1.0 Background ..... **Page 1**

2.0 Purpose & Need for the Project ..... **Page 1**
- **2.1 Project Description** ..... **Page 1**
- **2.2 Purpose & Need for the Project** ..... **Page 2**

3.0 Project Funding & Fiscal Impacts ..... **Page 4**
- **3.1 Project Funding** ..... **Page 4**
- **3.2 Annual Fiscal Impact** ..... **Page 4**
- **3.3 Impact to Utility Rates** ..... **Page 5**

4.0 Alternatives to the Proposed Project ..... **Page 5**
- **4.1 Alternative No. 1** ..... **Page 5**
- **4.2 Alternative No. 2** ..... **Page 6**
- **4.3 Alternative No. 3** ..... **Page 8**

5.0 Environmental Impacts ..... **Page 9**
- **5.1 Va. Department of Transportation** ..... **Page 10**
- **5.2 Va. Department of Historic Resources** ..... **Page 10**
- **5.3 Va. Marine Resources Commission** ..... **Page 11**
- **5.4 New Kent Wetlands Board** ..... **Page 12**
- **5.5 Va. Department of Game & Inland Fisheries** ..... **Page 12**
- **5.6 Va. Department of Conservation & Recreation** ..... **Page 13**
- **5.7 Unites States Army Corps of Engineers** ..... **Page 13**
- **5.8 Va. Department of Agriculture & Consumer Services** ..... **Page 15**
- **5.9 Unites States Fish & Wildlife Service** ..... **Page 15**
- **5.10 Va. Department of Environmental Quality** ..... **Page 16**
- **5.11 Unites States Department of Agriculture** ..... **Page 18**

6.0 Miscellaneous Impacts ..... **Page 19**
- **6.1 Socio-Economic Impacts** ..... **Page 19**
- **6.2 Air Quality Impacts & Odors** ..... **Page 19**
- **6.3 Noise Impacts** ..... **Page 20**
- **6.4 Floodplain Impacts** ..... **Page 21**
- **6.5 Water Quality Impacts** ..... **Page 21**
- **6.6 Aesthetics & Visual Impacts** ..... **Page 21**
- **6.7 Coastal Zone Impacts** ..... **Page 22**
- **6.8 Transportation Impacts** ..... **Page 22**

7.0 Summary of Mitigation Efforts ..... Page 22
7.1 Mitigation of Fiscal Impacts & Utility Rate Increases ..... Page 22
7.2 Mitigation of Transportation Impacts ..... Page 23
7.3 Mitigation of Water Quality Impacts ..... Page 23
7.4 Mitigation of Socio-Economic Impacts ..... Page 23
7.5 Mitigation of Air Quality Impacts ..... Page 24
7.6 Mitigation of Impacts to Residents Along the Project Route ..... Page 24

8.0 Conclusions & Recommendations ..... Page 24

FIGURES

New Kent County Water Service Area Map ..... Figure 1
Project Area Map ..... Figure 2
Project Area Zoning Map ..... Figure 3
Project Area FEMA Floodplain Map ..... Figure 4

APPENDICES

VDH Engineering Description Sheets ..... Appendix A
VDH Site Visit Letter ..... Appendix B
Project Financing Information ..... Appendix C
EDR *NEPACheck* ® ..... Appendix D
VDOT Review Request & Responses ..... Appendix E
VDHR Review Request & Responses ..... Appendix F
VMRC Review Request & Responses ..... Appendix G
New Kent Wetlands Board Review Request & Responses ..... Appendix H
DGIF Review Request & Responses ..... Appendix I
DCR Review Request & Responses ..... Appendix J
USACE Review Request & Responses ..... Appendix K
VDACS Review Request & Responses ..... Appendix L
USFWS Review Request & Responses ..... Appendix M
DEQ Review Request & Responses ..... Appendix N
NRCS Review Request & Responses ..... Appendix O

END OF TABLE OF CONTENTS

1.0 BACKGROUND

New Kent County is a small rural community located between the population centers of Richmond and Newport News, Virginia. The primary industry in New Kent County is agriculture. The County has an approximately population of 19,500 and an average household size of 2.62 persons (June 2013).

New Kent County is entirely groundwater dependent for its potable water supplies. Two reservoirs located within the County (Diascund Reservoir and Chickahominy Lake) are owned and operated by Newport News Waterworks. The County provides public utility services, in the form of public water and/or sewer, to approximately 2,400 customers, roughly equivalent to 6,300 persons, or approximately one-third of the County's population. New Kent County operates 13 separate public water systems, with groundwater supplied directly from 25 production wells. Individual well production rates range from less than 40 gpm (gallons per minute) to over 1,200 gpm. Despite system ages which range up to 40 years old, the systems are well maintained, and no deficiencies have been reported during recent Virginia Department of Health water system inspections. Figure 1 is a New Kent County Map showing Water Service Areas.

Through various groundwater withdrawal permits, as well as the 2010 Water Supply Planning process, the Virginia Department of Environmental Quality (DEQ) has been pressing New Kent County Public Utilities towards alternate supplies of potable and non-potable water, in order to alleviate stress on the potable aquifers of the Virginia Coastal Plain. A reclaimed water system has since been established to provide up to 40 million gallons per year of treated wastewater effluent for turf irrigation at two golf courses and the Colonial Downs Racetrack. Additional sources of water supply identified include surface water intakes on the Pamunkey or Chickahominy Rivers, surface water withdrawal from abandoned sand & gravel pits located within the County, or bulk water purchases from Newport News, Henrico County or the City of Richmond.

Regardless of the source of future water supply, it is clear that centralization of New Kent County's water infrastructure is the critical first step in the process of moving from groundwater dependency to an alternate supply of potable water.

2.0 PURPOSE & NEED FOR THE PROJECT

2.1 Project Description

The proposed project is to connect the Kenwood/Greenwood and Quinton Estates water systems to the larger capacity and more reliable Farms of New Kent water system. This will provide a single, unified water system to serve the neighborhoods of Farms of New Kent, Kenwood Farms, Greenwood Estates, Deerlake and Quinton Estates. A Preliminary Engineering Report (PER) has been prepared by the County's engineer and submitted to VDH under separate cover. The PER outlines the general details of the proposed project, including: route, line size and estimated cost of the project.

The proposed project includes:

- Extension of approximately 5,200 feet of 12-inch water line west from Watkins Elementary School (6501 New Kent Highway) to the Route 249/612 intersection along the south shoulder of Route 249 (New Kent Highway).
- Extension of approximately 4,000 feet of 8-inch water line from the Route 249/Route 612 (Airport Road) intersection south to the Route 612/Route 1330 (Quinton Estates Drive) intersection. Due to existing features and topography, the waterline will be installed on the east shoulder of Route 612 from the Route 249 intersection to 8485 Airport Road, crossing (via bore) to the west shoulder of Route 612 and continuing to 8430 Airport Road, crossing (via bore) to the east shoulder and continuing to Quinton Estates Drive, where it will connect to existing water lines.
- 12-inch waterline crossing of Route 249 (via bore) at 5700 New Kent Highway and continuing approximately 3,400 feet north along the east side of Route 612 (Tunstall Road) to 9200 Tunstall Road, leaving the right-of-way and continuing approximately 400 feet within existing utility easement to 9200 Deerlake Drive, and connecting to existing 8-inch waterline at 9200 Deerlake Drive. Approximately 3,200 feet of existing 6-inch and 8-inch waterline will be replaced from 8735 Tunstall Road to 9200 Deerlake Drive.

A Project Area Map is included as Figure 2. The project will be performed predominantly within VDOT rights-of-way, existing utility easements or on County-owned property. A permanent utility easement of approximately 3,000 square feet will be required at the northeast intersection of Route 249 and Route 612. Additional temporary construction easements will be necessary to accommodate road crossings.

Project coordination with Virginia Department of Transportation (VDOT) construction of a roundabout at the intersection of Route 249 and Route 612, has already been established. VDOT's current construction schedule shows construction of the roundabout beginning between July 1, 2014 and July 1, 2015.

A site visit was performed with Fabiola Helfer and Barry Matthews of VDH on May 6, 2013, to observe existing conditions and identify any obvious environmental impacts which may require further consideration. A copy of the site visit letter from VDH is included as Appendix B.

2.2 Purpose & Need for the Project

The purpose of the proposed project is to increase water service reliability for over 400 existing New Kent County Department of Public Utilities (DPU) water customers in the Quinton area and create operational efficiency by interconnecting the existing Kenwood/Greenwood and Quinton Estates Water Systems with the existing Farms of New Kent Water System. The project will benefit the County's asset management efforts by eliminating annual operation and maintenance costs on five water pumping stations including:

- SCADA system, including monthly phone service,
- (5) wells & submersible well pumps/motors,
- (6) booster pumps/motors,
- (2) emergency generators, including transfer switches and fuel for self-testing & power outages,
- (4) hydropneumatic pressure tanks,
- (3) water storage tanks comprising a total volume of 125,000 gallons.

Current information on the water systems involved is presented in the table below, and the Virginia Department of Health Engineering Description Sheets for each water system is included in Appendix A:

Water System	Kenwood/Greenwood	Quinton Estates	Farms of New Kent
VDH PWSID#	4127430	4127380-A	4127190
Total Effective Water Storage(gallons)	89,760	30,112	1,000,000
Maximum Combined Well Pump Production (gpm)	321	203	2,138
Maximum System Flow Rate (gpm)	540	225	2,000+
Maximum Permitted Capacity (gpd)	179,600	60,400	1,710,400
Maximum Permitted Residential Connections (@ 200 gal/ERC)	449	151	4,942
Treatment	Chlorination	Chlorination	Chlorination
Operator Class Required	V	V	V
Total Connections July 2013	288	79	73
Annual Use – 2012 (gallons)	15,384,000	4,095,000	7,810,000*
DEQ GWWP#	GW0005900	GW0005800	GW0006700
Maximum Permitted Gallons/Month	3,183,414	788,400	32,000,000
Maximum Permitted Gallons/Year	26,309,200	5,365,500	239,850,000
Permit Expiration	1/1/2017	3/1/2015	6/1/2019

* irrigation water provided to the Viniterra Golf Course under temporary agreement is not included

The project will reduce costs to the Commonwealth of Virginia by eliminating the need for management of two Virginia Department of Health (VDH) Waterworks Operation Permits (#4127380-A & #4127430) and two Department of Environmental Quality (DEQ) Groundwater Withdrawal Permits (#GW0005800 & #GW0005900).

Additional benefits of the project include:

- Elimination of necessary pending capital maintenance costs at Kenwood Farms and Quinton Estates, including: tank maintenance & painting, well inspection & pump maintenance, well replacement and SCADA installation,
- A future connection point and system operating capacity for bulk water sales or emergency connection to the Windsor Park water system, owned & operated by Aqua Virginia, located along Airport Road, just south of Quinton Estates,
- Increased fire protection (in the form of greater flow & pressure) for the neighborhoods of Kenwood Farms, Greenwood Estates, Deerlake and Quinton Estates,
- Increased fire protection for rural residences along the project route, from addition of approximately 10 fire hydrants,
- Mitigation of future water system upgrade costs to accommodate approved development at Greenwood IV and Dunham, including: larger water storage tanks, larger booster pumps and larger generator,

3.0 PROJECT FUNDING & FISCAL IMPACTS

3.1 Project Funding

Funding of the proposed project was approved in the County's FY14 Capital Improvement Plan. The Drinking Water State Revolving Loan Fund (DWSRF) was established in 1996 by the Environmental Protection Agency (EPA) through the Safe Drinking Water Act. DPU has received a low-interest loan offer from the VDH-Office of Drinking Water, through the DWSRF. The loan offer amount of $1.249 million is based upon the preliminary project estimates provided by the engineer in preparing the PER. Ultimately, the source of the funding is federal dollars, coupled with a 20% match by the state, to be administered by the Virginia Resource Authority (VRA), and repaid by DPU. Terms of the loan have not been finalized, however, the tentative offer is for:

> *"$1,249,000 loan for a term of 20 years. The interest rate on the loan will be set at loan closing and will be set at 1% below the prevailing "AA" market rate. Recently the interest rate on the loans has been between 2.5 and 3.5 percent."*

A copy of the loan offer is included in Appendix C.

3.2 Annual Fiscal Impact

Consolidation of the three water systems is expected to save approximately $83,542 in annual operating and maintenance (O&M) costs. Cost reductions will be achieved largely through the elimination of regular preventive maintenance (generators, tanks, wells and pumps), elimination of groundwater permit fees and consultant costs, reduction in water system sampling costs, and reduction in operation and maintenance labor/overhead costs. Unscheduled repair and on-call labor costs have not been

included in the analysis. A copy of the detailed costs savings analysis submitted with the DWSRF funding application is included in Appendix C.

An estimate of the annual debt service on the VRA loan has been based on an amortization table prepared by the County's financial consultant, Davenport & Company, LLC. The table below summarizes the debt service on a level-debt 20-year loan with $1.249 million in principal.

Principal	Interest Rate	Total Interest	Total Cost	Annual Payment	O&M Savings	Net Annual Fiscal Impact to Utilities Budget
$1,249,000	2.5%	$353,398.28	$1,602,395.28	$80,119.76	$83,542.00	($3,422.24)
$1,249,000	3.5%	$508,619.70	$1,757,619.70	$87,880.98	$83,542.00	$4,428.98

An analysis of O&M costs and savings is presented in Section 4.3 below. Estimated debt service schedules are included in Appendix C.

3.3 Impact to Utility Rates

The purpose of the project is, in part, to reduce overall utility operating expenses. On an annual basis, debt service on this loan will be approximately equivalent to the O & M cost savings. Therefore, the project is not anticipated to have any measureable effect on utility rates or user fees, except to help in mitigating future utility rate increases by reducing future O&M costs.

4.0 ALTERNATIVES TO THE PROPOSED PROJECT

The project has been proposed based on the merits of operational and fiscal efficiency, system reliability, increased fire protection and planning for future water needs. Described below are alternatives to the project which have been considered.

4.1 Alternative No. 1

Take no action. Maintain the status quo and continue to operate Farms of New Kent, Kenwood/Greenwood and Quinton Estates water systems separately.

Advantages

- No/low immediate capital costs.
- No construction activities.
- No disruption of water service during construction.
- A single water line break or system failure affects fewer customers.

Disadvantages

- Does not reduce overall operating costs (electrical, water sampling, preventive maintenance, permitting, etc).

- Lower degree of water system reliability in the event of an extended power outage, as backup power is required to provide system pressure to Kenwood/Greenwood and Quinton Estates.
- Limited supply, storage and pumping capacities for fire-fighting. Smaller systems do not meet current County Standards.
- Does not address pending maintenance & repair needs (tank painting, well replacement).
- Does not provide SCADA for Quinton Estates.
- Does not address future needs for approved and by-right developments.
- Does not address New Kent or DEQ long term water supply planning strategies.

ESTIMATED CONSTRUCTION COSTS ALTERNATIVE #1 - 3 SEPARATE WATER SYSTEMS – NO ACTION	
Engineering/Design:	$0
Administrative/Legal:	$0
Easements/Land Acquisition:	$0
Construction:	$0
Debt Service:	$0
Contract/Construction Management:	$0
Contingencies:	$0
TOTAL	**$0**

ESTIMATED ANNUAL OPERATIONS & MAINTENANCE COSTS ALTERNATIVE #1 - 3 SEPARATE WATER SYSTEMS – NO ACTION	
Water Sampling:	$3,700
Groundwater Permitting:	$11,133
Labor, Tools, Overhead:	$93,600
Electrical Service & Generator Fuel:	$14,376
Preventive Maintenance:	$7,986
Property Insurance:	$1,878
SCADA Dialer (phone service – 2 sites):	$1,548
TOTAL	**$134,221**

4.2 Alternative No. 2

Upgrade Kenwood/Greenwood and Quinton Estates water systems individually as needed. Perform maintenance and repairs in the future as warranted.

Advantages

- Opportunity to phase capital costs and construction.
- Minimizes construction activities.
- Majority of the costs for upgrades to meet future development to be borne by developer.
- No disruption of water service during construction activities are anticipated.
- County Standards for flow and storage may be achieved for portions of the Kenwood/Greenwood Water System.

- Provides capacity for approved and by-right developments.
- May mitigate some of the known pending capital costs of existing systems.
- A single water line break or system failure affects fewer customers.

Disadvantages

- Increases overall operating costs (electrical, water sampling, preventive maintenance, permitting).
- Lower degree of water system reliability in the event of an extended power outage, as backup power is required to provide system pressure to Kenwood/Greenwood and Quinton Estates.
- May require additional land acquisition for additional pumping stations & storage tanks.
- Does not bring Quinton Estates nor portions of Kenwood/Greenwood up to Current County Standards.
- Known pending capital costs to the County in the form of repairs & maintenance of existing systems are estimated at $210,000 (tank cleaning, painting & repair, Quinton Estates SCADA Installation).
- Does not address New Kent or DEQ long term water supply planning strategies.

ESTIMATED CONSTRUCTION COSTS ALTERNATIVE #2 - 3 SEPARATE WATER SYSTEMS - UPGRADED AS NEEDED	
Engineering/Design (estimated at 10% of construction costs):	$82,500
Administrative/Legal:	$0
Easements/Land Acquisition:	$0
Construction (AC Schultes quote 10/30/08):	$824,750
Debt Service:	$0
Contract/Construction Management:	$0
Contingencies (estimated at 5% of construction costs):	$24,750
TOTAL	**$932,000**

ESTIMATED ANNUAL OPERATIONS & MAINTENANCE COSTS ALTERNATIVE #2 - 3 SEPARATE WATER SYSTEMS - UPGRADED AS NEEDED	
Water Sampling:	$3,700
Groundwater Permitting:	$11,133
Labor, Tools, Overhead:	$93,600
Electrical Service & Generator Fuel:	$15,368
Preventive Maintenance:	$8,386
Property Insurance:	$1,878
SCADA Dialer (phone service – 3 sites):	$1,548
TOTAL	**$135,613**

4.3 Alternative No. 3

Alternative No. 3 is the proposed project. Connect the existing Kenwood/Greenwood & Quinton Estates water systems to a larger water system, specifically the Farms of New Kent water system.

Advantages

- Below market rate funding offered by VDH allows DPU to preserve its capital reserves for other needed projects.
- Reduces DPU's overall operating costs by approximately $83,542 annually.
- Minimal land/easement acquisition required (approximately 3000 square feet).
- Substantially increases the reliability of the Kenwood/Greenwood & Quinton Estates water systems in the event of an extended power outage, by providing storage and flow in excess of County Standards, without immediate need for backup power.
- Represents a significant step towards unification of New Kent's water systems, which is a long-term water supply planning strategy for New Kent County & DEQ.
- Eliminates the need for future water pumping station upgrades, maintenance and repairs at Kenwood/Greenwood & Quinton Estates water systems.
- Greatly improves flow, storage and fire-fighting capabilities for Kenwood/Greenwood & Quinton Estates water systems, to meet current County Standards.
- Provides increased fire protection for rural residences along the project route, from addition of approximately 10 fire hydrants.
- Provides capacity for approved and by-right development in the Kenwood/Greenwood/Deerlake area.
- Lower waterline construction costs in the vicinity of the proposed roundabout if performed prior to road construction.
- Provides ready access to an alternate water supply for residences along the waterline route (although this is not part of the proposed project).
- Provides ready access to an alternate water supply for the Windsor Park water system (although this is not part of the proposed project).

Disadvantages

- Highest up-front capital costs of the alternatives considered.
- Most disruptive (traffic, water services) of the alternatives considered.
- A single water line break or system failure may affect a greater number of customers.

ESTIMATED CONSTRUCTION COSTS ALTERNATIVE #3 - CONSOLIDATED WATER SYSTEMS	
Engineering/Design (approved in FY12 CIP):	$133,115
Administrative/Legal:	$2,000
Easements/Land Acquisition:	$3,000
Construction:	$1,249,000
Debt Service (VRA 20 year loan offered @ 3.5%)	$87,881
Contract/Construction Management (approved in FY12 CIP - estimated at 5% of construction costs):	$62,450
Contingencies (estimated at 5% of construction costs):	$62,450
TOTAL	**$1,599,896**

ESTIMATED ANNUAL OPERATIONS & MAINTENANCE COSTS ALTERNATIVE #3 - CONSOLIDATED WATER SYSTEMS	
Water Sampling:	$2,272
Groundwater Permitting:	$4,100
Labor, Tools, Overhead:	$24,752
Electrical Service & Generator Fuel:	$13,763
Preventive Maintenance:	$4,386
Property Insurance:	$1,406
SCADA Dialer (phone service):	$0
TOTAL	**$50,679**

5.0 ENVIRONMENTAL IMPACTS

The National Environmental Policy Act of 1969 (NEPA) requires that all federally funded projects carefully consider and analyze any potential environmental impacts, consider potential alternatives, and minimize and mitigate any adverse impacts to sensitive environmental resources. DPU made direct written contact with affected state and federal agencies using guidance provided under VDH-ODW's Program Guidance Package #7 document. DPU followed up as needed and provided clarifications and additional information via telephone and/or email until each agency review of the proposed project was complete.

DPU also commissioned Environmental Data Resources (EDR) to run a *NEPACheck* ® of published state and federal databases as an additional screening measure. A copy of the EDR *NEPACheck* ® is included as Appendix D.

5.1 Virginia Department of Transportation (VDOT) – Environmental Division

Primary Agency Review Contact: Ms. Elizabeth G. Jordan, Ph. D.

Environmental Program Planner

804-786-0868

elizabeth.jordan@vdot.virginia.gov

VDOT was contacted to provide review on the impact to transportation resources, including: traffic safety, roadway protection and restoration, and future projects.

Preliminary comments received from VDOT centered around the need for a VDOT Land Use Permit, since the proposed work is to be performed within the VDOT right-of-way, as well as coordination of the waterline project with VDOT's Route 249/Route 612 Roundabout Construction Project.

On February 28, 2013, representatives of DPU, Draper Aden Associates (DAA - DPU's design engineer), VDOT and Johnson, Mirmiran and Thompson (JMT - VDOT's design engineer) met to coordinate the two projects. JMT provided roundabout design plans for overlay on the waterline construction plans. Consequently, DAA has adjusted location, depth and routing of the waterline to accommodate the roundabout construction. In general, it was agreed among the parties that careful coordination and proper sequencing of the projects would represent the most efficient path to completion for both.

Since VDOT will be a review agency during the construction plan review process, additional comments may be offered at a later date, and a check is in place to assure the VDOT permit is obtained. The design engineer (DAA) will provide a standard traffic control plan with the project specifications. The selected contractor will be required to obtain a VDOT Land Use Permit. Traffic control measures in accordance with the Virginia Work Area Protection Manual and roadway protection/restoration will be addressed by the contractor in the VDOT permitting process. Additionally, a surety will be required of the contractor to ensure adequate restoration of the roadway and right-of-way.

Copies of the review request and other documents relevant to the VDOT review and project coordination are included in Appendix E.

5.2 Virginia Department of Historic Resources (DHR) – Office of Review and Compliance

Primary Agency Review Contact: Mr. Roger Kirchen

Manager – Division of Resource Services & Review

804-482-6091

roger.kirchen@dhr.virginia.com

In order to comply with Section 106 of the National Historic Preservation Act of 1966, DHR was contact to assess the impact to properties or structures that may be listed or eligible for the National Register of Historic Places.

DHR requires an archive search prior to review. As part of the Archive Search process, DPU provided information from known sites of archaeological significance along the project route. Three properties with potential archaeological resources were identified through the following document: *Archaeological Resources Inventory and Predictive Modeling for New Kent County, Virginia* (Matthew R. Laird Ph.D., May 2004) and presented to DHR. That document is labeled "not to be released or its contents disclosed to the public pursuant to Section 2.2-3705(A)(36) of the Code of Virginia." Therefore, that document is not included as part of this Environmental Review.

DHR determined that although historic properties do exist within the project vicinity, "*no historic properties will be affected by the proposed undertaking.*"

No mitigation of historic or archaeological resources is required. Copies of the review request and other documents relevant to the DHR review are included in Appendix F.

5.3 Virginia Marine Resources Commission (VMRC) – Habitat Management Division

Primary Agency Review Contact: Mr. Tony Watkinson

Chief

757-247-2250

tony.watkinson@mrc.virginia.gov

The VMRC was contacted to determine if any federally listed or proposed threatened or endangered species and designated or proposed critical habitat may be present in the project area. The VMRC also administers the State's Coastal Management Program.

VMRC determined that "*it does not appear that any work is proposed within the jurisdiction of the Marine Resources Commission*."

No mitigation is required at this time. The VMRC will have additional opportunity to comment if a Joint Permit Application (JPA) is required (ie: if wetlands are determined to be impacted), as determined by the US Army Corps of Engineers.

Copies of the review request and other documents relevant to the VMRC review are included in Appendix G.

5.4 New Kent Wetlands Board

Primary Agency Review Contact: Mr. Matthew Venable

Environmental Planning Manager

804-966-8580

mjvenable@newkent-va.us

The New Kent Wetlands Board was contacted to determine the following:

- Impacts to parcels enrolled in the County's Agricultural & Forrestal Districts program,
- Impacts to wetlands (as designated by the National Wetlands Inventory),
- If hydric soils exist within the project area,
- If the project will encroach upon a designated Resource Protection Area (RPA).

The New Kent Wetlands Board determined that parcels 21-30 and 21-31A along the project path may contain hydric soils, and therefore may have portions of the project within the RPA buffer. They also determined an unspecified "environmentally sensitive area" may exist along the project path in the vicinity of parcels 21-6-3, 21-6-4 and 21-6-5.

Mitigation in the form of Erosion & Sedimentation (E&S) controls will be specified in the project plans & specifications in accordance with the *Virginia Erosion & Sediment Control Handbook, Latest Edition*. Additional mitigation, if required, will be determined during the Joint Permit Application process administered by the US Army Corps of Engineers. A Land Disturbance Permit from New Kent County will also be required of the selected contractor. Since New Kent's Environmental Division of the Department of Community Development is a review agency during the construction plan review process, they will also have the opportunity to provide additional comments at a later date, and a check is in place to ensure that appropriate mitigation is performed, as needed. Regular site inspections will be performed by the New Kent County Environmental Division.

Copies of the review request and other documents relevant to the New Kent Wetlands Board review are included in Appendix H.

5.5 Virginia Department of Game & Inland Fisheries (DGIF) – Environmental Services

Primary Agency Review Contact: Ms. Amy Ewing

Environmental Services Biologist

804-367-2211

amy.ewing@dgif.virginia.gov

DGIF was contacted to determine if wildlife resources, including threatened and endangered wildlife, may be impacted by the proposed project.

DGIF responded in writing that due to staffing limitations, they would not be able to review the project. Upon follow up, DGIF confirmed that they:

> *"…will review your project if it enters into regulatory review or permitting processes (water and wetland impact permitting, NEPA scoping, large state project review by DEQ, etc.). Unless your project falls into one of those categories OR is a VDOT or VDOT locally administered project, we will not likely review the project and provide comments."*

DGIF's Virginia Fish & Wildlife Information System (VAFWIS) was utilized to fulfill the review request with the US Fish & Wildlife Service. A three mile search radius of Quinton, Virginia covered the entire project area. The results of the search were as follows:

- 427 Known or Likely Species of Concern were identified,
- No Anadromous Fish Use Streams were identified,
- No Impediments to Fish Passage were identified,
- No Threatened and Endangered Waters were identified,
- No Managed Trout Streams were identified,
- No Bald Eagle Concentration Areas and Roosts were identified,
- No Bald Eagles Nests were identified,
- No Habitat Predicted for Aquatic WAP Tier I & II Species were identified,
- No Habitat Predicted for Terrestrial WAP Tier I & II Species were identified,
- 71 Different Species of Virginia Breeding Birds were identified,
- 413 BOVA Species Associated with Cities and Counties of the Commonwealth of Virginia were identified,
- No USGS NRCS Watersheds were identified.

No mitigation of wildlife resources is required. Copies of the review request and other documents relevant to the DGIF review are included in Appendix I.

5.6 Virginia Department of Conservation & Recreation (DCR) – Division of Planning & Recreation

Primary Agency Review Contact: Ms. Rene Hypes

Project Review Coordinator

804-371-2708

rene.hypes@dcr.virginia.gov

DCR was contacted to determine if any natural heritage resources (including: habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations) may be impacted by the project.

DCR responded that while natural heritage resources do exist in the project vicinity, they *"do not anticipate that this project will adversely impact these natural heritage resources."*

DCR also responded on behalf of the Virginia Department of Agriculture & Consumer Services (VDACS). DCR determined that *"the current activity will not affect any documented state-listed plants or insects."*

No mitigation of natural heritage resources is required. Copies of the review request and other documents relevant to the DCR review are included in Appendix J.

5.7 United States Army Corps of Engineers (USACE)

Primary Agency Review Contact: Mr. Steven A. Vanderploeg

804 397-9836

steven.a.vanderploeg@usace.army.mil

USACE was contacted to determine if jurisdictional waters of the United States (including wetlands) may be impacted by the proposed project.

USACE responded with the following comments:

> *"A site visit for the confirmation of jurisdictional wetlands along the proposed waterline indicated that there are jurisdictional wetlands in your project area. If there is any proposed work (i.e. mechanized land clearing, discharge of dredge or fill, ect) in jurisdictional waters of the U.S. including wetlands then a U.S. Army Corps of Engineers permit maybe required. Please note other federal, state, state and local permits may also be required."*

Mitigation in the form of Erosion & Sedimentation (E&S) controls will be specified in the project plans & specifications. Additional mitigation, if required, will be determined during the Joint Permit Application process administered by the US Army Corps of Engineers. New Kent County's Environmental Division of the Department of Community Development is a review agency during the construction plan review process, so they will also have the opportunity to provide additional comments at a later date, and a check is in place to ensure that appropriate mitigation is performed, as needed. Regular site inspections will be performed by the New Kent County Environmental Division.

Copies of the review request and other documents relevant to the USACE review are included in Appendix K.

5.8 Virginia Department of Agricultural & Consumer Services (VDACS) – Office of Plant & Industry Services

Primary Agency Review Contact: Mr. Keith Tignor

State Apiarist

keith.tignor@vdacs.virginia.gov

804-786-3515

VDACS was contacted to determine if any documented state-listed plants or insects may be impacted by the proposed project.

VDACS did not respond to the written request, nor follow up email. DCR submitted a response on behalf of VDACS. DCR determined that *"the current activity will not affect any documented state-listed plants or insects."*

No mitigation of state-listed plants or insects is required. Copies of the review request and other documents relevant to the VDACS review are included in Appendix L.

5.9 United States Fish & Wildlife Service (USFWS)

Primary Agency Review Contact: Mr. Troy Anderson

Endangered Species/Conservation Planning Assistance Supervisor

804-693-6694 ext. 166

troy_anderson@fws.gov

USFWS was contacted to determine if any endangered or threatened species, critical habitats or bald eagle concentration areas may be impacted by the proposed project.

USFWS referred the project review to their on-line ECOS-IPaC system for review. The ECOS-IPaC system determined the following:

- No bald eagle concentration areas exist within the project vicinity and the proposed project is unlikely to disturb nesting bald eagles
- No critical habitats exist in the project vicinity
- Two threatened plant species may exist within the project vicinity:
    - Small Whorled Pagonia (*Isotria medioloides*)
    - Swamp Pink (*Helonias bullata*)

Based on these results, the ECOS-IPaC system required and generated an individual project review request to be sent to USFWS. That review package included the following:

- USFWS ECOS-IPaC review documents
- DGIF review documents and responses
- DCR review documents and responses

Based on their review of the submitted information, USFWS requested an account of tree impact area for the proposed project. DAA provided an account of tree clearing and tree impact area based on the proposed waterline alignment. A total of 4,533 square feet (0.1 acres) of tree was identified in five separate locations, and the information was provided to USFWS.

USFWS responded:

> *"…the project area does not support potential habitat for the federally listed small whorled pogonia (Isotria medeoloides) or swamp pink (Helonias bullata) and therefore no impacts will occur to federally listed species."*

No mitigation of endangered or threatened species, critical habitats or bald eagle habitat is required. Copies of the review request and other documents relevant to the USFWS review are included in Appendix M.

5.10 Virginia Department of Environmental Quality (DEQ) – Office of Environmental Impact Review

Primary Agency Review Contact: John Fisher

EIR Coordinator

804-698-4339

john.fisher@deq.virginia.gov

DEQ was contacted to determine if the project submittal is in accordance with the Intergovernmental Review of Federal Programs (E.O. 12372), consistent with federal regulations for the review of federal financial assistance to state and local governments (15 CFR, Subpart F, §930.90 *et seq.*), and consistent with enforceable policies of the Virginia Coastal Management Program.

DEQ's relevant comments for federal consistency mainly centered around the enforceable policies of the Virginia Coastal Zone Management Program (VCP), including:

- Non-Point Source Pollution Control
    - Erosion & Sediment Control (E&S) and Stormwater Management – as mentioned above, the New Kent County Department of Community Development – Environmental Division

will review project construction plans for E&S controls consistent with the VCP, and in accordance with the *Virginia Erosion & Sediment Control Handbook, Latest Edition*.

- Virginia Stormwater Management Program (VSMP) General Permit for Stormwater Discharges from Construction Activities – the project will a involve land clearing area of approximately 1.28 acres (55,757 square feet). Therefore, a project specific Stormwater Pollution Prevention Plan will be prepared and a VSMP General Permit will be required. This permit will be required of the selected contractor prior to processing of a Land Disturbance Permit by New Kent County. This will likewise be reviewed by the New Kent County Department of Community Development – Environmental Division, at the plan review phase. Based on the proposed project plans, a VSMP permit will be required.

Mitigation of impacts from non-point source pollution, will be determined during the Joint Permit Application process administered by the US Army Corps of Engineers, the SWPPP prepared during the VSMP permit process by DEQ, and the Land Disturbance Permit Application process by New Kent County. Since New Kent's Environmental Division of the Department of Community Development is a review agency during the construction plan review process, they will also have the opportunity to provide additional comments at a later date, and a check is in place to ensure that appropriate mitigation is performed, as needed. Regular site inspections will be performed by the New Kent County Environmental Division.

Since the project involves an alteration of permitted groundwater withdrawals from the potable aquifers of the Virginia Coastal Plain, DEQ-Office of Water Supply Planning was contacted separately regarding the project's impact on three affected groundwater withdrawal permits that are held by New Kent County. DEQ offered a letter of support to VDH for funding from the DWSRF, citing the following benefits:

- Minimizing the impact on potable groundwater aquifers, by elimination of five wells screened in the Middle Potomac Aquifer (four of which are suspected to be constructed to allow mingling of aquifers of differing water quality), and by shifting the groundwater withdrawal further east, where impacts of groundwater withdrawals are less severe,
- Consolidation of water systems, which is a major step towards New Kent County developing an alternative (presumably non-groundwater) source of water supply, and thereby reducing the stress on the potable aquifers Virginia Coastal Plain,
- Administrative and contractor costs savings to DEQ of approximately $49,000, by eliminating two groundwater withdrawal permits.

The project itself mitigates potential impacts to potable groundwater resources of the Virginia Coastal Plain, as outlined in the letter of support offered by DEQ. The project does not represent an increase in total groundwater withdrawal or withdrawal in excess of the amount permitted by the Farms of New Kent Groundwater Withdrawal Permit. However, the permit modifications involved will most likely require additional groundwater modeling by DEQ. Impacts to other groundwater users identified in the

modeling effort will be address through the existing Mitigation Plan for the Farms of New Kent Water System as required by Groundwater Withdrawal Permit #0006700.

Finally, a Freedom of Information Act (FOIA) request was submitted to the DEQ-Piedmont Regional Office regarding any pollution complaints filed in reference to a known former petroleum fueling station (Washington's Store) located at 5731 New Kent Highway, Quinton. Due to the proximity of the former fueling island to the roadway, petroleum-impacted soils may be encountered. No reports of a petroleum release were returned as a result of the FOIA inquiry. The underground storage tanks at the site were closed in-place in 1988, in accordance with applicable regulations at the time. Geotechnical borings along the waterline path will be oriented such that this location is preliminarily screened for the presence of petroleum-impacted soils.

Mitigation of petroleum-impacted soils, if required, will be determined based on pre-screening, as well as the concentration and type of petroleum encountered, and coordination with DEQ and VDOT (since the excavation will be performed within the right-of-way). Since excavation in this area will likely be limited to a depth of five to seven feet, it is unlikely liquid phase petroleum (free product) will be encountered. Due to the time which has passed since petroleum was last stored at the site, it is unlikely that petroleum vapors will remain at the site.

Copies of the review request and other documents relevant to the DEQ review are included in Appendix N**.**

5.11 US Department of Agriculture - Natural Resources Conservation Service (NCRS)

Primary Agency Review Contact: Greg Hammer

Soil Scientist

757-547-7172 Ext: 3

greg.hammer@va.usda.com

In order to comply with the Farmland Protection Policy Act, NRCS was contacted to determine if the proposed project may affect important or protected farmland or prime rangeland.

NRCS performed a Farmland Conversion Impact Rating Assessment for Corridor Type Projects. The project received a total of zero points in that assessment, indicating:

- Less than 20% non-urban use within a 1 mile radius of the project,
- Less than 20% of the site borders on land in non-urban use,
- Less than 20% of the project area has been farmed more than 5 of the last 10 years,
- No on-farm investments will be affected by the project,
- The project is fully compatible with existing agricultural use of surrounding farmland.

No mitigation of important or protected farmland or prime rangeland is required. Copies of the review request and other documents relevant to the NRCS review are included in Appendix O.

6.0 MISCELLANEOUS IMPACTS

6.1 Socio-Economic Impacts

The proposed project corridor consists of rural residential, suburban, forrestal and agricultural uses. Current zoning along the project path includes:

- PUD (Farms of New Kent Planned Unit Development)
- A-1 Agricultural,
- Business,
- R-1 Single Family Residential,
- R-3 General Residential.

A Zoning Map of the project vicinity is included as Figure 3.

The project does not include mandatory utility connections along the project path. Where required, temporary and permanent easement acquisition will be negotiated with the property owners to ensure that fair compensation is provided based on an independent appraisal of actual property values. Therefore, the project does not impose undue financial hardship for existing rural residents along Route 249 or Route 612, nor does it have a disproportionately high negative economic effect on minority or low-income residents along the project path.

The project will provide an ample and readily available supply of potable water for those within the project corridor who wish to connect. The project will also provide a point of connection for Aqua Virginia's Windsor Park Water System, located on Airport Road (Route 612), just south of the tie-in to Quinton Estates. Utility connection fees and bi-monthly usage charges would apply to all new connections. The project does not have a disproportionately high public health effect on minority or low-income resident along the project path, rather, it provides an opportunity to improve or remedy public health concerns within the project corridor.

The project does not include destruction or displacement of residence or businesses. The project includes only 0.1 acres of tree clearing. The project includes obtaining a modest permanent utility easement of less than 3,000 square feet. Several temporary construction easements will also be necessary. The project does not affect agricultural practices within the project corridor.

The project will provide approximately 10 new fire hydrants along the Route 249/Route 612 corridor, which will provide an increased level of fire protection which was previously unavailable to rural residents along the project path. This may result in a decrease in homeowner's insurance premiums to those residents, and therefore provide a positive economic effect to residents along the project path.

Approximately one dozen service connections along Tunstall Road (Route 612) and Deerlake Drive will be transferred from the existing 6-inch line to the proposed 12-inch line. Additionally, tie-in of existing 6-inch lines on Wensleydale Drive and Hingham Drive will be performed. These activities represent water service disruptions for a small number of affected residences. These activities will be detailed in the project plans & specifications in such a manner that interruption of water services will be minimized, and performed during mid-day hours, while most residents are at work. Affected residents will be notified prior to service disruption.

Based on these factors, the project will not negatively affect the socio-economic character of the project corridor, nor that of the neighborhoods to be served.

No additional mitigation of socio-economic impacts is required.

6.2 Air Quality Impacts & Odors

The proposed project does not involve construction or installation of fuel-burning equipment. The project does not involve construction of water treatment nor wastewater collection/treatment works which may result in sludge production and/or unpleasant odors. The project eliminates two diesel powered emergency generators.

The project will involve the use of diesel burning construction equipment. EPA Tier 4 off-road diesel equipment regulations, as well as the National Clean Diesel Campaign have taken aim at reducing emissions from diesel burning equipment and vehicles. However at this time, there is no requirement for use of this equipment specifically on federally funded or other construction projects.

The project does not involve extensive land clearing, dozing or tilling. Depending on climatic conditions during construction, the project may generate minor amounts of fugitive dust. Open burning will not be allowed. Contractors will be required to provide dust control on site with water as necessary, and to keep pavement clear of sediment which may dry and become airborne as a result of vehicular traffic. Construction debris will be removed from the site, or in the case of trees and vegetation, may be shredded on site for composting, where appropriate.

No additional mitigation of air quality or odors is required.

6.3 Noise Impacts

The project will include the use of standard construction equipment. The project will be performed within the daylight hours. The project will not include any blasting, explosives or demolition. Excessive noise, above the New Kent County Noise Ordinance level of 75 decibels is not expected.

No mitigation of noise is required.

6.4 Floodplain Impacts

As noted in EDR's *NEPACheck* ® (page 8), the project path does not intersect the Federal Emergency Management Association's (FEMA) 100-year or 500-year floodplain. A copy of applicable FEMA Floodplain Map of the project vicinity is included as Figure 4.

No mitigation of floodplain impacts is required.

6.5 Water Quality Impacts

The project does not include a surface water intake, and therefore no fisheries will be impacted. The project does not represent an immediate increase in groundwater withdrawal, nor does it represent a groundwater withdrawal in excess of the DEQ permitted 32,000,000 gallons per month and 239,850,000 gallons per year (Groundwater Withdrawal Permit #0006700) or the VDH permitted daily waterworks capacity of 1,710,400 gallons per day (Waterworks Operation Permit #4127190) at the Farms of New Kent Water System. The project does not affect the availability of potable water to current utility customers, nor does it significantly alter the quality of water delivered to existing utility customers.

The project does not affect water availability during drought periods, as the confined aquifers from which the water will be withdrawn are not immediately responsive to drought conditions. Wastewater generated as a result of water distribution to customers will be disposed through existing and proposed septic systems, as approved by the Chickahominy Health District of the Virginia Department of Health.

New Kent County is considered to have "substantially implemented" it's Sourcewater Protection Program (SWP), since it's wells are located east of the fall line, and are constructed to VDH standards. As previously noted in Section 4.10, the project will result in positive impacts to the Potomac Aquifers which are the primary potable water supply to all of New Kent County.

Potential water quality degradation to surface water streams in the project vicinity will be mitigated through E&S controls as well as the Land Disturbance, JPA, and VSMP permitting processes as described in Section 4.4, 4.7 and 4.10 above, respectively. E&S controls, to prevent off site sedimentation, will be outline in the project plans & specifications, and will be installed in accordance with the *Virginia Erosion & Sediment Control Handbook, Latest Edition*. Regular site inspections will be performed by the New Kent County Environmental Division.

No additional water quality mitigation is required.

6.6 Aesthetic & Visual Impacts

The project does not include construction of any structures, tanks or treatment systems. The project does include above grade appurtenances include approximately 10 fire hydrants. Tree clearing will be minimized, as the project will be performed predominantly performed within the VDOT right-of-way. A 600-foot directional drill is proposed along Airport Road (Route 612) to avoid disturbance of landscape trees & driveways within or near the right-of-way in that area. The project will result in taking out-of-

service seven (7) ground level tanks and five pump houses that are located within residential neighborhoods. Ultimately, these structures will be demolished, although that is not part of the project as proposed at this time. Therefore, the project will result in overall positive aesthetic impacts.

No mitigation of aesthetics or visual impacts is required.

6.7 Coastal Zone Impacts

The project will not be performed within a coastal zone, and therefore coastal barrier resource systems will not be impacted.

No mitigation of coastal zones or barrier systems is required.

6.8 Transportation Impacts

The project will be performed predominantly within the VDOT right-of-way and within close proximity to Route 249 and Route 612. Therefore, traffic control and safety will be of primary importance for the travelling public as well as for the construction crews performing the work. All road crossings will be performed via bore, in accordance with VDOT standards. Disturbance of existing pavement is not anticipated. Temporary lane closures may be required. Detours are not anticipated. Traffic control will be performed in accordance with the Virginia Work Area Protection Manual, as noted in Section 4.1 above.

Multiple driveways will be crossed by open trenches during the waterline installation. Project specifications will require driveway restoration to original condition (paved or gravel). Driveway crossings will be performed in such a manner that the trenches are opened and backfilled in the same day, or temporary measures (such as steel plates or temporary backfill) will be installed to minimize interruption of driveway access for property owners.

No additional transportation mitigation is required.

7.0 SUMMARY OF MITIGATION EFFORTS

As confirmed by the reviewing agencies, no impacts are anticipated to historic or archaeological resources, proposed threatened or endangered species, critical habitats, wildlife resources, bald eagles, state-listed plants or insects, natural heritage resources, prime rangeland or protected farmland, nor agricultural resources. Relevant impacts of the proposed project and their mitigation can be summarized in six key categories:

7.1 Mitigation of Fiscal Impacts & Utility Rate Increases

Impacts to utility rates will be mitigated by the operational efficiency & maintenance costs savings which are the impetus for the project.

The project also provides a long-term fiscal benefit to the Commonwealth of Virginia, by eliminating the need for management of two Groundwater Withdrawal Permits and two Waterworks Operation Permits.

7.2 Mitigation of Transportation Impacts

Transportation & traffic impacts will be mitigated predominantly through the VDOT Land Use Permitting process, and adherence to the *Virginia Work Area Protection Manual* by the contractor for traffic control. Road crossings will be performed via bore, to minimize traffic impacts as well as future settlement of pavement.

Impacts to the pending roundabout construction project will be minimized by careful coordination with VDOT.

7.3 Mitigation of Water Quality Impacts

Wetlands, Coastal Management Zones and surface water quality impacts will be mitigated by implementation of an Erosion & Sediment Control Plan, using the *Virginia Erosion & Sediment Control Handbook, Latest Edition* which will be reviewed and approved prior to construction. The New Kent County Land Disturbance Permit process, as well as the Joint Permit Application process will ensure adequate E&S controls are in place. Non-point source pollution will be mitigated through the Stormwater Pollution Prevention Plan, prepared as part of the Virginia Stormwater Management Program General Permit for Stormwater Discharges from Construction Activities. The project will be periodically inspected by the New Kent County Department of Community Development's Environmental Division, to ensure on-going compliance.

The project will result in a positive impact on the potable groundwater aquifers of the Potomac Formation, by eliminating wells which may allow mingling of aquifers of differing water quality, and by focusing the groundwater withdrawal further from the fall line.

7.4 Mitigation of Socio-economic Impacts

Socio-economic impacts will be mitigated by providing adequate compensation, based on an independent appraisal of fair market value, for temporary and permanent easements necessary for the project.

Modest economic benefits may be provided by the increase level of fire protection provided by fire hydrants installed along the project route.

The project may provide a potential alternate source of potable water supply if public health concerns are realized along the project corridor in the future.

7.5 Mitigation of Air Quality Impacts

Air quality impacts will be mitigated by dust control practices required of the selected contractor as part of the project documents. Open burning will not be permitted. Two diesel-powered generators will also be eliminated as part of the project.

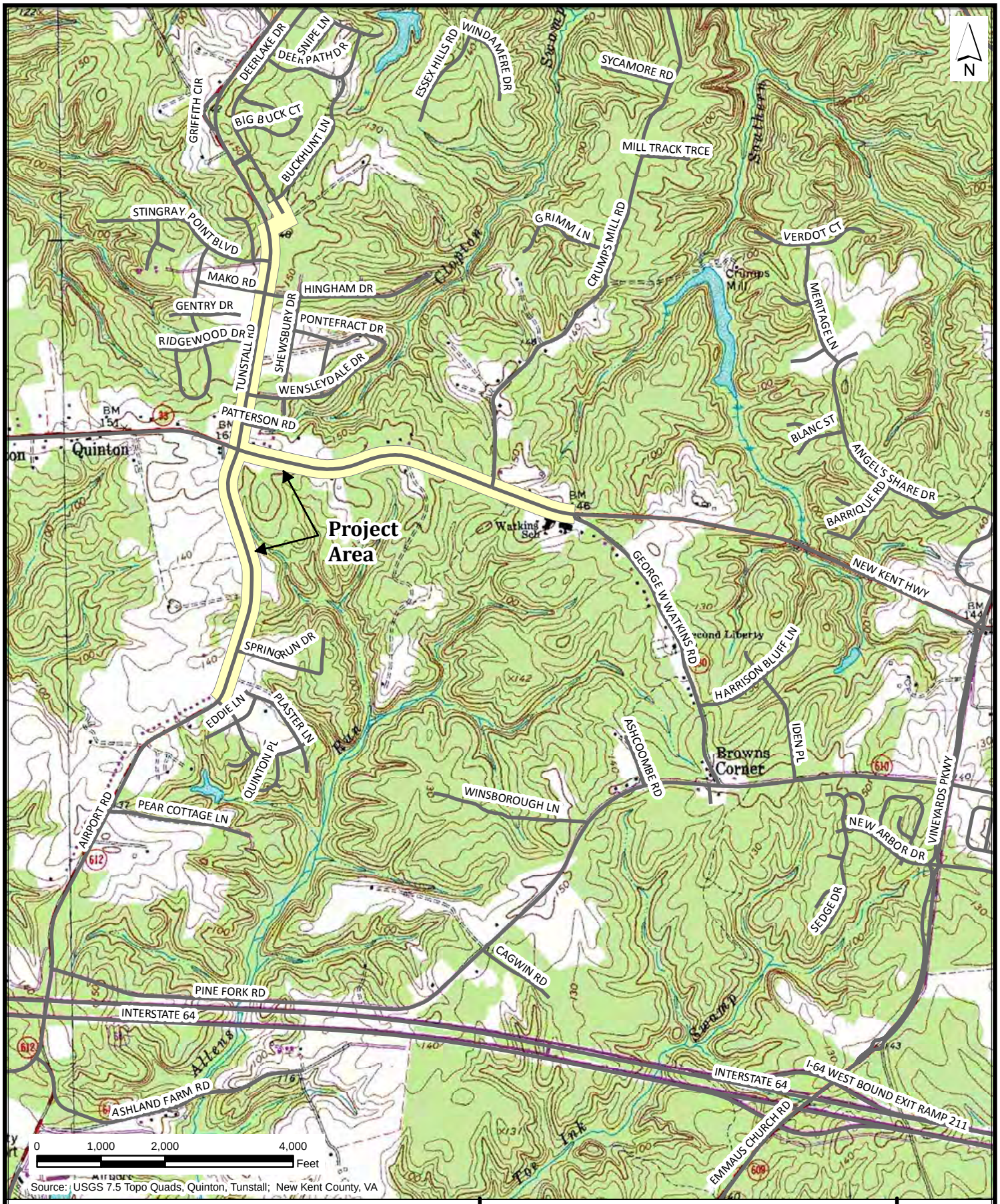
7.6 Mitigation of Impacts to Residents Along the Project Route

Water service and driveway access disruptions will be minimized by careful sequencing of service lateral connections and water line replacement as part of the project plans & specifications.

8.0 CONCLUSIONS & RECOMMENDATIONS

The proposed project represents significant fiscal savings to the New Kent County Department of Public Utilities, its customers and the Commonwealth of Virginia. The project also represents a major step forward in New Kent County's future water supply planning strategy, no matter what the future source of water supply may be. Environmental impacts of the project are incidental in the worst case scenario, and easily mitigated through existing and commonly accepted processes. Several levels of checks, reviews and compliance inspections will insure that wetland/surface water quality impacts in particular are adequately mitigated.

It is recommended that the funding agency issue a Finding of No Significant Impact in a timely manner, so that project construction may commence in a timeframe that does not interfere with construction of the proposed roundabout at the Route 249/Route 612 intersection. Construction conflicts and delays on these two projects will only serve to increase costs to New Kent County and the Commonwealth of Virginia.



Document Path: P:\R12\100\R12139R\R12139R-01U\GIS\MAP - R12139R-01U - Figure 1 - Project Area Rt 249 Waterline Ext - 12 0312 - AWG.mxd

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Engineering • Surveying • Environmental Services
Blacksburg, VA Charlottesville, VA Hampton Roads, VA Richmond, VA

PROJECT AREA/VICINITY MAP
RT 249 WATERLINE EXTENSION
New Kent County, Virginia

DAA# R12139R-01U

FIGURE
1