposals, TJPDC staff developed a spreadsheet model. This model includes calculations that identify the return on investment (ROI) for Fluvanna County. Market research and the County's existing plans served as the basis for the model's assumptions for future growth. Under several scenarios, the model calculates the net revenue in various market conditions. It also considers a scenario without the water or sewer-lines, to provide a control.

The purpose of TJPDC's Return on Investment (ROI) study is to provide insight to local decision-makers to determine if the proposed water and sewer-line would be cost-effective for the County. The final results provide figures for short- and long-term implications of an expanded public water and sewer system. It also looks beyond financial factors, by identifying ways the area could develop under different growth scenarios. Those growth forecasts will inform zoning and land use strategies in the Zion Crossroads area.

Year 5 Cumulative Revenues/Costs			
Scenarios	Gross Revenue	Gross Cost	Net Revenue
No Waterline	\$ 7,417,327	-\$ 10,003,801	-\$ 2,586,474
Slow Growth	\$ 16,438,091	-\$ 16,346,267	\$ 91,824
Moderate Growth	\$ 17,321,799	-\$ 16,461,695	\$ 860,104
Expected Growth	\$ 18,772,297	-\$ 16,695,620	\$ 2,076,676
Strong Growth	\$ 20,521,385	-\$ 16,974,296	\$ 3,547,088

Year 10 Cumulative Revenues/Costs			
Scenarios	Gross Revenue	Gross Cost	Net Revenue
No Waterline	\$ 15,502,507	-\$ 20,295,270	-\$ 4,792,763
Slow Growth	\$ 36,174,012	-\$ 34,167,189	\$ 2,006,823
Moderate Growth	\$ 40,096,505	-\$ 34,763,989	\$ 5,332,516
Expected Growth	\$ 45,381,034	-\$ 35,678,978	\$ 9,702,056
Strong Growth	\$ 52,445,081	-\$ 36,890,570	\$ 15,554,511

Purpose:

Fluvanna County requested that the Thomas Jefferson Planning District Commission (TJPDC) develop a financial analysis of a proposed water and sewer-line project in the Zion Crossroads area. The purpose of this Return on Investment (ROI) Study is to provide unbiased information to decision-makers. The main tool in this analysis is a spreadsheet model, which staff developed to calculate the financial impacts for 10 years following project initiation. This model is inclusive, accounting for all the costs and revenues associated with the proposed water/sewer-line. It also calculates the costs and revenues that are connected with anticipated growth. The model is transparent, allowing people to understand the assumptions and methodology, and easily modified, so decision-makers can make changes in assumptions and find instant results.

The ROI model includes all of the contractual costs and revenues associated with the water and sewer-line. The proposal for this infrastructure would include three partners: Fluvanna County, Aqua Virginia and the Department of Corrections. Aqua Virginia operates the Lake Monticello water system and proposes to extend that line into the Zion Crossroads area. The Department of Corrections owns and operates the sewer system, located at the women's prison on US Route 250. Through an agreement with the County, the sewer service would also expand into the Zion Crossroads area. The following payment and fees are proposed in contracts with these partners. While the ROI model includes these specific costs, it is structured to be flexible and to calculate the financial implications of any proposed payments by the County.

Waterline Proposal

Aqua Virginia operates the Lake Monticello system, which currently has surplus water. The proposal would allow Aqua Virginia to build a waterline to the Fluvanna Correctional Center for Women, thus providing water to that facility. The waterline would also extend beyond the correctional center to the remainder of the Zion Crossroads Community Planning Area (CPA). In the proposed contract, the County would own and operate the water system, with the authority to set fees and rates. Fluvanna County would pay Aqua Virginia for the water and maintenance of the system. The cost of water and maintenance would be \$950,000 per year. This covers the expenses for the first 127,000 gallons per day (GPD) in each year. If the service area (excluding the prison) uses more than 127,000 GPD, then Aqua Virginia would charge Fluvanna County an additional \$2.95 per 1,000 gallons. These payments include the capital costs of constructing the waterline. The County would not incur additional expenses for this project, beyond what is described above. The proposal is included in the *appendix*.

Sewer Line Proposal

The Department of Corrections (DOC) owns and operates a sewer treatment facility at the correctional center, located at the west end of the study area. The facility has extra capacity, allowing the County to extend sewer-lines to private users in the area. Aqua Virginia will install, own and operate the sewer collection system for the study area. The system will discharge to the correctional center, subject to an agreement with the County and DOC. The DOC, and any other customers, will be billed a metered rate based on their water usage. Fluvanna County will be responsible for a monthly payment to Aqua of \$94,900 per year. This minimum payment will entitle Fluvanna County up to 4,000 gallons per day (GPD) of flow. For any usage over that 4,000 GPD, Fluvanna County will be responsible for the payment of \$.10 per 1,000 gallons. There will also be a charge of \$2 per 1,000 gallons. The proposal is included in the *appendix*.

In the proposed contract with these partners, there is an inflation rate associated with the annual payments. While this means that costs will increase, the ROI model and analysis does not include these rates. Staff excluded inflation because revenue would increase at the same rate. Under several test runs of the model, the presence or absence of inflation resulted in the same net revenue.

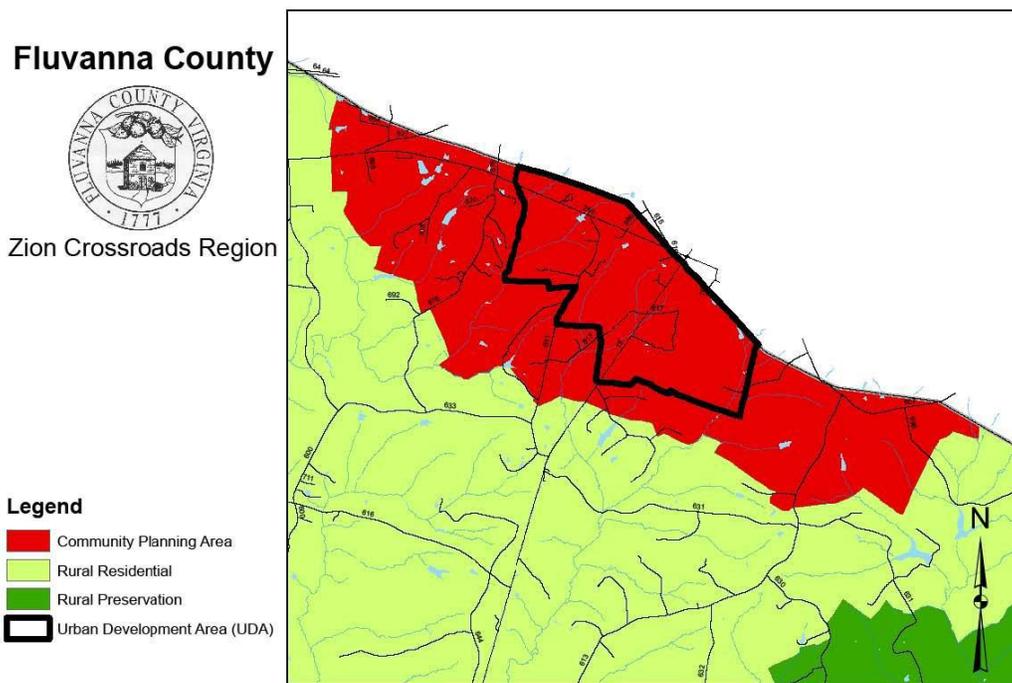
Methodology:

The Thomas Jefferson Planning District Commission developed the Return on Investment Study and the model that calculated the study’s results. The process began with a study area, which defined the limits of the proposed service area where public water and sewer would be available. Staff reviewed existing plans and studies, to ensure that the 10-year forecasts would be consistent with all approved documents. Staff conducted a market study to determine growth potential, with and without the infrastructure improvements. Staff developed a spreadsheet model, which uses calculations of costs and revenues to identify the financial implications of the water/sewer-line proposals. Once the model was in place, staff developed growth scenarios that would provide decision-makers with several possible outcomes for the future.

Study Area

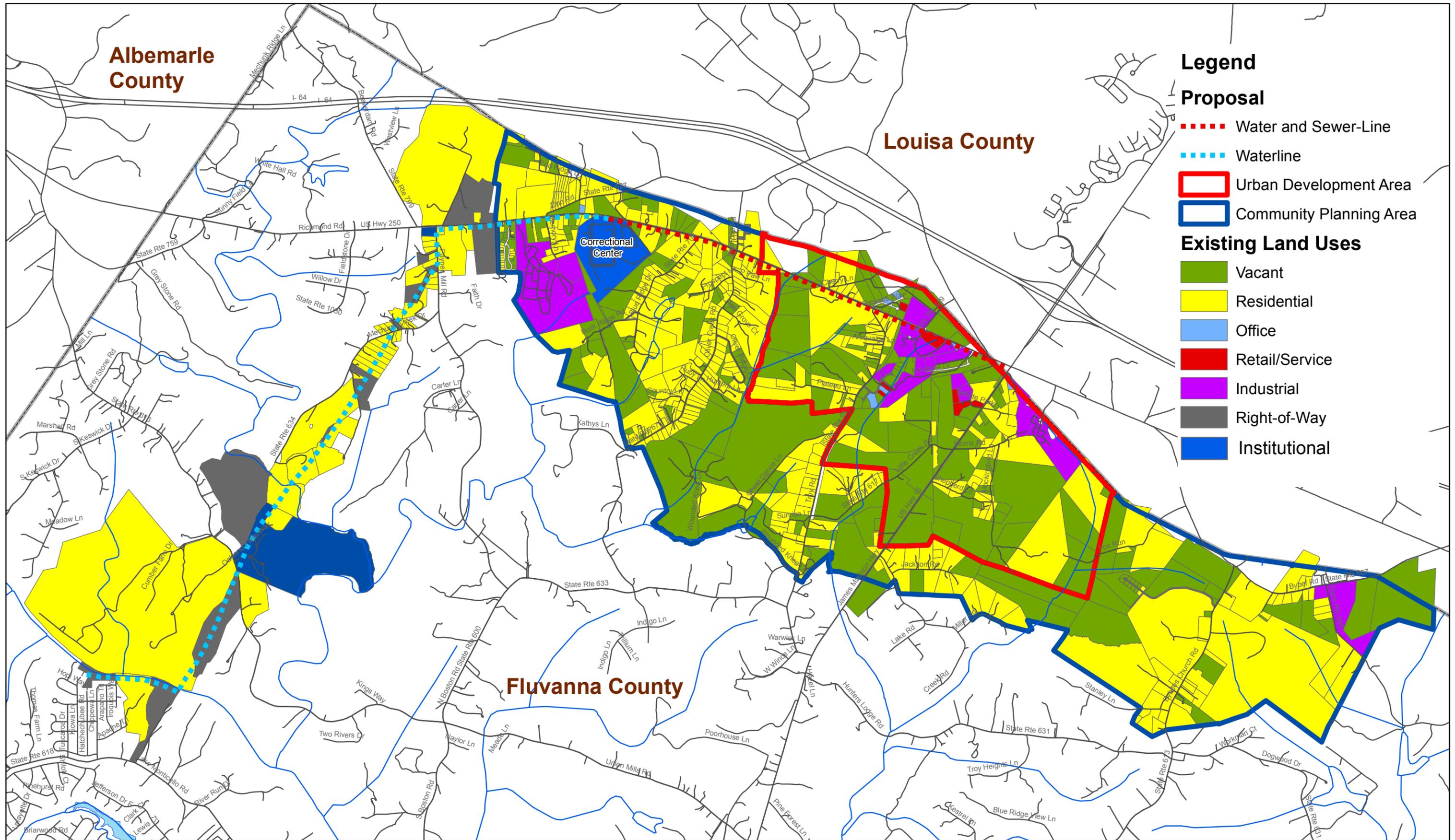
The study area is the Zion Crossroads Community Planning Area (CPA), which includes the urban development area (*figure 2*). The study area is intended to be consistent with the Fluvanna County Comprehensive Plan, which identifies these boundaries as a growth area (*figure 1*). The study also includes properties that are adjacent to the waterline right-of-way, between Lake Monticello and the Zion Crossroads CPA. While these properties are included, the model does not propose that these areas be served by the water or sewer-line. Consequently, the model does not assume any growth in those locations.

Figure 1: Future Land Use Map



Fluvanna County Comprehensive Plan

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**Figure 2: Zion Crossroads Waterline ROI:
Study Area and Existing Land Uses**

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Existing Plans

Staff reviewed existing plans as references for the study. These documents helped develop growth scenarios and provided data on demographics, previous growth trends, water usage, etc. Staff considered four plans and studies: the Zion Crossroads Community Plan, Northwest Fluvanna Corridor Study, Fluvanna County Comprehensive Plan and the Fluvanna County Regional Water Supply Plan.

Zion Crossroads Community Plan (2006)

This plan represents a collaborative effort between Fluvanna County citizens, staff and business owners, and the Thomas Jefferson Planning District Commission. It was one in a series of community plans for Fluvanna County. The plan makes the following recommendations to capitalize on the potential of Zion Crossroads as a major center of commerce, employment, and higher density residential uses.

Create a distinct identity for the Zion Crossroads area which requires:

1. *Establish a formal gateway that captures the rural character of the area*
2. *Define a village-scaled center*
3. *Support mixed-use development*

Support Economic Development and Community Based Services:

1. *Capitalize on location and enhance existing land uses including enhanced tourism, recreation, and educational opportunities*
2. *Develop a marketing strategy and plan for the area and its businesses*
3. *Expand and diversify local tax revenue by encouraging higher intensity commercial development, encouraging businesses and retail that are locally-based, and providing additional opportunity to expand light industry development*
4. *Provide appropriate infrastructure, including water and sewer services, and investigate the demand and cost of providing natural gas to the area*

Source: Zion Crossroads Community Plan, Page 4

Northwest Fluvanna Corridor Study (2007)

This is a transportation and land use study that focuses on the fastest growing portion of Fluvanna and Louisa Counties. The study area is bounded to the north by Zion Crossroads and to the south by VA 53, passing through Palmyra. This report summarizes the Corridor Study process, and provides a hands-on, how-to guide for achieving the region's vision for the future. This includes a Framework Plan that provides policymakers, planners, and the public with design guidelines and development tools to help achieve the common vision for the region's future, and includes strategies for coordinating transportation and land use.

A trend analysis developed as part of the study shows that based on current projections, the study area will have approximately 18,000 homes by the year 2050. If the current development patterns persist, it is projected that approximately 10,630 acres of land in the Northwest Corridor study area would be developed. Under this plan, Zion Crossroads would develop into a regional mixed-use center. The plan recommends the following land use designations for this area:

Regional Mixed-Use

Regional mixed-use development is characterized by a higher intensity and mixture of land uses than surrounding areas. Compact blocks oriented around a mixed-use Main Street define the core of the Regional Center. The regional mixed-use center has the largest diversity of uses, combining retail and office in close connection to residential and other varied uses. This is the highest-density community element in the Corridor Study.

Source: Northwest Fluvanna Corridor Study, Page 9

Regional Employment

The regional employment center is predominately devoted to employment uses, but still maintains a small mixed-use component to serve employees and surrounding residents. Employment uses may include professional office space, research facilities, storefront offices, and warehouse and light-industrial uses.

Source: Northwest Fluvanna Corridor Study, Page 11

Neighborhood Mixed-Use

Neighborhood mixed-use areas will include a mix of retail and office uses at the center, with connected residential uses at the edge. Although the neighborhood mixed-use element has a retail bias, a diverse integration of uses, including storefront retail, office, civic, and residential is recommended. The neighborhood mixed-use element combines higher density retail and residential uses.

Source: Northwest Fluvanna Corridor Study, Page 13

Neighborhood Residential

Neighborhood residential areas should provide a range of residential housing types and lot sizes. This includes a balance of single-family residences and some multi-family housing. While predominately single-family residential, neighborhood residential areas should incorporate some degree of mixed-use, primarily in the way of multi-family residential. Storefront retail and office may be integrated at a residential scale.

Source: Northwest Fluvanna Corridor Study, Page 15

[Fluvanna County Comprehensive Plan \(2009\)](#)

In 2009, Fluvanna County adopted the latest version of their Comprehensive Plan, drawing from the Zion Crossroads Community Plan and Northwest Fluvanna Corridor Study. As the guiding document for the County, the Comprehensive Plan influences land use policies and economic development efforts for the community, particularly the Zion Crossroads area. The Comprehensive Plan also provides data that helps forecast future growth.

The plan highlights Zion Crossroads as a Community Planning and Urban Development Area (UDA), a designation intended for areas that should receive the highest growth. The plan anticipates that most new growth will occur at Zion Crossroads, which will develop into a large regional mixed-use center featuring employment centers as well as a diverse mix of retail opportunities and housing options. The plan refers to the Virginia Employment Commission, which projected that Fluvanna County's population will increase to 37,433 by the year 2020, and to 47,010 by the year 2030. As a result, the Zion Crossroads UDA is intended to accommodate between 11,742 and 21,319 new residents over the next 10 to 20 years. To support this growth, the plan also includes provisions for additional infrastructure, particularly water in Zion Crossroads.

[Fluvanna County Regional Water Supply Plan \(2010\)](#)

Fluvanna County and the Town of Columbia prepared this plan to evaluate the current and future water supply needs in Fluvanna County to ensure that the water needs of the people living in the County will be met now and in the future. The plan is designed to ensure that adequate and safe drinking water is available. It is intended to encourage, promote and protect all other uses of water, through conservation and/or incentives. The plan also includes recommendations for public water and sewer service in the Zion Crossroads area. The County developed this plan to comply with the State Water Control Board's Local and Regional Water Supply Planning Regulation.

[Summary of Plans and Studies](#)

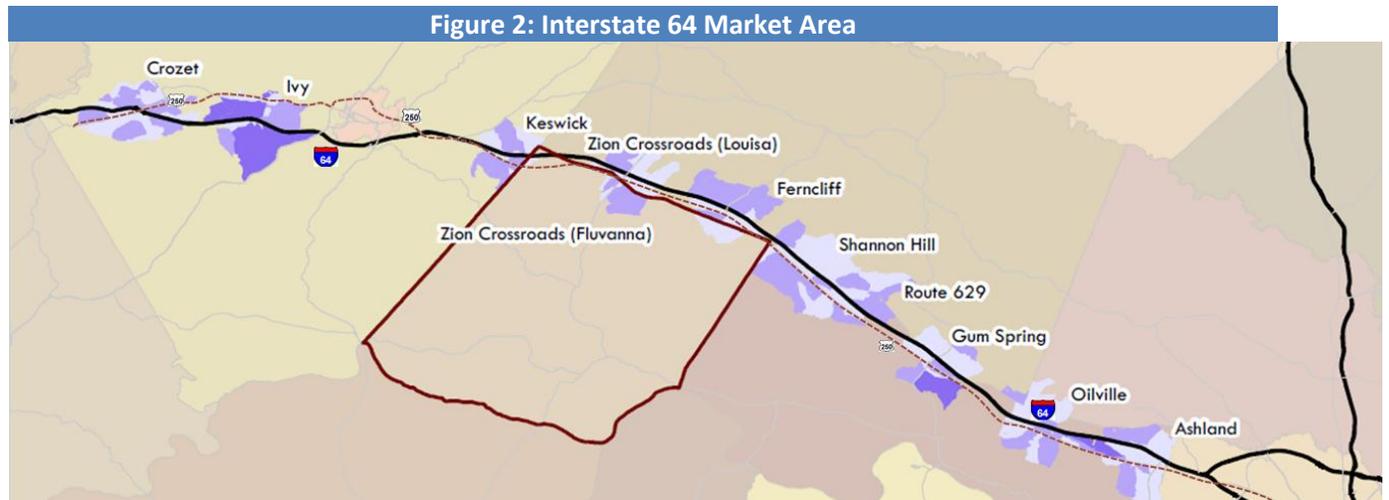
Fluvanna County's plans have several consistent themes and recommendations. All of these documents recommend that Zion Crossroads serve as the primary growth area for the County. With this designation, it is intended to capture the majority of new development in Fluvanna County. Zion Crossroads would function as a regional mixed-use center with office, retail and residential uses. These plans and studies also recommend that there be water and sewer infrastructure to support this future development.

[Market Study](#)

TJPCDC Staff conducted a market study to determine reasonable assumptions about future growth. The market study assessed the residential and nonresidential growth that occurred over the previous decade. The time between 2000 and 2010 appeared to be the most reasonable sample and prediction for the future. That decade includes periods with unusually high growth but it also included the economic downturn. Staff believes that this provided an average for the next 10 years.

[Selection of Study Areas](#)

The Interstate 64 corridor served as the market area (*figure 3*). Staff collected data on 10 interchanges that were similar to the study area. These interchanges share common characteristics as exurban locations that have access to I-64 and have development potential. The study area interchanges included: Crozet, Ivy, Keswick, Zion Crossroads, Ferncliff, Shannon Hill, Route 629, Gum Spring, Oilville and Ashland. Staff excluded some interchanges along this corridor, such as exits near the City of Charlottesville and Richmond. Due to their proximity to urbanized areas, these interchanges represent a different type of market. For the interchanges that were included, the study areas had a radius of approximately 1 to 2 miles. For residential growth, the market study included the number of housing units within each of these interchange areas. For commercial and industrial uses, staff collected data on square footage of building area. The square footage data came from various sources, including aerial photography, site plans, and local property records. The market study ignored development with low probability of occurring in the future, such as the Wal-Mart Distribution Center in Louisa County.



Market Study Interchanges: Colors Highlight Census Blocks

Development Trends

The market study allowed staff to see development trends throughout the I-64 corridor. The Louisa County side of Zion Crossroads was the only interchange with public water and sewer. In terms of commercial and industrial development, the benefit of these services is apparent (figure 4). This northern side of the interchange added nearly 500,000 ft² of commercial space and 70,000 ft² of industrial space. None of the other interchanges had significant growth in nonresidential development. This is consistent with research that suggests that these uses are dependent on public water and sewer. Conversely, residential development is less reliant on these public services (figure 5). The market study revealed that most of the interchanges had significant increases in residential development. The Fluvanna County side of Zion Crossroads had below average growth, in terms of residential development. The Fluvanna County Regional Water Supply Plan indicated that the Zion Crossroads area has a low supply of accessible groundwater. This makes it difficult to install private wells, thus limiting development.

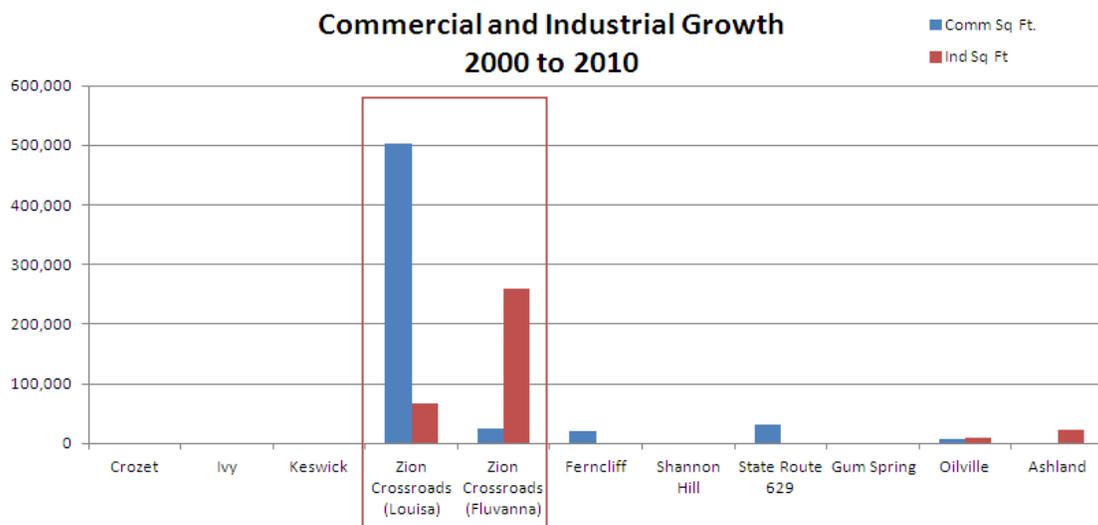


Figure 3: Market Area

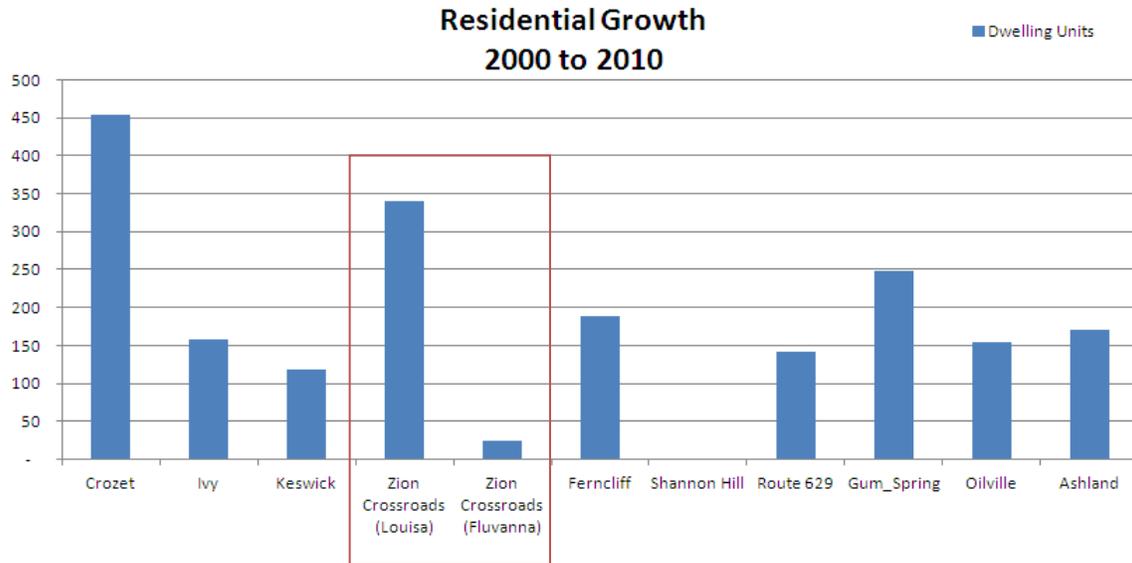


Figure 4: Market Area

Conclusions of Market Study

The market study highlights the influence that water and sewer infrastructure may have on development. The Louisa County portion of Zion Crossroads serves as the best comparison for what could happen in Fluvanna County, if the County chooses to extend water and sewer infrastructure to the area. At the same time, there are differences between the two portions of Zion Crossroads. The Louisa County side has better access to I-64. Consequently, that area is more likely to have commercial uses that serve highway traffic. This development would include certain retail businesses, drive-in restaurants, service stations and other similar uses. The Fluvanna County portion of Zion Crossroads is set farther back from these roadways. Due to its location, this area is more likely to develop with office space, though retail would continue to have significant potential as well. The previous decade reveals that the Fluvanna County side is more suitable for these office or light industrial businesses.

How the Return on Investment Model Works

The ROI model is a spreadsheet, with multiple calculations, assumptions and readouts. While the spreadsheet is complex, the fundamental analysis is relatively simple and can be described with the formula (Gross Revenue - Gross Cost = Net Revenue to the County). Revenues and costs can be divided further into the following groups (table 1).

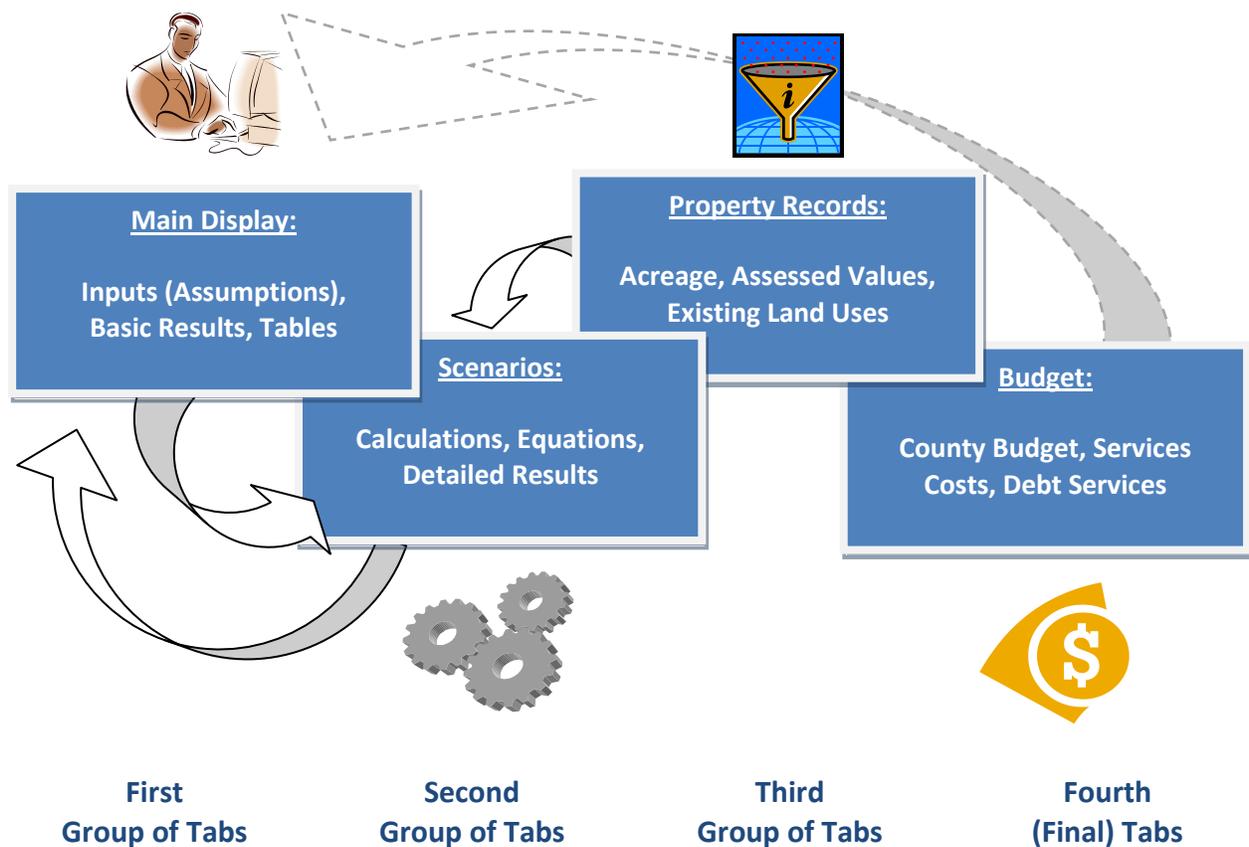
Table 1: Revenues and Costs

Revenues	Costs
Existing Development	Existing Services
Future Development	Future Services
Waterline Income	Waterline Capital/Maintenance
Sewer-Line Income	Sewer-Line Capital/Maintenance

Model Structure

The ROI model is a large spreadsheet with several interrelated tabs (*figure 6*). The tabs are grouped and ordered based on their function. The first tab is the main display, which allows the user to enter assumptions and review summary results. The second tab provides charts and tables, which provide greater detail of results in an easily understood format. The next group of tabs functions like an engine room for the model. This portion of the spreadsheet houses the equations and calculations on cost, revenue, water and sewer usage, developed area, building square footage, and housing units. The next section of the spreadsheet is the property data. These tabs contain property records on every parcel within the study area. The data includes assessed property values, acreage, existing land uses, and building square footage. All of this information feeds into the “engine room” for calculations. The final tab contains the County’s Budget, which helps identify the service costs associated with development.

Figure 5: Overview of ROI Model



Calculations

The following is a brief overview of how the model equations function. Within each of the scenarios there are five sets of calculations, which pull from the assumptions entered in first tab of the spreadsheet. The model calculates property development, tax revenue, water/sewer revenue, water/sewer costs and service costs. These equations are in the scenario tabs of the spreadsheet.

Property Development

The first step of this analysis is determining growth. The spreadsheet divides land uses into 6 categories: residential, office, retail/service, restaurants, industrial and vacant. The County's property records contain existing land use data, along with the acreage, assessed value and building square footage for each parcel.

Each scenario has assumptions for how much growth will occur. The model takes the year one figures and adds the new development at each year, through year 10 (*table 2*). The model includes Floor Area Ratios (FARs), to determine how much acreage will be developed. These figures set an average lot size for each housing unit or square foot of commercial/industrial space. If an acre is defined as newly developed, then the model removes that acre from the vacant land use. The model tracks vacant land to ensure there is still developable properties remaining and because vacant land has a lower assessed value, thus different tax revenue.

Table 2: Property Development Equations

Steps	Equations
1. Existing Development	Residential: Existing # of Households
	Nonresidential: Existing Square Feet of Nonresidential Uses
2. Future Development	Residential: New Households
	Nonresidential: New Nonresidential Development (ft ²)
3. Total	Residential: Existing Households + New Households = Total Households
	Nonresidential: Existing Development (ft ²) x New Development (ft ²) = Total Development (ft ²)
4. Acreage of Development	Residential: Total Households x Acres Per Household = Total Developed Acreage
	Nonresidential: Total Development (ft ²) x Floor Area Ratio = Total Developed Acreage
5. Acreage of Vacant Land	Acreage of Vacant Land – Acreage of New Development = New Acreage of Vacant Land

Note: A Floor Area Ratio is the ratio of building floor area to the total lot area of the building site. The FARs in the model came from examples of existing development in the region. Staff identified various land uses in the Zion Crossroads area, including the Fluvanna and Louisa portions, to measure the average acreage and building square footage. The acreage information came from local property records. The building square footage came from various sources, including site plans, property records and measurements calculated from aerial photography. Staff conducted the same process for random sites in other interchanges along the I-64 corridor, to ensure for a proper sample size.

Tax Revenue

Existing development generates revenue for the County through taxes. The ROI model accounts for three categories of tax revenue: real estate, personal property and the county share of retail sales. Fluvanna County also has a machinery and tools tax, which staff did not consider in the analysis because it is not generating significant revenue. The model also includes a placeholder for a meals tax. While the County does not have a meals tax and none is proposed, the placeholder allows analysis of this option for the future.

- Real Estate Tax: The real estate tax rate is \$.5981 per \$100 of assessed value. The model pulled from existing property records to determine assessed values.
- Personal Property Tax: The personal property tax is currently \$4.15 per \$100 of assessed value. Since vehicles are the primary form of personal property, the model needed data on average values for a standard personal automobile. Staff found common vehicle models and identified the Blue Book value for each. The American Community Survey was the source for average number of vehicles per household.
- Retail Sales Tax: The sales tax is 1% on the dollar for retail sales. The source for sales data was retailsales.com. This group compiles information from multiple sources, including company filings, government agencies, research firms and industry trade groups. Currently, there is limited service and retail space in the study area. Any existing businesses have relatively low sales per square foot, thus less tax revenue.

In the future scenarios, the County collects tax revenue from all of the existing development, and all of the forecasted growth. For future revenue, the ROI model continues to account for three categories of taxes: real estate, personal property and the County share of retail sales. Inflation is not included in this assessment. Since the inflation on cost and revenue would be the same, the net revenue would remain unchanged.

- Real Estate Tax: The model assumes that the real estate tax rate will remain at the adopted FY13 level of \$.5981 per \$100 of assessed value. For future land values, staff referenced the County's parcel and assessment data. Staff used this data to estimate average values per acre for the various land uses in the model: residential, office, retail/service, restaurants, industrial and vacant. These averages served as the assumptions for future land values for new development. Staff also referenced land values on the Louisa County portion of Zion Crossroads, to estimate future values.

- **Personal Property Tax:** The model assumes that the personal property tax rate will remain at the adopted FY13 level of \$4.15 per \$100 of assessed value. Staff used the same vehicles values and averages seen in the existing development calculations.
- **Retail Sales Tax:** Under the model scenarios, the sales tax rate would be unchanged, at 1% on the dollar. The model keeps existing businesses and adds the sales average of future retail, which is expected to have higher sales per square foot. The source for this data was retailsales.com.

Table 3: Tax Revenue Equations

Tax Category	Equations
1. Real Estate	$\text{Total Acreage (per Land Use)} \times \text{Average Value per Acre} = \text{Total Land Value (per Land Use)}$ $\text{Total Land Value} \times \text{Tax Rate} = \text{Value per } \100 $\text{Value per } \$100 \times \text{Tax Rate} = \text{Tax Revenue}$
2. Personal Property	$\text{Total Households} \times \text{Average Vehicles per Household} = \text{Total Vehicles}$ $\text{Total Vehicles} \times \text{Average Value per Vehicle} = \text{Total Value of All Personal Property}$ $\text{Total Value of All Personal Property} / \$100 = \text{Value per } \100 $\text{Value per } \$100 \times \text{Tax Rate} = \text{Tax Revenue}$
3. Sales	$\text{Total ft}^2 \text{ of Retail} \times \text{Average Sales per ft}^2 = \text{Total Retail Sales}$ $\text{Total Retail Sales} \times \text{Tax Rate (\%)} = \text{Tax Revenue}$

Water and Sewer Revenue

Aside from taxes, the proposed water and sewer line would generate additional revenue from connection fees and usage rates. According to the assumptions in the analysis, the water system would be a significant source of revenue. The model breaks up revenue into three categories: connection fees, water rates and availability fees.

- **Water Connection Fees:** A connection fee is a one-time charge for connecting to the water system. A residential unit will typically have one connection. Nonresidential uses, such as restaurants or retail stores, may have multiple connections. These uses require larger volumes of water and the connections only have a limited capacity. For nonresidential uses, there would be one connection for every 150 gallons per day. This study assumes that each connection would cost \$3,750, with the same rate applied to all uses. The model assumes that all existing households would connect without charge. Conversely, all existing businesses would pay for these connection fees.
- **Water Rates:** The water rate accounts for the daily usage of water, which would be tracked with a water meter. The proposed fee is \$8 per 1,000 gallons. The proposed rate is consistent with those found other surrounding areas.
- **Water Availability Fee:** The final water system revenue source is the availability fee. Developers or others would pay this fee to secure a set amount of water capacity. The model assumes the County would receive \$500,000 per year in fees for the first 6 years. The model assumes that all

existing households would connect without charge. Conversely, all existing businesses would pay for these connection fees.

- **Sewer Connection Fees:** The sewer system would also generate revenue using a similar fee structure. The County would charge a connection fee of \$4,500, for anyone who connects to the system. As with the water services, there would be one connection per household or multiple connections for nonresidential uses. For nonresidential uses, each connection would carry a maximum of 150 GPD. The model assumes that all existing households would connect, but there would be no charge for those connections.
- **Sewer Rates:** Fluvanna County would collect \$10 for every 1,000 gallons of sewage, as a service charge. The system operators would calculate the amount of wastewater for each connection, based on the amount of water coming into the property. The assumption is that for every gallon that goes into a home or business, approximately one gallon will exit as sewage. This is a common assumption for these systems.

Table 4: Equations Calculating Water and Sewer Revenue

Fee	Equations
1. Connection Fee	Residential:
	Total Households x Connection Fee = Total Residential Revenue
	Nonresidential:
	Total ft ² (per Land Use) x Average Water Usage = Total Water Usage
	Total Water Usage / 150 GPD = # of Connections
	# of Connections x Connection Fee = Total Nonresidential Revenue
2. Water Usage	Total Residential Revenue + Total Nonresidential Revenue = Total Revenue
	Total Water Usage / 1,000 Gallons = Gallons per 1,000 Gallons per 1,000 x Water Fee = Total Revenue

Note: The model includes national averages for water consumption, with the data originating from multiple online resources. Staff referenced a large sample of sources, to ensure consistency. Staff also referred to the Fluvanna County Regional Water Supply Plan and consulted Fluvanna County staff members who are responsible for operating the County’s existing public water systems.

Water and Sewer Costs

The proposed water and sewer-lines generate revenue, but they also have costs. The County would pay Aqua Virginia and the Department of Corrections for operations, maintenance and supply. Aqua Virginia provided the proposed water costs that the County would pay, as part of a contractual agreement. A contract would set those figures as well. These payments include the capital costs of constructing the waterline. The County would not have additional expenses for this project, beyond what is described below.

- **Meter Box Maintenance:** The model assumes that the County would pay \$250 per water meter, for maintenance. This is a one-time cost associated with any potential issues that may arise with each meter.
- **Cost of Water:** The County purchases water from Aqua Virginia, the supplier. Each year, Fluvanna County would pay \$950,000 to Aqua Virginia for the first 127,000 GPD. For any additional water usage over that amount, the County would pay \$2.95 per 1,000 gallons.
- **Sewer Costs:** The sewer costs are structured differently. The Department of Corrections would charge a baseline charge of \$94,900 per year to the County. The County would also have to pay for the sewage capacity, which would be \$2 per 1,000 gallons of wastewater. An additional \$.10 per 1,000 gallons would cover maintenance.

Table 5: Equations Calculating Water and Sewer Cost

Fees	Equations
1. Waterline Meter Box Maintenance	Total Number of Connections x Meter Box Maintenance Fee = Total Revenue
2. Cost of Water	Total Water Usage – 127,000 = Water Usage over Baseline Water Usage over Baseline / 1,000 = Water Usage per 1,000 Gallons Water Usage per 1,000 Gallons x Water Rate = Total Revenue
3. Sewer Maintenance	Water Usage / 1,000 = Sewage per 1,000 Gallons Sewage Usage per 1,000 Gallons x Sewer Rate = Total Revenue
4. Sewer Service	Water Usage / 1,000 = Sewage per 1,000 Gallons Sewage Usage per 1,000 Gallons x Sewer Rate = Total Revenue

Service Costs

All of the model scenarios begin with the costs of existing development. The ROI model divides these costs into three groups: schools, debt services and administrative.

- Schools: The Department of Education has figures on the local cost per student for school operations that also went into the model. For every student in the study area, the model assigns a cost of \$4,302.
- Debt Services: Debt services account for payments on the new high school. The County's total annual budget payments served as the main reference for the service costs. Staff summed the total acreage of developed parcels (with over \$30,000 of improved value) for the entire County. Staff divided that figure by the total value of the general fund to determine service costs per developed acre. The model charges \$96.6 per developed acre for this item.
- Administrative: The total cost for county administration goes towards the daily operations of the County. This includes the expenses for public safety, parks and recreation, community programs and other items under the County budget. To calculate the average costs, staff used the same process described under debt services, except staff divided the developed acreage by the "Debt Services Fund" in the budget. The model charges \$176 per developed acre for administrative costs.

The model assumes that future development will have the same costs per developed acre for debt services and administration. Staff used the same figures for schools as well. The model charges \$96.6 per developed acre for debt serves and \$176 per developed acre for administrative costs. The County would also pay \$4,302 per student. The model does not include inflation into these calculations, because the inflation would influence costs and revenues equally. The net revenue and comparisons between scenarios are the same, regardless of inflation.

Table 6: Service Cost Equations

Steps	Equations
1. Schools	Total Households x # of Students per Household = Total Students Total Students x Cost per Student = Total School Costs
2. Debt Services	Total Developed Acreage x Average Cost per Developed Acre = Total Costs
3. Administrative Services	Total Developed Acreage x Average Cost per Developed Acre = Total Costs

Growth Scenarios:

The market study and existing plans served as the basis for future growth scenarios. For a baseline, staff used trends from the previous decade to develop a control scenario. The remaining “water/sewer-line” scenarios show what could occur if the County decides to install the lines. While the market study provided credible assumptions for the future, there is still a degree of uncertainty with forecasting. To account for this uncertainty, staff provided a range of scenarios that account for lower and higher than expected growth rates.

Land Use	Growth
Residential	340 Homes
Office	10,000 ft ²
Retail/Service	488,000 ft ²
Restaurants	5,000 ft ²
Industrial	68,000 ft ²

No Water/Sewer-Line

The “no water/sewer-line” scenario shows the financial implications of forgoing the proposed water and sewer-lines. Under this scenario, the study area would develop as it did in the previous decade (*table 8*). With 24 homes, there would be 68 new residents in the study area. The 30,000 ft² of office space would create 120 new jobs. The 15,000 ft² of retail would be equivalent to a small store. There would no restaurants, but industrial growth would continue at high rates. While this scenario assumes a high growth rate for industrial, it is unlikely that this development will occur. There are a limited number of warehouses, lumber mills and recycling centers in the region. Fluvanna County will not be able to continue developing these uses. At the same time, the previous decade provides a reasonable control scenario for the next 10 years without a water or sewer-line.

Land Use	2000-2010	10-Year Projection
Residential	24 Homes	24 Homes
Office	30,000 ft ²	30,000 ft ²
Retail/Service	15,000 ft ²	15,000 ft ²
Restaurants	0 ft ²	0 ft ²
Industrial	259,702 ft ²	259,702 ft ²

Slow Growth (with Water/Sewer)

The slow growth scenario is intended to provide a conservative forecast for the 10-year planning horizon (*table 9*). The measuring stick for these scenarios is the Louisa County portion of Zion Crossroads. The slow growth scenario assumes that the study area would grow faster than it did in the past decade, but at a rate that is a fraction of what occurred in Louisa County.

Land Use	Growth
Residential	63 Homes
Office	45,000 ft ²
Retail/Service	153,000 ft ²
Restaurants	9,000 ft ²
Industrial	54,000 ft ²

Residential

This scenario anticipates 63 new housing units. The Louisa County side of Zion Crossroads added 340 housing units between 2000 and 2010. Consequently, the 63 unit forecast constitutes 19% of the growth that occurred over the county line. To provide additional perspective, the slow growth scenario equates to 169 new residents, which includes 26 new students.

Office

The slow growth scenario would add 45,000 ft² of office space. Compared to the previous 10 years, this would be a 50% increase in square footage. While this appears to be an aggressive forecast, there are two factors that support these figures as “slow growth”. First, the installation of water and sewer infrastructure would increase the rate of construction, which the market study and research supports. Second, much of Fluvanna County’s industrial development resembles office space. Over the last 10 years, there is a trend towards this “light industrial” use. The slow growth scenario assumes that this trend will continue, creating 180 new jobs from office space.

Retail/Service

The slow growth scenario anticipates 153,000 ft² of new retail and service space in the next 10 years. The market study and research reveals that retailers depend on water and sewer systems. Between 2000 and 2010, the Louisa County portion of Zion Crossroads grew by approximately 500,000 ft² in retail space. With this as a reference, the slow growth scenario equates to one third of the retail development in the Louisa County portion. 153,000 ft² of new retail and service space is equivalent to a small convenience center. This may include a grocery store with a retail anchor and several small retail stores. A large big-box store, such as a Super Wal-Mart, has over 200,000 ft². In terms of employment, the slow growth scenario would create 162 jobs.

Restaurants

The scenario anticipates 9,000 ft² for restaurant space. The average fast food establishment is approximately 3,000 square feet. An average dine-in restaurant chain requires 5,000 to 6,000 square feet. With these figures, the slow growth scenario would be equivalent to 3 fast food establishments or combination of 1 fast food and 1 dine-in restaurant.

Between 2000 and 2010, the Louisa County side of Zion Crossroads only had one dine-in restaurant, the IHOP. Since that time, several new restaurants are planned, built or under discussion. Given this demand, the slow growth scenario includes assumptions that this trend will expand into the Fluvanna County study area.

Industrial

With 54,000 ft² projected for the next 10 years, this scenario assumes that the industrial growth rate decline sharply from the past 10 years. This study anticipates four factors that will lead to this decline. First, many of the previous industrial developments are uncommon. The chances of the County finding similar opportunities are low. Second, future land uses will conflict with industrial uses. This scenario includes assumptions that residential and retail will be more prevalent in the area. According to market research in the I-64 corridor, industrial growth declines as development of these conflicting land uses occur. Third, there is a trend towards light industrial uses that resemble office space. The County’s new industrial space focused more on research, rather than warehouses or manufacturing. This trend will likely continue and result in more office than industrial growth. Fourth, Fluvanna County’s economic development efforts are focused on office and retail space, with less emphasis on industrial. This focus is present in the Comprehensive Plan and other local planning documents.

To provide additional perspective, 54,000 ft² is equivalent to 2 to 3 medium-sized warehouses. An example of a medium-sized warehouse is the Blue Ridge Mountain Sports building off Route 15. This would be one-fifth of the industrial growth experienced in this area between 2000 and 2010.

Moderate Growth (with Water/Sewer)

The moderate growth scenario is intended to provide a forecast for the 10-year planning horizon that is below expectations (*table 10*). While these growth assumptions are more optimistic than those in the “slow growth” scenario, they are still below the rates anticipated from the market study. Again, the Louisa County side of Zion Crossroads served as a main reference.

Land Use	Growth
Residential	90 Homes
Office	94,500 ft ²
Retail/Service	220,500 ft ²
Restaurants	9,000 ft ²
Industrial	54,000 ft ²

Residential

This scenario anticipates 90 new housing units. This constitutes 26% of the growth that occurred in Zion Crossroads (Louisa County), since 2000. The moderate growth scenario equates to 241 new residents, including 37 new students.

Office

The moderate growth scenario anticipates 94,500 ft² of office space. This would equate to 378 employees. Considering that the Zion Crossroads area is the major growth area in the County, it is reasonable to assume that most future employment would occur within this study area.

Retail/Service

The moderate growth scenario anticipates 220,500 ft² of new retail and service space in the next 10 years. Between 2000 and 2010, the Louisa County portion of Zion Crossroads grew by approximately 500,000 ft² in retail space. With this as a reference, the moderate growth scenario for Fluvanna County would account for less than half of the retail space developed in the Louisa County portion. This is equivalent to an average big-box store, surrounded by several smaller retailer outparcels. Alternatively, it would be roughly the same size as a large big-box retailer. The moderate scenario would result in a commercial center that is less than half the size of the “Shoppes at Spring Creek” development, located in the Louisa County portion of Zion Crossroads. In terms of employment, the moderate growth scenario would create 233 jobs.

Restaurants

This scenario anticipates 9,000 ft² for restaurant space, which is the same as the slow growth scenario. With the average figures discussed in the previous scenario, this square footage would be equivalent to 3 fast food establishments or combination of 1 fast food and 1 dine-in restaurant.

Industrial

With 54,000 ft² projected for the next 10 years, this scenario anticipates the same rate shown in the slow growth scenario. As stated under the description for that scenario, industrial growth will be limited in the future. Most of the light industrial uses will more closely resemble offices and could be included under that category.

Expected Growth (with Water/Sewer)

The expected growth scenario is intended to provide the most likely forecast for the 10-year planning horizon (*table 11*). The County's planning documents and the market study served as the basis for this scenario. The Comprehensive Plan encourages and supports these growth assumptions (*as described on page 9*). The Regional Water Supply Plan also accounts for similar growth assumptions and provides recommendations for public water systems that would meet the water supply needs from this development. While this is the expected forecast, much of the growth is still a fraction of what occurred in Louisa County over the past 10 years, as seen in the market study.

Land Use	Growth
Residential	126 Homes
Office	135,000 ft ²
Retail/Service	292,500 ft ²
Restaurants	22,500 ft ²
Industrial	63,000 ft ²

Residential

This scenario anticipates 126 new housing units. This would account for nearly 40% of the residential growth that took place on the Louisa County side of Zion Crossroads between 2000 and 2010. These 126 housing units would bring in 337 new residents to the study area, which would include 52 new students.

Office

The expected scenario would add 135,000 ft² of office space. That is equivalent to 540 employees.

Retail/Service

The scenario anticipates 292,500 ft² of new retail and service space in the next 10 years. This is the equivalent to 2 retail anchors, a grocer and several small retailers. It would also equal a commercial center that is three fourths the size of the "Shoppes at Spring Creek." In term of employment, it would create 310 jobs.

Restaurants

There would be 22,500 ft² for restaurant space in the next decade. This is equal to 3 dine-in restaurants and a fast-food establishment. There are several new restaurants are recently built or underway in the area, which would suggest there is demand for future growth.

Industrial

The expected growth scenario anticipates 63,000 ft² of industrial space. This is equivalent to 2 to 3 medium-sized warehouses *or* 1 large warehouse. An example of a large warehouse would be the Mac Steel building, located on Route 250 in Zion Crossroads.

Strong Growth (with Water/Sewer)

The strong growth scenario is intended to provide the best case scenario for the 10-year planning horizon (*table 12*). These rates are higher than expected. The market study and existing plans feed into these assumptions.

Land Use	Growth
Residential	180 Homes
Office	180,000 ft ²
Retail/Service	409,500 ft ²
Restaurants	27,000 ft ²
Industrial	63,000 ft ²

Residential

The strong growth scenario anticipates 180 new housing units by year 10. The scenario equates to 482 residents, which includes 74 students.

Office

The strong growth scenario anticipates 180,000 ft² of office space. This would equate to 720 employees.

Retail/Service

The strong growth scenario anticipates 409,500 ft² of new retail and service space in the next 10 years. This is equivalent to a regional shopping center that has 2 large big-box stores with several small retail stores. The square footage would be slightly less than the size of the “Shoppes at Spring Creek.” In terms of employment, this scenario creates 433 jobs.

Restaurants

This scenario anticipates 27,000 ft² for restaurant space. This is equivalent to 4 dine-in restaurants and a fast-food establishment or similar combination.

Industrial

With 63,000 ft² projected for the next 10 years, this scenario assumes that the industrial growth rate will decline sharply from the past 10 years. This assumption is equivalent to 2 to 3 medium-sized warehouses or a large warehouse.

Results:

According to the model, the Zion Crossroads CPA currently results in a net loss for Fluvanna County. Based on the “existing development” scenario, the County collects approximately \$1,639,811 of gross revenue from the study area. This revenue comes from real estate, property and sales taxes. Conversely, the County spends approximately \$1,977,747 in expenses for the Zion Crossroads area, paying for schools, debt services and administrative services. This results in a net loss of **-\$ 337,935** (table 13).

Revenue		Costs	
Real Estate Tax	\$ 1,401,357	School	-\$ 770,789
Property Tax	\$ 198,204	High School Debt Ser.	-\$ 427,704
Sales Tax	\$ 40,250	Administrative	-\$ 779,253
Total Revenue	\$ 1,639,811	Total Costs	-\$ 1,977,747
Total = -\$ 337,935			

The model provides detailed results for the next 10 years, in 5 different scenarios. The “No Water/Sewer-Line” scenario indicates what would occur over the next 10 years, if the County decided not to build a waterline. This scenario assumes that the Zion Crossroads area would continue developing as it had in the previous decade, from 2000 to 2010. The remaining scenarios show what would occur if the County did build the proposed water and sewer lines. The “slow growth” scenario illustrates a conservative growth estimate. The “moderate scenario” is intended to provide a lower than expected forecast. The “expected” scenario provides estimates that are consistent with the market study for the I-64 corridor and is intended to provide the most likely forecast. The “strong growth” scenario shows the results of higher than expected growth. The following table records the results of these scenarios after year 5.

Scenarios	Gross Revenue	Gross Cost	Net Revenue
No Waterline	\$ 7,417,327	-\$ 10,003,801	-\$ 2,586,474
Slow Growth	\$ 16,438,091	-\$ 16,346,267	\$ 91,824
Moderate Growth	\$ 17,321,799	-\$ 16,461,695	\$ 860,104
Expected Growth	\$ 18,772,297	-\$ 16,695,620	\$ 2,076,676
Strong Growth	\$ 20,521,385	-\$ 16,974,296	\$ 3,547,088

After year 5, there is a clear difference between the scenarios (table 14). The “No Water/Sewer-Line” scenario would have net revenue of -\$2,586,474. At year 5, the slow growth scenario still shows positive net revenue of \$91,824. The remaining scenarios indicate positive net revenue as well. After year 10, the “no water/sewer-line” scenario has net revenue of -\$4,792,763. All of the remaining scenarios have positive net revenue (table 15).

Table 15: Year 10 Cumulative Revenues/Costs			
Scenarios	Gross Revenue	Gross Cost	Net Revenue
No Waterline	\$ 15,502,507	-\$ 20,295,270	-\$ 4,792,763
Slow Growth	\$ 36,174,012	-\$ 34,167,189	\$ 2,006,823
Moderate Growth	\$ 40,096,505	-\$ 34,763,989	\$ 5,332,516
Expected Growth	\$ 45,381,034	-\$ 35,678,978	\$ 9,702,056
Strong Growth	\$ 52,445,081	-\$ 36,890,570	\$ 15,554,511

**Annual Cumulative Net Revenue:
10-Year Horizon**

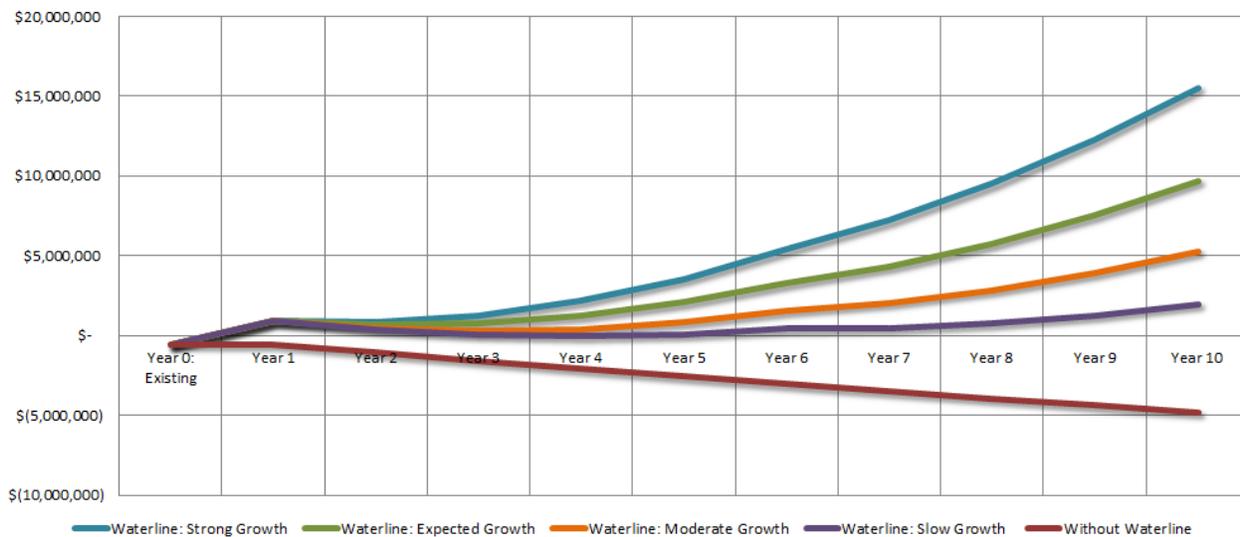


Figure 6: Annual Cumulative Net Revenue (10-Year Horizon)

The line graph (figure 6), illustrates the scenario results over the 10-year planning horizon. Each scenario begins with the snapshot of current day, -\$337,935. The graph illustrates the cumulative net revenue, as opposed to the annual net revenue. Cumulative revenue shows the total costs and revenues from the current and previous years combined. This format shows the total financial impact on Fluvanna County.

Several factors contribute to the shape of the line graphs. The waterline/sewer-line scenarios show a sharp increase in year 1. The connect fees from existing businesses and water/sewer usage fees contribute to this increase. All of the existing businesses connect to the system in year 1, along with one tenth of the existing residences. The availability fee also contributes to the shape of the graph. From year 1 through year 6, the County would collect \$500,000 per year, via contracts with other jurisdictions and/or developers. The slope of the lines decreases in the graph, starting at year 7. This is due to the availability fee.

The following tables (table 16-20) show a more detailed breakdown of the results. Under each scenario is a record of gross costs, gross revenue, annual net revenue and cumulative net revenue for each year.

No Water/Sewer-Line

Table 16: Detailed Results for No Water/Sewer-Line Scenario

Year	Gross Revenue	Gross Cost	Annual Net Revenue	Cumulative Net Revenue
Year 0	\$1,639,811	-\$1,977,747	-\$337,935	-\$337,935
Year 1	\$ 1,430,037	-\$ 1,977,747	-\$ 547,709	-\$ 547,709
Year 2	\$ 1,456,751	-\$ 1,989,253	-\$ 532,502	-\$ 1,080,211
Year 3	\$ 1,483,465	-\$ 2,000,760	-\$ 517,295	-\$ 1,597,506
Year 4	\$ 1,510,180	-\$ 2,012,267	-\$ 502,087	-\$ 2,099,593
Year 5	\$ 1,536,894	-\$ 2,023,774	-\$ 486,880	-\$ 2,586,474
Year 6	\$ 1,563,608	-\$ 2,035,280	-\$ 471,673	-\$ 3,058,146
Year 7	\$ 1,590,322	-\$ 2,046,787	-\$ 456,465	-\$ 3,514,611
Year 8	\$ 1,617,036	-\$ 2,058,294	-\$ 441,258	-\$ 3,955,869
Year 9	\$ 1,643,750	-\$ 2,069,801	-\$ 426,051	-\$ 4,381,920
Year 10	\$ 1,670,464	-\$ 2,081,307	-\$ 410,843	-\$ 4,792,763

Slow Growth

Table 17: Detailed Results for Slow Growth Scenario

Year	Gross Revenue	Gross Cost	Annual Net Revenue	Cumulative Net Revenue
Year 0	\$1,639,811	-\$1,977,747	-\$337,935	-\$337,935
Year 1	\$ 4,096,045	-\$ 3,168,588	\$ 927,457	\$ 927,457
Year 2	\$ 2,664,954	-\$ 3,204,498	-\$ 539,544	\$ 387,913
Year 3	\$ 2,945,326	-\$ 3,264,446	-\$ 319,120	\$ 68,793
Year 4	\$ 3,225,697	-\$ 3,324,394	-\$ 98,696	-\$ 29,904
Year 5	\$ 3,506,069	-\$ 3,384,341	\$ 121,728	\$ 91,824
Year 6	\$ 3,786,441	-\$ 3,444,289	\$ 342,152	\$ 433,976
Year 7	\$ 3,566,812	-\$ 3,504,237	\$ 62,576	\$ 496,552
Year 8	\$ 3,847,184	-\$ 3,564,184	\$ 283,000	\$ 779,551
Year 9	\$ 4,127,556	-\$ 3,624,132	\$ 503,424	\$ 1,282,975
Year 10	\$ 4,407,927	-\$ 3,684,080	\$ 723,848	\$ 2,006,823

Moderate Growth

Table 18: Detailed Results for Moderate Growth Scenario

Year	Gross Revenue	Gross Cost	Annual Net Revenue	Cumulative Net Revenue
Year 0	\$1,639,811	-\$1,977,747	-\$337,935	-\$337,935
Year 1	\$ 4,096,045	-\$ 3,168,588	\$ 927,457	\$ 927,457
Year 2	\$ 2,790,434	-\$ 3,220,280	-\$ 429,847	\$ 497,610
Year 3	\$ 3,050,697	-\$ 3,239,959	-\$ 189,262	\$ 308,348
Year 4	\$ 3,511,936	-\$ 3,392,498	\$ 119,438	\$ 427,786
Year 5	\$ 3,872,687	-\$ 3,440,370	\$ 432,318	\$ 860,104
Year 6	\$ 4,233,439	-\$ 3,513,733	\$ 719,706	\$ 1,579,810
Year 7	\$ 4,094,190	-\$ 3,587,096	\$ 507,094	\$ 2,086,904
Year 8	\$ 4,454,941	-\$ 3,660,459	\$ 794,482	\$ 2,881,387
Year 9	\$ 4,815,692	-\$ 3,733,822	\$ 1,081,871	\$ 3,963,257
Year 10	\$ 5,176,444	-\$ 3,807,185	\$ 1,369,259	\$ 5,332,516

Expected Growth

Table 19: Detailed Results for Expected Growth Scenario

Year	Gross Revenue	Gross Cost	Annual Net Revenue	Cumulative Net Revenue
Year 0	\$1,639,811	-\$1,977,747	-\$337,935	-\$337,935
Year 1	\$ 4,096,045	-\$ 3,168,588	\$ 927,457	\$ 927,457
Year 2	\$ 2,984,835	-\$ 3,243,454	-\$ 258,619	\$ 668,838
Year 3	\$ 3,440,987	-\$ 3,335,657	\$ 105,330	\$ 774,168
Year 4	\$ 3,897,139	-\$ 3,427,860	\$ 469,279	\$ 1,243,448
Year 5	\$ 4,353,291	-\$ 3,520,063	\$ 833,229	\$ 2,076,676
Year 6	\$ 4,809,443	-\$ 3,612,266	\$ 1,197,178	\$ 3,273,854
Year 7	\$ 4,765,595	-\$ 3,704,469	\$ 1,061,127	\$ 4,334,981
Year 8	\$ 5,221,748	-\$ 3,796,672	\$ 1,425,076	\$ 5,760,057
Year 9	\$ 5,677,900	-\$ 3,888,875	\$ 1,789,025	\$ 7,549,082
Year 10	\$ 6,134,052	-\$ 3,981,078	\$ 2,152,974	\$ 9,702,056

Strong Growth

Table 20: Detailed Results for Strong Growth Scenario

Year	Gross Revenue	Gross Cost	Annual Net Revenue	Cumulative Net Revenue
Year 0	\$1,639,811	-\$1,977,747	-\$337,935	-\$337,935
Year 1	\$ 4,096,045	-\$ 3,168,588	\$ 927,457	\$ 927,457
Year 2	\$ 3,213,533	-\$ 3,274,151	-\$ 60,618	\$ 866,839
Year 3	\$ 3,808,734	-\$ 3,392,335	\$ 416,399	\$ 1,283,239
Year 4	\$ 4,403,935	-\$ 3,510,519	\$ 893,416	\$ 2,176,655
Year 5	\$ 4,999,136	-\$ 3,628,703	\$ 1,370,433	\$ 3,547,088
Year 6	\$ 5,594,337	-\$ 3,746,887	\$ 1,847,450	\$ 5,394,539
Year 7	\$ 5,689,538	-\$ 3,865,071	\$ 1,824,468	\$ 7,219,006
Year 8	\$ 6,284,739	-\$ 3,983,255	\$ 2,301,485	\$ 9,520,491
Year 9	\$ 6,879,940	-\$ 4,101,439	\$ 2,778,502	\$ 12,298,993
Year 10	\$ 7,475,141	-\$ 4,219,623	\$ 3,255,519	\$ 15,554,511

Appendix:

Proposal to Provide Water Service & a Sewer Collection System to Zion Crossroads



Aqua Virginia, Inc.
2414 Granite Ridge Rd.
Rockville, VA 23146

T: (804) 749-8868
F: (804) 749-8002
www.aquaamerica.com

May 4, 2012

BY HAND DELIVERY

Mr. Steven M. Nichols, County Administrator
Fluvanna County Office Building, Main Street
P. O. Box 540
Palmyra, Virginia 22963

Re: **Proposal to Provide Water Service & a Sewer
Collection System to Zion Crossroads**

Dear Mr. Nichols:

On behalf of Aqua Virginia, Inc., we are pleased to provide this proposal to initiate the approval process pursuant to Virginia Code §56-575.4(A) of the Public-Private Educational Facilities Infrastructure Act (PPEA).

Please let us know the amount of your proposal review fee, if any, and we will promptly provide it to you.

As required by the Section VI.A of the County of Fluvanna Amended and Restated Guidelines and Procedures and by the applicable provisions of the PPEA, we are enclosing the following items for your consideration in reviewing this proposal:

QUALIFICATION AND EXPERIENCE

Legal Structure of Aqua: Aqua Virginia, Inc., a Virginia corporation, is a subsidiary of Aqua America, Inc., one of the nation's largest investor owned water and wastewater utilities that serves approximately 3,000,000 residents in 13 states (hereinafter, "Aqua").

Experience & Organizational Aspects of Project: We have been in business since 1886 and have a proven track record of making the necessary capital investments to ensure environmentally safe and reliable services wherever we operate. Aqua owns and operates over 140 water and sewer systems throughout Virginia and serves over 27,000 customers. Aqua is no stranger to Fluvanna County. In fact, one of Aqua America, Inc.'s affiliates, Aqua Resources, Inc., is among the top four taxpayers in Fluvanna County. (See: County Comprehensive Plan, page 146.) In addition, we have extensive experience in the construction and management of water treatment and wastewater treatment facilities, including the lines and facilities necessary for their operation.

For purposes of the organizational structure of the proposed project, Aqua would be solely responsible for constructing the water and wastewater facilities, either directly or through the use of its own subcontractors. From a management perspective, it is anticipated that all subcontractors shall be solely responsible to Aqua with respect to project implementation.

We have engaged in numerous projects that are comparable to this proposal. For example, since 2004, Aqua Virginia, Inc. has spent over 52 million in capital improvements to water and sewer systems, upgrading Lake Monticello's WWTP from 0.6 to 0.775 MGD, constructing a 3 MGD settling basin at the Lake Monticello's water plant, and overall at Aqua America, capital spending was 330 million in 2011 which included many miles of new water mains. The key personnel managing this project would be Clifton L. Parker, IV, P.E., Director Corporate Development & Engineering, and Tim E. Castillo, Area Manager.

We anticipate that the engineering and design work for the project will be handled by Thomas Davis Rust, P.E., PHR+A, a Pennoni Company, 14532 Lee Road, Chantilly, Virginia 20151. The construction firms for the project could likely be one of the following companies, depending upon bidding responses and availability:

W.C. Spratt, Pete Strychowski
PO Box 824
Fredericksburg, VA 22404

KP Glass, Chris Simms
2423 Granite Ridge Road
Rockville, Virginia 23146

WCC Cable, Tim Rioux
4809 Ewell Road
Fredericksburg, Virginia 22408

To the extent that completion guarantees are negotiated, it is likely that the following bonding company will be engaged by Aqua: Traveler's Casualty and Surety Company of America.

Contact Information: The names and addresses of the persons who may be contacted for further information concerning this proposal are as follows:

Clifton L. Parker, IV, P.E., Director Corporate Development & Engineering
2414 Granite Ridge Road
Rockville, Virginia 23146
(804) 310-0398 / Email: CLParkerIV@aquaamerica.com

Financial Statement: For your consideration, we are enclosing our most recently audited financial statements shown in the 2011 Annual Report.

Conflict of Interests: To the best of my information and belief, there are no persons who would be voting upon the merits of this project as a County officer who would have to disqualify himself or herself from participation in any transaction arising from or in connection with the project pursuant to the Virginia State and Local Government Conflict of Interest Act.

PROJECT CHARACTERISTICS

Project Conceptual Maps: We have enclosed two topographic maps entitled, "AQUA VIRGINIA, INC., **Exhibit A**, Concept Drawing Proposed Route from L.M. to Zion Crossroads," dated March 9, 2012, indicating the location of the qualifying project as well as **Exhibit B**, entitled, "AQUA VIRGINIA, INC., **Exhibit B**, Concept Drawing, Proposed Route from Prison to Zion Crossroads" dated March 9, 2012.

Description of the Water Project: Aqua proposes to construct a potable water line from Lake Monticello's water plant that will extend approximately 8.5 miles, as shown on the attached Exhibit A, to approximately the Route 15 and Route 250 intersection ("Water System"). The Water System shall include, but not be limited to, the pipe, easements and right of ways, pumps, storage tanks, meters, hydrants, all appurtenances associated with water supply, and infrastructure installed as part of the construction, operation, maintenance, and replacement of the System.

The general terms and assumptions for the Water System are as follows:

- a. The Department of Corrections will be the initial customer using water in the amount of approximately 120,000 gallons per day ("GPD").
- b. An Aqua affiliated company shall design, permit, construct, own, operate, and maintain the Water System at its sole cost and expense.
- c. Fluvanna County shall be responsible for securing and administering all of its customers and its service territory served by Aqua's waterline.
- d. Fluvanna County, at its sole discretion, will establish water connection fees and rates, and collect those monies.
- e. Aqua, through its affiliate, will provide up to 500,000 GPD of capacity in the Water System to Fluvanna County.
- f. Aqua shall prepare and submit the proposed engineering report to the Virginia Department of Health for the System.

g. Aqua and Fluvanna County will jointly coordinate the construction project for the Water System and Sewer System, easement acquisition, design, bidding, construction, and start-up of the System at Aqua's expense estimated at \$9,061,340.00, with the understanding that if the total project bid plus other costs, including, but not limited to, "soft costs," exceed 20% of the estimate, Aqua may suspend the project, with the option of making changes and re-bidding.

h. Fluvanna County will take a dominant role along with Aqua in acquiring any needed easements on behalf of the Water System and Sewer System. County staff efforts on this project will be at the County's expense.

i. Aqua will supply the Water System with water, operate the Water System, process Miss Utility tickets, read Fluvanna County's customer's meters serviced by Aqua's Water System, and supply the meter readings to Fluvanna County monthly.

j. Fluvanna County will make taps to the Water System and Sewer System and be responsible for its metered connections and service lines.

k. Aqua shall inspect and approve all taps to the water main for a nominal fee that will be negotiated by the parties.

l. Aqua shall meter all flow into the water main from Lake Monticello's water plant.

m. Fluvanna County shall be responsible for an annual payment of \$950,000.00 per year for the Water System, subject to annual increases based upon the Consumer Price Index ("CPI") that governs the greater Charlottesville, Virginia area. The annual payment is estimated based on a \$9,061,340.00 project cost, which includes right-of-way acquisition fees, and shall entitle Fluvanna County to 127,000 GPD of flow for no additional charge. For any usage over the 127,000 GPD, Fluvanna County shall be responsible for the payment of \$2.95 per thousand gallons, subject to annual increases based upon the CPI. In the event that the acquisition cost of the necessary right-of-ways and the project is more or less than estimated, the annual payment and the commodity based payment will be re-calculated.

n. The terms of the water agreement for the Water System between Fluvanna County and Aqua shall be 20 years, or such other term as may be mutually agreeable. At the end of 20 years, the agreement may be renewed or cancelled upon mutual agreement of the parties. Upon completion of the terms of the agreement, Fluvanna County may purchase the system from Aqua for the remaining net plant value, also called undepreciated asset cost, of the Water System.

Description of the Sewer Project Also, Aqua, through its affiliate, agrees to design, build, install, own, and operate a sewer collection system (hereinafter, the "Sewer System") for the Rt. 250 economic development corridor. The Sewer System shall discharge to the Virginia Department of Corrections ("DOC") facility near Zion Crossroads, subject to an

Agreement with the County and DOC that Fluvanna County will be responsible for negotiating. The DOC, and any other customers, will be billed a metered rate based on their water usage by the county using the available water meter reading data provided by Aqua. The Sewer System will generally consist of 15,000 feet of line to the DOC's wastewater plant. It is anticipated that the Sewer System will be a low pressure system that will require that all customers install, own, maintain, and replace an individual grinder pump at the individual customer's expense. Fluvanna County shall be responsible for a monthly payment to Aqua of \$7,908.00 (\$94,900.00 per year), subject to annual increases based upon the Consumer Price Index ("CPI") that governs the greater Charlottesville, Virginia area. This monthly minimum payment shall entitle Fluvanna County to 4,000 gallons per day of flow for no additional charge. For any usage over the 4,000 gallons per day, up to the DOC plant's capacity to accept flows estimated at 150,000 GPD, Fluvanna County shall be responsible for the payment of \$0.10 per thousand gallons. A 20 year agreement with a renewal option and similar terms outlined above shall be defined in a definitive sewer agreement.

Work to be Performed by Fluvanna County: Except to the extent described above, it is not anticipated that Fluvanna County will be performing any work. However, it will be essential that Fluvanna County enter into appropriate agreements with the Department of Corrections as previously described and that the County facilitate easement acquisition as follows:

Easement Acquisition: Aqua proposes to secure necessary easements or other property interests by directly negotiating with affected property owners through Aqua's own employees and/or agents. In the event that such good faith negotiations are unsuccessful, then Fluvanna County would exercise its powers under eminent domain to acquire such necessary easements or other property interests, and Aqua would be responsible for paying the costs of the same, provided that such costs are within the \$9,061,340.00 budgetary amount set forth in subparagraph (g) & (m) above. In the event that the estimated or actual costs of acquiring such easements or other property interests, including the costs associated with attorney fees, appraisal and other litigation related costs, cause the overall project budget to exceed the \$9,061,340.00 amount, then Aqua reserves the right to withdraw from the project without incurring further expenses.

Required Permits & Approvals: The following is a list of all federal, state and local permits and approvals required for the proposed project from local, state, or federal agencies and a projected schedule for obtaining such permits and approvals:

1. Virginia Department of Health (VDH), Construction Permit for Watermain Extension and Issuance of New PWSID for the Water System to Zion Crossroads, estimated schedule is four months to acquire permit.
2. VDOT Permit, for water and sewer lines to be installed along the public right of way on Rt.250, estimated four months.

3. Army Corps of Engineers & Department of Environmental Quality, Joint Permit, to Cross Rivanna River, estimated time four months.
4. Fluvanna County Erosion and Sediment Control Permit, estimated time, two months.
5. Private Easements, estimated time, six to twelve months.

Anticipated Social, Economic and Environmental Impacts: We believe that the proposed project provides the opportunity for enhanced social, economic and environmental gains for Fluvanna County. The Water System and the Sewer System offer significant social and economic opportunities for the County by providing a safe and reliable water source and wastewater treatment facility for economic development in and about the Zion Crossroads area. Such economic development will provide potential jobs for County citizens as well as provide enormous potential for an enhanced tax base for the County, including, real estate taxes, machinery and tools taxes and general business taxes. Both the Water System and the Sewer System will utilize state of the art equipment and methodologies that will more than adequately protect the environment. No adverse social, economic and environmental matters are anticipated.

Proposed Schedule for Work: For purposes of scheduling the project, it is anticipated that the date for initiating the project would be no later than 30 days after the definitive agreement is executed and the County indicates it is ready for Aqua to begin engineering and survey work, and that completion of the project is estimated to be completed within twelve to eighteen months, subject to easements and regulatory approvals.

Risk Allocation and Liability for Work Completion: The risks associated with the timely completion of the proposed project is minimal for both Fluvanna County and Aqua due to the fact that the County will control, through its negotiations with DOC, the timing of the completion of the project and the commencement of delivery of services. With this being the case, the County is in the position to fully protect both parties in this regard.

Assumptions Relating to Ownership, Legal Liability & Operations: For a summary of these matters, please refer to the above section entitled “**Description of the Water & Sewer Project.**”

Phasing of Project Openings: It is not presently anticipated that the project will be phased with respect to the completion dates and delivery of services. However, the timing of bringing the Water System and the Sewer System on line at varied periods is certainly feasible and is a matter for detailed discussion in the negotiation of any interim or comprehensive agreement between the parties. Initially, the water system will be built and serve DOC and the sewer system will likely be built later after appropriate customers have been identified by Fluvanna County.

Assumptions and Contingencies: The two critical assumptions and contingencies that affect the project are as follows: (1) Fluvanna County will need to negotiate an appropriate user agreement with DOC that is satisfactory to the County and Aqua; and, (2) The County will need to assist in the acquisition of all required easements that cannot be obtained by Aqua.

PROJECT FINANCING

Estimated Cost of Project & Cost Estimate Methodology: We estimate that the Water System will cost approximately \$9,061,341.00, and that the Sewer System will cost approximately \$ 900,000.00. Our methodology in estimating costs is based upon the length of the lines and related facilities as compared to the costs that we have typically experienced on comparable projects.

Aqua intends upon financing the project by using its access to capital through public markets as well as using income from continuing operations. Aqua has no financing contingency for this project. As specified in the attached Annual Report, Aqua's 2011 annual revenues were 711 million dollars which is more than sufficient to meet the expenditures needed for this project.

- *Submit a plan for the development, financing, and operation of the project showing the anticipated schedule on which funds will be required. Describe the anticipated costs of and proposed sources and uses for such funds including any anticipated debt service costs. The operational plan should include appropriate staffing levels and associated costs. Include supporting due diligence studies, analyses, or reports.*

As funds are required for the project, Aqua will have those funds immediately available. Aqua has ample staffing and has no financing contingency for this project.

- *Include a list and discussion of assumptions underlying all major elements of the plan. Assumptions should include all significant fees associated with financing given the recommended financing approach. In addition complete disclosure of interest rate assumptions should be included. Any ongoing operational fees, if applicable, should also be disclosed as well as any assumptions with regard to increases in such fees.*

Aqua has no financing contingency for this project.

- *Identify the proposed risk factors and methods for dealing with these factors.*

Aqua has no financing contingency for this project.

- *Identify any local, state, or federal resources that the proposer contemplates requesting for the project. Describe the total commitment, if any, expected from governmental sources and the timing of any anticipated commitment. Such disclosure*

should include any direct or indirect guarantees or pledges of the County's credit or revenue.

There are no local, state, or federal resources required for this project. Aqua has no financing contingency for this project.

- *Identify the amounts and the terms and conditions for any revenue sources.*

Revenues from the utility system will be paid to the county according to rates which will be set by the county. Aqua has no financing contingency for this project.

- *Identify any aspect of the project that could disqualify the project from obtaining tax-exempt financing.*

No application for tax exempt financing is required. Aqua has no financing contingency for this project.

PROJECT BENEFIT & COMPATIBILITY

Beneficiaries of the Project: We believe that the proposed project provides tremendous economic benefits for Fluvanna County, as well as the general region. The Water System and the Sewer System offer substantial economic benefits for the County by providing a safe and reliable water source and wastewater treatment facility for economic development in and about the Zion Crossroads area. Such economic development will provide potential jobs for County and area citizens as well as provide enormous potential for an enhanced tax base for the County, including, real estate taxes, machinery and tools taxes and general business taxes. Both the Water System and the Sewer System will utilize state of the art equipment and methodologies that will more than adequately provide the environment. The DOC also will benefit from the project through the availability of an improved wastewater system.

Support for the Project: It is anticipated that area property owners should strongly support the project in light of the fact that it will provide significant economic development opportunities for all the properties in the area through the provision of a reliable water and wastewater system. In addition, the State should be quite supportive due to the benefits accruing to the local DOC facility. At the present time, we are not aware of any opposition to the proposed project.

Informing the General Public: Aqua is committed to working with the County to have community informational meetings and other appropriate public notices to inform the general public and the business community of the nature of the project and its anticipated benefits.

Benefits to County, Community & Region: Please refer to “Support for Project” above. In addition, the Zion Crossroads area has a vast potential for commercial development. However, without the availability of water and sewer, the potential will not be fully realized. Our project provides reliable water and sewer service to this area of the County and will allow the properties to reach their highest and best use from a commercial development standpoint. The DOC also will benefit from the project as it will not have to replace its aging water plant and will be able to sell its excess sewer plant capacity to further enhance the cost efficiency of the facility to the benefit of Virginia.

Compatibility with the County Comprehensive Plan: The County Comprehensive Plan has the following vision for the Zion Crossroads area: “The Zion Crossroads area is the primary commercial node, with primarily retail and office uses, but also light industrial and mixed-use, mixed-income residential development.” (Page 136 of the County Comprehensive Plan.) The following uses are encouraged in this part of the County: Large/Medium/Small Commercial Offices; Civic; Multi-Family Residential; Regional Mixed-Use; Regional Employment; and, Neighborhood Mixed-Use. (See: “Summary of Community Planning Areas,” updated April 2012.) Our proposed project furthers this vision and each of the aforementioned uses by providing the water and sewer infrastructure needed to allow this area to reach its full potential. Currently, it is our understanding that neither the County capital improvements budget, nor any other government spending plan will provide for the implementation of this needed water and sewer infrastructure. Accordingly, our proposal under the PPEA will allow the County to attain the type of commercial growth envisioned by the Comprehensive Plan.

Minority Owned Businesses: Aqua is committed to encouraging opportunities for minority-owned businesses, woman-owned businesses, and small businesses in general, and is willing to work with the County to further these goals on the proposed project.

MISCELLANEOUS MATTERS

The County’s Plans for Development of Similar Facilities: Aqua is not aware of any plans of development that Fluvanna County may have for projects similar to the one that we are now proposing. Accordingly, we believe that this project will provide the County with a unique opportunity to address its water and wastewater needs.

Public Utility Crossings: The following is a list of public utility facilities that will be crossed by the proposed project along with our plans to accommodate such crossings:

Directionally drilling under state waters requires a permit as identified in Required Permits and Approvals above. Additionally, new mains along public right of ways require VDOT permits.

User Fees: User fees and other service payments over the term of the anticipated interim or comprehensive agreement pursuant to Virginia Code §56-575.9 or 56-575.9:1 and

the methodology and circumstances for changes to such user fees and other service payments over time are as hereinbefore set forth.

In connection with your consideration of our proposal, we ask that the Board of Supervisors take the following actions:

- Please determine whether to accept our proposal in accordance with the requirements of Virginia Code §56-575.16. In so doing, we would appreciate it if you would take formal Board action to determine that the project (including both the Water System and Sewer System) serves a public purpose under the standards provided in Virginia Code §56-575.4(C).
- In the event that you wish to approve moving forward with this proposal, please establish a date for the commencement of activities related to the project pursuant to Virginia Code §56-575.4(F). Of course, you may extend such date from time to time, as needed.
- Please comply with the requirements under Virginia Code § 56-575.17 regarding the posting requirements, public comment and public access to the applicable records as the same relate to our conceptual proposal.

Please note that our proposal is subject to and conditioned upon our being able to successfully negotiate a mutually acceptable interim or comprehensive agreement with Fluvanna County under Virginia Code pursuant to §56-575.9.

We look forward to the opportunity of working with you and serving your community. Should you need any additional material or information, please contact either me or Clifton Parker, IV, P.E., of my staff at (804) 749-8868 x12 (office), (804) 310-0398 (cell), or CLParkerIV@aquaamerica.com.

Sincerely,


Shannon V. Becker, Interim Vice
President & Chief Operating Officer
Aqua Virginia, Inc.

Cc: Shaun V. Kenney, Chairman
Fluvanna County Board of Supervisors

PLEASE ACKNOWLEDGE RECEIPT OF THIS PROPOSAL BY SIGNING BELOW AND PROVIDING AQUA WITH A SIGNED COPY:

This letter proposal was received by Fluvanna County, Virginia, on this ___ day of May, 2012 at _____ a.m. / p.m.

By: _____

RECEIVED
MAY 8 2012
12:42 pm
Fluvanna County