

AUGUSTA COUNTY SERVICE AUTHORITY



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April 27, 2015

Kimberly Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE, Room 1A
Washington, DC 20426

Re: Atlantic Coast Pipeline (ACP), Dominion Transmission, Inc. (DTI)
Docket #PF15-6-000

Dear Ms. Bose,

I write to you on behalf of the Board of Directors of Augusta County Service Authority (Service Authority) regarding the proposed ACP project. The Service Authority is responsible for public water production and distribution to approximately 14,600 customers and is responsible for public sewer and collection and treatment for nearly 9,000 customers. Additionally, the Service Authority is responsible for management and operation of the County's solid waste disposal facility. Augusta County is the second largest county in the Commonwealth of Virginia covering more than 967 square miles. The Service Authority provides water service in 12 separate water service areas. Our water supplies are primarily reliant on wells and springs. Our county is situated on karst topography, which increases the risk of introducing contaminants into the aquifers through surface activities. As you may know, the route(s) for this project selected by DTI cuts through several Service Authority service areas. As a result, the Service Authority is very concerned about the risk to the Service Authority's existing infrastructure and more importantly, its water sources.

Recognizing this and our significant dependence on groundwater, the Service Authority and County of Augusta prepared and implemented a Source Water Protection Ordinance in 2011. Later that year, we were honored by the United States Environmental Protection Agency for our outstanding work in development of an excellent source water protection program.

The USEPA Press Release (attached) from December 15, 2011 states that:

*The U.S. Environmental Protection Agency has awarded two prestigious awards to the Augusta County Service Authority: the **Source Water Protection Award** for protecting existing and potential drinking water sources and the **PISCES Award** recognizing leadership and innovation in utilizing clean water infrastructure funds. "Drinking water is a finite and precious resource, and we commend Augusta County's leadership in protecting it," said EPA Region III Administrator Shawn M. Garvin. "Other municipalities would be well-served to follow their example in adopting source water protection ordinances."*

The Augusta County Service Authority coordinated the development of one of the strongest source water protection ordinances in the Commonwealth of Virginia. The ordinance, passed in February 2011, helps to protect ground water sources of drinking

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water from adverse impacts such as contamination from hazardous materials or petroleum products, or loss of water in underground aquifers which supply water in the County. "We've invested a lot of resources in establishing our drinking water supply, said Augusta County Service Authority Director Ken Fanfoni. "The ordinance will help us to prevent it being jeopardized by careless actions or unforeseen events."

Whereas the Augusta County Service Authority has expended millions of dollars (along with funding from the USEPA, the VA Department of Environmental Quality, and the Virginia Department of Health) to develop scientifically-based Source Water Protection Areas in order to protect the sensitive karst areas that feed into our drinking water supplies, and have been recognized by the USEPA for its vision and leadership, the planners for DTI have chosen to **give little regard to all of the work done to date**, and have chosen a route that is **environmentally thoughtless** and jeopardizes our largest drinking water supply by traversing the most sensitive portion of the delineated recharge area. A copy of the Augusta County Source Water Protection Ordinance is attached. **Please note that this ordinance, adopted by the local county government and the basis of our USEPA recognition, would prohibit the construction of this pipeline through our designated Source Water Protection Areas.**

Service Authority provided DTI with a copy of a report from our groundwater consultants (Emery and Garrett Groundwater Investigations, LLC or EGGI) dated October 31, 2014. A copy of this report is enclosed. This report outlined our expectations from DTI, and contained recommendations on how to properly coordinate this pipeline project without jeopardizing our sensitive water source recharge areas.

Service Authority received a response from DTI on March 5, 2015 regarding our concerns over avoiding our most sensitive groundwater recharge areas in the karst region. Their response contained the following:

"Atlantic Coast Pipeline (ACP) is undertaking a multi-step process to reduce the potential of adverse effects on groundwater resources in Augusta County and elsewhere along its route. ACP's first step was to obtain from Service Authority its geo-referenced data on the locations of sensitive groundwater production wells, potable water supply production springs, source water protection areas, and future groundwater development areas. Using that information, ACP's routing team reviewed the location of the route across Augusta County and refined and relocated it, as necessary, to minimize exposure to groundwater production and development areas. ACP's next step was to engage GeoConcepts Engineering, Inc. from Ashburn, Virginia, to assist ACP in determination of the locations and potential to affect groundwater resources in karst-prone areas crossed by the pipeline. GeoConcepts geotechnical karst experts are undertaking field reviews and survey with ACP engineers to identify existing karst surface features along the current route across Augusta County. The focus on the review is on those features that would result in direct incursion of surface water and/or sediment into the subsurface such as sinkholes with open "throats", sinkholes that show signs of receiving surface drainage, and sinking or losing streams. Simultaneously with this review, ACP routing staff are adjusting and refining the route to avoid previously recorded karst features or features identified during the field review of the centerline."

Keeping that in mind, please refer to the attached map of the Lyndhurst Source Water Protection Area. The Lyndhurst Well is the single largest public groundwater supply in the county, yielding 1,400 gallons per minute of water that meets all federal and state drinking water standards with simple disinfection as the only treatment. The recharge area is in a karst region, sprinkled with sinkholes. It is also bounded by potentially hazardous sites that include an auto salvage junkyard, a fly ash disposal area, and an old landfill. One alternate DTI route (Appalachian Trail South) now is in direct conflict with these sinkholes and adjacent threats. It also bisects an area already identified for future water supply development. Blasting along this route is **irresponsible** and very likely to generate negative impacts on the subsurface flow of water through the karst, or to open new pathways for surface contamination. If damaged, the replacement cost of this public water source could easily reach \$3 million. The Service Authority has a significant amount of information on the geology and potential risks to the groundwater in this area from the 2008 EGGI report entitled, *Delineation of Wellhead Protection Area Surrounding the Lyndhurst Well*, which DTI has never asked to review. Other prior work performed by the Authority may also be beneficial to DTI as it considers route alternatives.

When we met with DTI representatives to discuss our concerns over groundwater protection in karst areas, we were told to contact their “karst expert” who was Mr. Bob Denton of GeoConcepts, Inc. We have spoken to Mr. Denton on several occasions. However, when we approached him regarding the latest alternate route that seriously threatens our Lyndhurst Well, he simply said that he had never seen this new route and had in fact been removed from the project. Interestingly, the March 5, 2015 letter from DTI states that they “have hired the best experts available to provide an understanding of the county’s karst topography and hydrology”. So it appears as though DTI has either fired or replaced their acknowledged karst expert with no communication or notification to us, despite our repeated unsuccessful efforts to get meaningful answers from them regarding our source water protection concerns. And their actions in re-routing their pipeline directly into our most vulnerable recharge area are in total contradiction to their vague statements above which refers to their efforts to “avoid previously recorded karst features” and to “minimize exposure to groundwater production.” If there is in fact a scientific karst analysis of the impact of this alternative route on our Lyndhurst Groundwater Recharge Area, it has been withheld from us, and we would strongly suggest that FERC obtain a copy of this report and distribute it for others to review.

The EGGI report contained many recommendations aimed at providing a sound construction and karst management plan, and to provide assurance to the Service Authority that a catastrophic event that impacts our drinking water supply would be resolved quickly without years of legal battles. After reviewing the DTI response, the following recommendations proposed by EGGI remain key **unanswered concerns:**

- 1) Avoiding pipeline installation near source recharge and protection areas.
- 2) Development of a legally binding construction management, karst, and blasting plan with financial backing (such as an escrow account) for quickly handling issues.
- 3) Development of operating and mitigation plans with financial backing (such as an escrow account) for quickly handling issues.
- 4) Inclusion of an effective groundwater monitoring plan.

The March 5, 2015 response from DTI outlines the general steps intended to be taken and simply refers to the requirements of the Federal Energy Regulatory Commission. While the response we received attempts to address each of the concerns and recommendations outlined in the EGGI report, **the**

response lacks an offer of a specific commitment (in any category listed above) to the Service Authority. The report simply alludes to future plans (Construction Management Plan, Blasting Plan, Operations Plan, and Karst Mitigation Plan) **that have not yet been developed, so they are impossible to review and comment on at this time.** With regard to our specific concerns about ‘avoiding pipeline installation near source recharge and protection areas’ Service Authority Staff have not, to date, been contacted by DTI or any of its consultants to discuss route alternates or to review existing Service Authority groundwater reports.

Typical responses from DTI include a statement that no detailed answers can be provided, since they have not yet identified the final route. It appears that DTI will be allowed to go through the FERC EIS and permitting process without offering any specific answers simply on the basis that they are still evaluating route options, and that final details, or the specifics of karst plans and blasting plans, etc. will be developed “later”.

Another major concern is the potential for this pipeline to carry other hazardous liquids in the future, instead of the originally intended high pressure gas. The presence of hazardous liquids in this pipeline would certainly change its risk to groundwater quality, and alter our comments. DTI’s response has been simply that they “do not plan” to transport any products other than natural gas, but this is certainly no guarantee. A revised permit in the future is certainly not a problem for DTI, although transporting hazardous liquids through our karst recharge areas would change the entire threat level of this project to our drinking water supply. **DTI should be willing to sign an agreement that no products other than natural gas will ever be transported through this pipeline or along their pipeline ROW. We encourage FERC to incorporate this restriction into the final permit for this project.**

The Service Authority had many questions regarding the DTI document, “Guidelines for Construction Activities on Rights-of-Way and in the Vicinity of Dominion Transmission, Inc. Pipelines” that were outlined and provided to DTI prior to meeting with company representatives on December 3, 2014. Responses were also documented by Staff during the meeting. A summary of key items promised by DTI following this meeting included:

- 1) A new guideline document or agreement that would directly pertain to the Service Authority (including a commitment of reciprocal notification of DTI’s work plans where pipeline crossings occur).
- 2) Clarification of paperwork/permit requirements to work within DTI right-of-way as a utility. Multiple documents are mentioned (DTI easement document, reimbursement agreement, encroachment agreement, and the guidelines document, which requires a legally binding signature).
- 3) A copy of the draft easement document that will be used by DTI as it is expected that there may be language in this document that could affect the Authority’s construction and maintenance activities in DTI right-of-way.

Working “cooperatively” with the Service Authority is noted in several responses but **the above issues remain unanswered.** To ensure that there is long term clarity, a written agreement with the Service Authority should be required. No offer to provide new documents or enter into an agreement at a future date was included in the response. Ultimately, the Service Authority would like to have a clear understanding of what is expected and required by DTI policy and procedures when it comes to

working in DTI right-of-way and whether the DTI requirements conflict with the Service Authority's ability to construct, operate, and maintain a public water and sewer utility.

The proposed pipeline route is also crossing the Augusta Regional Landfill property. The gas pipeline is projected to intersect our active leachate collection system in two places and also be in close proximity to our state-regulated gas and groundwater monitoring wells. We have expressed our concerns to DTI regarding negative impacts of blasting near our monitoring wells and the potential to cause offsite migration of gas or leachate that would put the Landfill in regulatory non-compliance with state and federal laws. The only response received from DTI to date was this statement on March 5, 2015:

"It is our current understanding that the ACP will cross Service Authority property near the Augusta County Landfill. ACP is currently developing easements for property owners along the pipeline route. ACP will engage Service Authority at an appropriate future time to negotiate the terms of that easement specific to Service Authority-held property."

It is disappointing that their only response is to choose to ignore our stated concerns regarding the risk to our environmental regulatory compliance status.

Summary

Throughout the entire process, DTI has repeatedly avoided direct answers to our questions, and has not adequately involved the Service Authority for any meaningful discussion on the impact of their project on the public drinking water supply. This has been a one-way process where the Authority continually has to seek out answers from DTI, and the eventual responses are vague and non-committal. Therefore, all risk from this project in regards to the issues above is placed on the Service Authority, our customers, and the local governments. It appears that the Augusta County Service Authority may be the only public utility whose critical water supplies are being threatened by this project. As such, we expect a higher level of attention and response from DTI. They appear to treat us as if we were a private landowner with a small residential well. We are hopeful that our concerns as expressed in this letter will be recognized by FERC and given the attention they deserve. **We therefore request that FERC have a representative meet with the Service Authority Board at the earliest opportunity. We also request to be a Cooperating Agency in the FERC process.**

Sincerely,

Tracy C. Pyles, Jr. by Sheri Heflin, Board Secretary
Tracy C. Pyles, Jr.
Chairman, Augusta County Service Authority Board

Attachments:

EGGI report October 31, 2014
Source Water Protection Ordinance
DTI March 5, 2015 responses
EPA Award (photo)

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October 31, 2014

Mr. Ken Fanfoni
Augusta County Service Authority
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P.O. Box 859
Verona, VA 24482-0859

Dear Ken,

This letter presents Emery & Garrett Groundwater Investigations, LLC's (EGGI's) professional opinions and recommendations regarding potential risks to the Augusta County Water Supply Production Wells, Springs, and infrastructure posed by the construction and operation of a high pressure natural gas pipeline by Dominion Power Resources, Inc. (Figure 1). As you know, Augusta County Service Authority (ACSA) (combined with the City of Staunton) provides potable drinking water and wastewater treatment to over 40,000 customers in Augusta County, Virginia. ACSA has invested hundreds of millions of dollars in water supply and wastewater infrastructure to serve the residents of the County. Most of the 1.2 billion gallons of water produced annually by the ACSA comes from high-yield wells and springs located in carbonate karst geologic settings.

The proposed routes for the Dominion Power natural gas pipeline that will go through Augusta County have raised numerous public concerns regarding the security of existing water resources and the potential for adversely impairing the opportunities for developing future groundwater resources that are critical to so many Augusta County residents (Figure 1). It is a recognized responsibility of the County to protect the substantial financial investments made to date by the ACSA as they relate to these potable groundwater supplies and the construction of both water and wastewater infrastructure.

A brief overview of the hydrogeologic setting and the risks associated with the construction and operation of the gas pipeline is provided herein. Recommendations are also provided to the ACSA and Augusta County that would serve to help prevent adverse impacts from occurring as they relate to the installation and operation of this high pressure gas pipeline.

A. HYDROGEOLOGIC SETTING

The ACSA obtains most of its potable water supplies from wells and springs located in karst settings (Figures 1 and 2). This reflects the fact that a significant portion of Augusta County is underlain by carbonate bedrock (i.e., limestone, dolomite, etc.).

Dissolution of the carbonate portion of such bedrock (Photo Inset 1) leads to the development of a karst landscape and subsurface karst aquifers. Karst environments are characterized by the presence of sinkholes, internally drained regions, sinking and losing streams, large springs, and caves (Figure 2).

While karst features in carbonate rocks present opportunities for the development of significant groundwater supplies, such features also present challenges with respect to groundwater protection. In a karst setting, changes to land use associated with construction and blasting can allow surface water to quickly enter the ground through solution enhanced fractures, conduits, or caves (Photo Inset 1, Figure 2). Such rapid infiltration can occur without the benefit of slow filtering that takes place in non-karst settings where relatively thick soil and complex fracture systems reduce the influx of potential contaminants, including potential pathogens such as bacteria, giardia, and other microparticulates. Other contaminants, such as those related to fuel spills, pesticides, fertilizers, and contaminated stormwater runoff, can also

Photo Inset 1. Open karst conduit beneath a solution sinkhole.

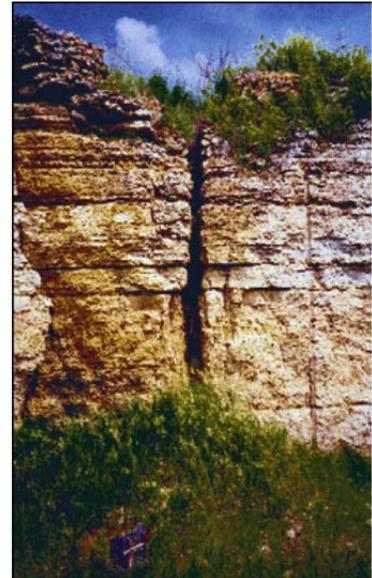


Photo Inset 2. Dropout Sinkhole in Augusta County.



quickly enter the groundwater system when ground conditions are altered. As a result, contaminants that enter the groundwater system can adversely impact nearby Production Wells and Springs rendering them unfit for use.

Another concern associated with impacting karst aquifer systems is that sinkhole development can pose a particular challenge to water supply infrastructure. Some sinkholes in Augusta County develop slowly over the course of thousands of years, but others have formed suddenly in a matter of minutes or days (Photo Inset 2). The latter

type of sinkhole can pose a very substantial hazard to the ACSA's infrastructure and potable groundwater resources.

Wells and springs located within karst aquifers are also susceptible to increases in turbidity that results from the suspension of insoluble residuum of carbonate rock formations (mainly inorganic clays, quartz, and other minerals). Although turbidity is not typically a problem during the normal operation of ACSA Production Wells, land use changes that impact groundwater levels, groundwater flow, or cause changes in hydrostatic pressure within the groundwater system can result in the suspension of the residuum and cause an increase in groundwater turbidity (Figure 2, Photograph 3). Increased turbidity levels in the local groundwater system can impair the potability of public water supply sources.

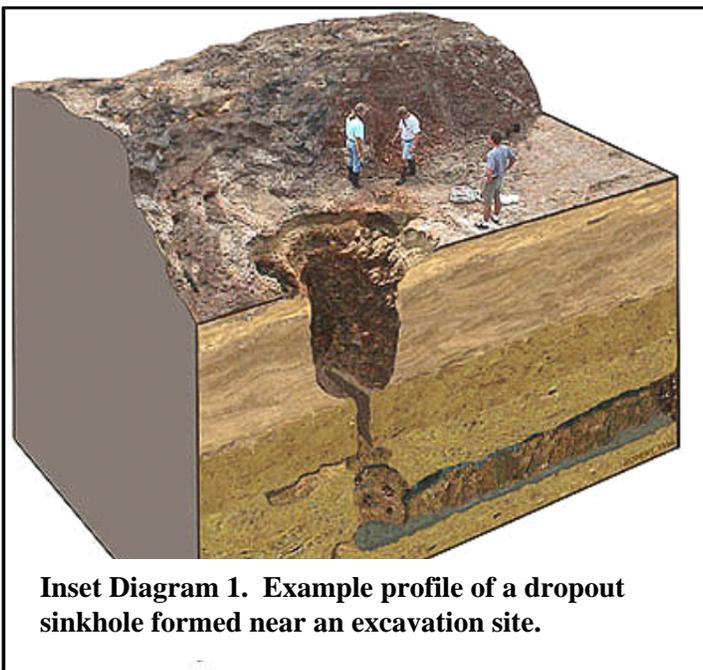
B. SPECIFIC CONCERNS RELATED TO THE INSTALLATION AND OPERATION OF A NEW HIGH PRESSURE GAS LINE

1) Blasting

The installation of a gas pipeline across Augusta County will necessitate substantial blasting of bedrock where shallow exposures are encountered. Blasting projects generate two primary concerns with respect to groundwater resources: 1) they can cause adverse water quality impacts, and 2) they can cause a decrease in yield of nearby wells and springs.

a) Water Quality

Groundwater quality concerns with any blasting project are associated with the introduction of blasting chemicals (or their combustion by-products) into the environment where



Inset Diagram 1. Example profile of a dropout sinkhole formed near an excavation site.

they can enter the groundwater system and ultimately adversely affect the underlying bedrock aquifer, wells, and springs. Examples of blasting agents (and their byproducts) that are of concern include: nitrate, volatile organic compounds (VOCs), perchlorate, and petroleum hydrocarbons. Blasting can also adversely impact water quality in other ways, such as causing turbidity (suspended particles) to be generated in the groundwater and by modifying natural groundwater flow paths in ways that change the occurrence of dissolved material that is naturally present in the groundwater. Furthermore, blasting in karst environments can open up fractures or other karst conduits allowing the introduction of surface water directly

into the aquifer without the benefit of adequate treatment to eliminate pathogens such as E.coli, giardia, and other microparticulates.

Blasting vibrations can also damage the grout and sanitary seals constructed around each Production Well. Compromised sanitary seals can allow surface water and other contaminants to quickly enter the well and underlying aquifer. Presently, the ACSA Production Wells produce water from karst aquifers that are of very high quality. Any adverse impacts to this high quality water could result in very costly treatment remedies.

b) Diminished Well Yields

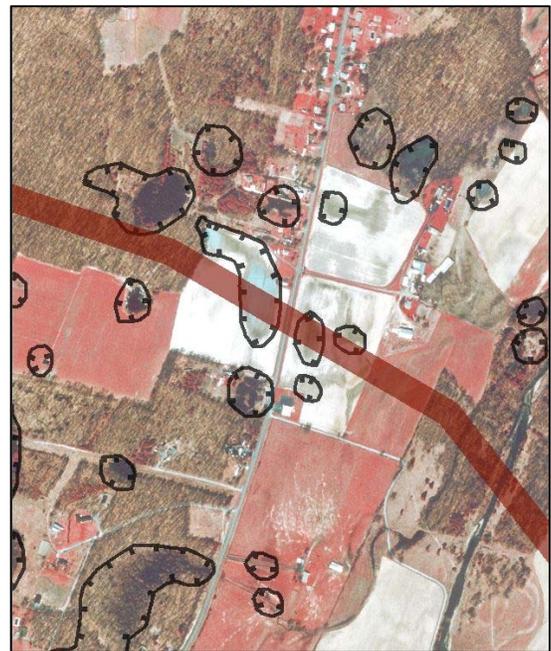
Blasting induces vibrations into the ground and groundwater system and can result in diminished well yields due to: 1) the collapse of a fracture or well bore (e.g., the infilling by sediment of the water-bearing fracture in a well); 2) permanently lowering water tables; 3) forming sinkholes, particularly where unstable soil arches are present (Photograph 3 on Figure 2). All changes caused by blasting vibrations in the karst system can alter the hydrology of the bedrock aquifer and reduce the yield of wells and springs.

2) Gas Pipeline Construction

Installation of a high pressure gas pipeline involves significant construction activity including land clearing, major trenching and excavating, and activities associated with the assembly of the pipeline and associated infrastructure.

Construction activities pose numerous potential threats to the utilization of the ACSA Production Wells and Springs. These include the following:

- Frequent handling and storage of petroleum products can lead to uncontrolled releases to the environment that result in contamination of underlying groundwater supplies (Field, 1990);
- Construction induced vibrations can cause turbidity to occur within the groundwater system and within productive wells and springs (Langer, 2001);
- Earth disturbance and excavations can change (or concentrate) stormwater flow in new ways that can adversely affect groundwater quality;
- Ponding of stormwater in new areas (as a result of construction activities) is a common trigger of sudden sinkhole formation and ground collapse, leading to rapid infiltration of untreated stormwater into the underlying aquifer (Newton, 1987);



Inset Photo 3 – Pipeline corridor passes through an area of intense sinkhole development proximal to the ACSA Lyndhurst Production Well.

- Excavation can expose and enhance existing bedrock fractures and or karst conduits that exist at or near the ground surface leading to surface water intrusion into the underlying groundwater system; and
- Construction activities can damage existing water utilities, as the proposed natural gas pipeline is expected to cross existing ACSA water mains (and sewer lines) at numerous locations.

3) Operation of High Pressure Gas Pipeline

Although the normal operation of a natural gas pipeline typically presents limited risk to groundwater quality, there are certain events or occurrences that can pose a threat to groundwater resources. Slow, long-term leaks of natural gas that go undetected for long periods of time can result in natural gas entering the karst aquifer system and potentially traveling to springs and wells used for domestic, industrial, or public use. In such a case, indoor degassing of concentrated natural gas from groundwater can result in explosive atmospheres (Crawford, N.C., 1984, and Pennsylvania Department of Environmental Protection, 2009).

Catastrophic pipeline failures are low frequency, high-impact events that have devastating consequences in terms of structural damage and personal injury. Over the past 20 years (1994-2013), significant gas transmission pipeline accidents in the United States have resulted in over 41 fatalities, 195 injuries, and caused \$1.6 billion dollars of property damage (Figure 3, Appendix A). A catastrophic leak, explosion or fire can lead to groundwater contamination (and water utility service disruption) due to runoff from fire suppression efforts (Photograph 5, Figure 3) and/or the mass injection of natural gas to the subsurface. In karst terrains, there is an increased risk of a pipeline failure due to the formation of a sinkhole or subsidence that occurs in proximity to the pipeline, wells, and/or springs.

Furthermore, if this proposed pipeline is licensed to carry liquid hydrocarbons (gasoline, crude oil, diesel, or other liquid hydrocarbons) other than natural gas, there is serious concern that a release of one (or more) of these products could result in a significant impact to groundwater quality that renders the groundwater unfit for potable purposes (Figure 3, Photographs 3 and 6). Property losses due to hazardous liquid pipeline incidents are more extensive nationwide than incidents involving gas transmission pipelines even though there are fewer miles of hazardous liquid pipeline (192,396 miles of liquid hydrocarbon pipeline in 2013) compared to gas transmission lines (302,825 miles as of 2013) (PHMSA Website accessed 2014). **Over the past 20 years (1994-2013), significant hazardous liquid transmission pipeline accidents have resulted in over 40 fatalities within the United States, 132 injuries, and caused \$3.2 billion dollars of property damage (Appendix B). A total of 2.3 million barrels¹ of product have been spilled over that 20 year span, with an excess of 119 thousand barrels (nearly 5 million gallons) spilled as a result of 401 significant incidents just in 2013.** Whether the leak is a slow, long-term occurrence, or a sudden catastrophic release, there are numerous cases of groundwater contamination that are often difficult, expensive, and, sometimes, not even feasible to clean up (Delin and Others, 1998). If such an event were to

¹ One barrel of oil is equivalent to 42 gallons.

occur within one of the ACSA's designated groundwater recharge areas (Wellhead Protection Area [WHPA]) or proximal to a Production Well (Figure 1), it would be highly disruptive to the ACSA's water supply.

Another major concern posed by the normal operation of the gas pipeline is that the right-of-way and line crossing requirements could restrict or hamper expansion of the water utility system and potentially restrict development of additional well sites that are necessary to meet future water supply demands (Figure 1). Augusta County has seen rapid growth over the past two decades; the population has increased from 54,677 in 1990 to 73,912 people in 2013 (US Census Bureau). The availability of reliable water resources has been critical to support this growth, and it is vital for future expansion, as well as serving current residents and businesses. Any restrictions to developing a new source of groundwater supply or building additional water or wastewater infrastructure will cause significant detrimental impacts to the County as a whole.

C. CONCLUSIONS

1) **The Augusta County Service Authority and Augusta County should Avoid all High Pressure Gas Pipeline Construction Operations within Sensitive Groundwater Recharge and Protection Areas**

The Augusta County Service Authority (ACSA) relies on numerous high-yield karst wells and springs to supply drinking water to over 40,000 customers at over 15,000 connections (Figure 1). In many cases, individual/independent water sources have been developed to meet the entire demand of key portions of the ACSA Service Districts (e.g., Middlebrook). In other words, if a critical well or spring were rendered unusable, a portion of the ACSA water users would be left without a public water supply². Additionally, many homes in rural Augusta County rely on domestic wells for their only source of potable water, and loss of the use of their well would be catastrophic to many owners.

Once groundwater becomes contaminated, it can be very costly, time consuming, and potentially impossible to clean up. **Therefore, the best strategy to protect these critical groundwater resources is to avoid pipeline construction development and operation in designated sensitive water supply areas such as exist in: a) the wellhead protection and groundwater recharge areas, b) close proximity to public supply wells and springs³, and c) those areas that have been identified as favorable for the future development of public groundwater supplies.**

2) **The ACSA and Augusta County should Avoid the Use of any High Pressure Gas Pipeline for Transporting "Other" Hazardous Liquids**

ACSA should work diligently to prohibit any potential for using the gas pipeline for transporting other hazardous materials including the transport (or potential transport) of

² The ACSA Middlebrook Well is the sole source of public water in Middlebrook, Virginia.

³ Although Source Water Protection Areas have been identified for many of the ACSA Production Wells and Springs, not all water supplies have had their source areas delineated.

hazardous liquids, such as petroleum products, diesel fuel, gasoline, or other liquid hydrocarbons. It is EGGI's professional opinion that a catastrophic release of liquid petroleum products could contaminate karst aquifers rendering groundwater (pumped from nearby wells and springs) unfit for human consumption for a period of months, decades, or much longer. **Therefore, the ACSA and the County should ensure that the license issued by the FERC for the Dominion Pipeline explicitly excludes the transport of liquid-phase products and allows only the transport of dry (free of condensate) natural gas.**

3) The ACSA and Augusta County should confirm that the Pipeline Design is Sufficient to be Protected from Natural Environmental Hazards

A high priority for groundwater protection is to ensure that the pipeline is designed to be suitable to withstand environmental hazards that will be encountered along the final route(s). It is imperative that the pipeline be built to withstand stresses caused by ground subsidence, irregular (pinnacled) bedrock, potential rapid sinkhole development, earthquakes, and chemical and physical corrosion.

D. RECOMMENDATIONS – MINIMUM REQUIREMENTS TO BE MANDATED BY ACSA AND AUGUSTA COUNTY IF PIPELINE IS APPROVED TO BE INSTALLED

1) Development of Legally Binding Pipeline Construction Management and Blasting Plan (including a Groundwater Monitoring Plan)

*It is imperative that, if the pipeline is approved, its construction and installation be contingent upon the development of a legally binding **Construction Management and Blasting Plan** that is agreed upon by the ACSA, Augusta County, and Dominion Power (and its contractors) that addresses specific Best Management Practices to limit the potential for contaminating groundwater during site work activities. Aspects of the **Plan** must include (as a minimum): a) pre- / post-construction water quality sampling program, b) groundwater level monitoring, c) selection, handling and use of blasting agents, d) dewatering of blast-holes, e) control of stormwater, f) mitigation of karst features encountered/created during excavation/blasting, g) fuel storage and refueling, h) procedures and practices related to crossing existing utilities, i) stormwater management, and j) construction / blasting monitoring to ensure compliance with groundwater protection measures. It is imperative that the ACSA and Augusta County retain the authority to have Dominion Power immediately stop work on the pipeline if conditions develop that threaten public water supply sources. The specific metrics and criteria for establishing this “stop work” event will need to be thoroughly presented in the **Plan**.*

*Prior to the initiation of any blasting, a **Groundwater Monitoring Plan** must be designed, agreed upon, and implemented to quantify existing baseline hydrogeologic conditions and provide a means for identifying adverse impacts (should they occur) during and after the pipeline blasting/construction activities. The collected groundwater monitoring data will be used to establish any mitigation plan that is subsequently required.*

The **Plan(s)** shall include a provision for the funding of an escrow account to cover expenses incurred by the ACSA and County for testing, construction/blasting monitoring / inspections, and professional or legal consultation to address adverse impacts/issues that may arise during construction of the pipeline.

2) Development of Operation Plan

*It is imperative that, if the pipeline is approved, its construction and installation be contingent upon developing an **Operational Plan** for the pipeline that is approved by the ACSA Augusta County, and Dominion Power. The **Operation Plan** shall mandate specific provisions for regular inspections, leak monitoring and detection, ongoing training of emergency response personnel, and to establish the right, in perpetuity, for new ACSA water and wastewater utility crossings of the pipeline. An escrow account shall be established and maintained during the operational period of the pipeline to address all issues that may arise and to cover additional costs⁴ incurred by the ACSA when crossing the pipeline right-of-way with new or existing utilities.*

3) Development of a Mitigation Plan

*It is imperative that, if the pipeline is approved, its construction and installation be contingent upon developing a **Mitigation Plan** that is developed and approved by the ACSA, Augusta County, and Dominion Power to address a number of contingencies should all efforts targeted toward preventing adverse impacts fail . These contingencies would apply to the following: a) groundwater contamination occurs, b) the usability of a public supply well or residential well is compromised or diminished, c) a sinkhole develops near the pipeline, d) damage occurs to an ACSA facility or pipeline, e) a leak or release of transported product occurs, or f) a major catastrophic pipeline failure occurs. The **Plan** shall establish Dominion Power's financial liability (or other owner, operator, partner, successor, etc.) to repair, replace, remediate, any wells, aquifers, recharge areas to aquifers, or infrastructure that is harmed by the installation or operation of the pipeline. Dominion Power shall be financially responsible for providing alternative water supplies during a water "outage", whether this includes hauling water, paying for water purchased from adjoining utilities, or providing temporary emergency treatment systems. A key part of this **Plan** shall describe appropriate financial assurances (such as surety bonds, escrow accounts, insurance instruments, etc.) to insure that any remediation can be completed even if the company is no longer solvent.*

E. FINAL STATEMENT

The ACSA and Augusta County have invested hundreds of millions of dollars developing public water supplies and infrastructure to meet the growing water supply demands in Augusta County. Most of the water supplies in the County are obtained from sensitive karst aquifers that warrant the highest level of groundwater protection efforts to ensure a safe, reliable, and sustainable source of water for future generations. It is our professional opinion that all critical

⁴ These costs are defined as anything above and beyond the normal installation costs associated with water or wastewater lines due to the presence of the gas pipeline.

water resource areas serving the County, such as areas near ACSA Production Wells and Springs, designated groundwater recharge areas, wellhead protection areas, and future groundwater development zones, should be avoided when siting proposed gas transmission lines. Furthermore, the transport of hazardous hydrocarbon liquids (other than natural gas) should be strictly prohibited in this proposed high pressure gas pipeline where a leak could have devastating consequences. EGGI has provided herein our conclusions and recommendations as they relate to these issues.

Respectfully submitted,



Jeffrey M. Marts, P.G.
Geologist/Project Manager



James M. Emery, P.G.
Senior Hydrogeologist
President

F. REFERENCES

Crawford, N.C., 1984, Toxic and explosive fumes rising from carbonate aquifers – A Hazard for Residents of Sinkhole Plains: in Beck, B.F., ed., Sinkholes: Their Geology, Engineering and Environmental Impact, Proceedings of the First Multidisciplinary Conference on Sinkholes, Orlando, Florida.

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Field, M.S., 1990, Transport of Chemical Contaminants in Karst Terranes – Outline and Summary: in Selected Papers on Hydrogeology, 28th International Geologic Congress, v. 1, 1989.

Langer, W.H., 2001, Potential Environmental Impacts of Quarrying Stone in Karst – A Literature Review, USGS Open-File Report OF-01-0484.

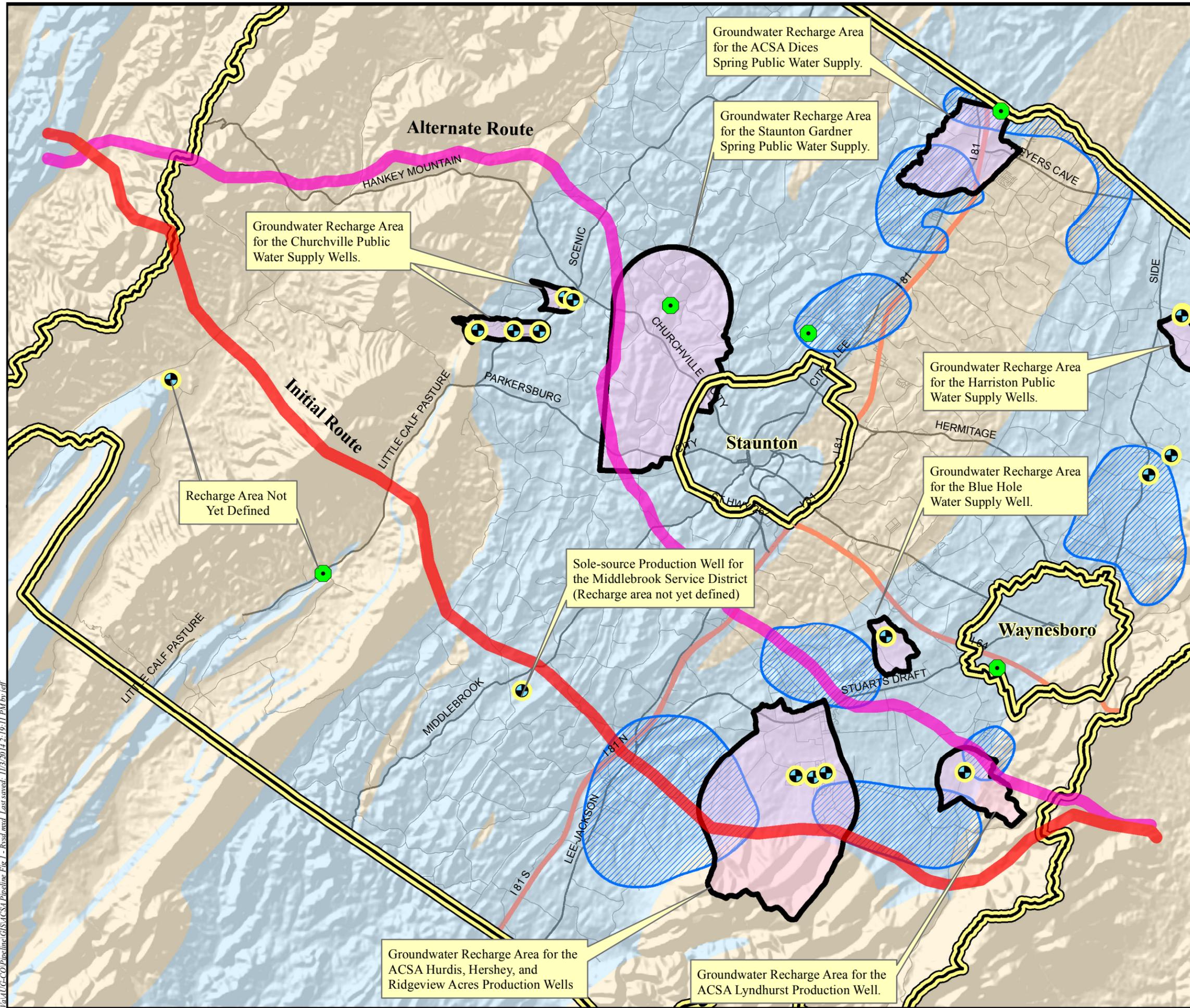
Newton, J.G., 1987, Development of Sinkholes Resulting from Man’s Activities in the Eastern United States, USGS Circular 968.

Pennsylvania Department of Environmental Protection, 2009, Stray Natural Gas Migration Associated with Oil and Gas Wells, Draft Report downloaded from DEP website on 10/31/14.

FIGURES

FIGURE 1

Proposed Gas Pipeline Study Corridors
and Augusta County
Groundwater Resources - Sensitive
Groundwater Recharge Areas
Augusta County, Virginia



Public Water Supplies

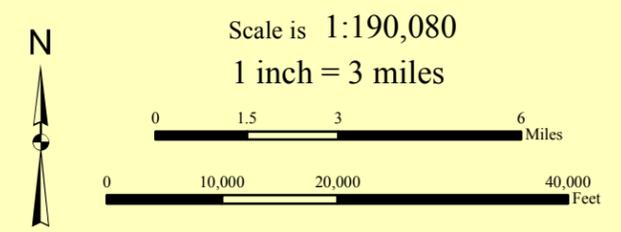
- Existing ACSA Production Well - Potable Supply
- Potable Water Supply Production Spring
- ACSA Source Water Protection Area - Designated Sensitive Groundwater Recharge Areas
- Future Groundwater Development Areas

Proposed Pipeline Study Corridors

- Alternate Route
- Initial Route

Bedrock Geology

- Non-carbonate Rocks
- Carbonate Rocks



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FIGURE 2
 Karst Geology and Geologic Hazards
 Augusta County, Virginia

Photograph 1



Photograph of a dropout or cover collapse sinkhole that formed suddenly during the nearby construction of a stormwater retention pond.

Photograph 2



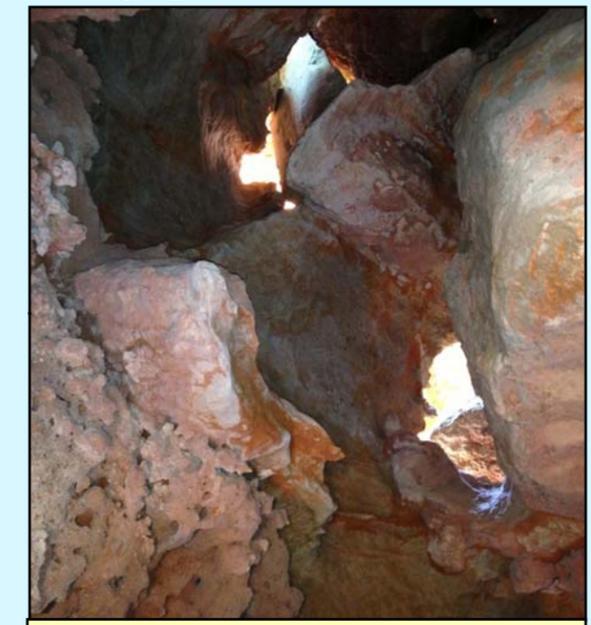
Example of a vertical open karst conduit in the Lincolnshire and Newmarket Limestones. Open conduits like this one are one reason why karst aquifers can be susceptible to contamination if landuse changes occur.

Photograph 3



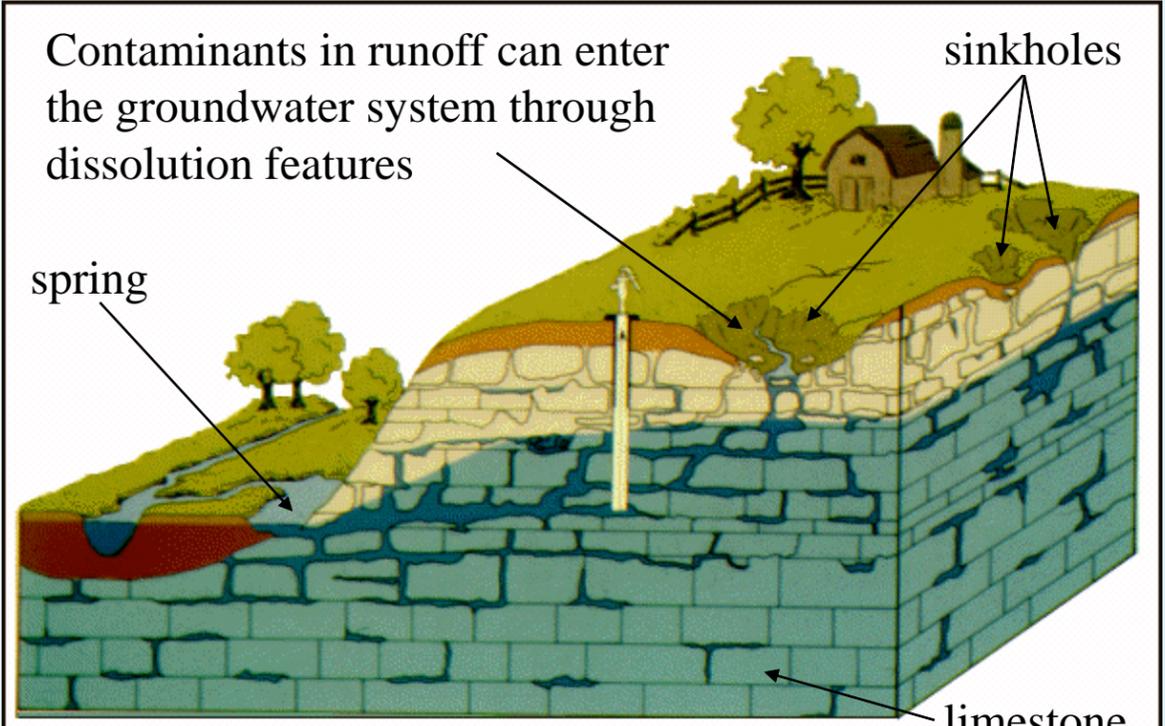
Photograph of a soil-filled vertical karst conduit in the Conococheague Formation. Blasting-induced vibrations can cause downward movement of soil in similar geologic settings, leading to the development of a cover collapse sinkhole at the ground surface.

Photograph 4



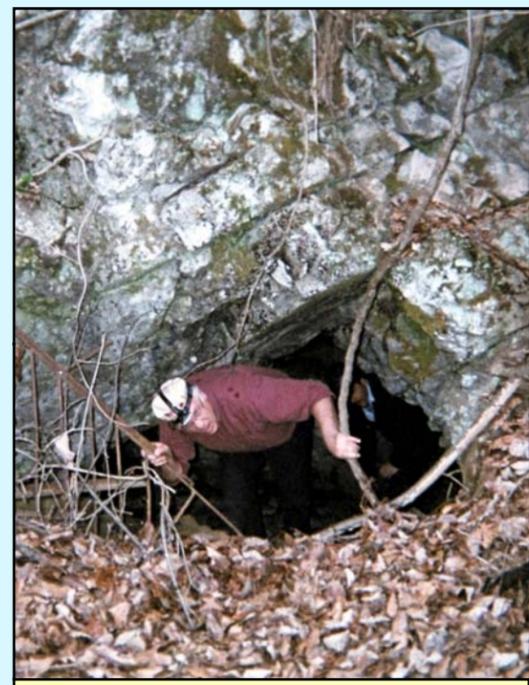
Photograph of a cavern in the Newmarket Limestone that once was a pathway for significant groundwater flow. The lower portion of this cave is filled with groundwater.

Diagram 1



This schematic diagram illustrates important features of a karst aquifer system and how activities at the ground surface can impact the groundwater system.

Photograph 6



Example of a cave in Augusta County where groundwater flows to the ground surface forming a major karst spring.

Photograph 5



Agriculture is a common landuse in Augusta County. Blasting induced vibrations or changes in stormwater flow paths can "open up" soil-filled conduits.

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FIGURE 3
Examples of Pipeline Accidents
Augusta County, Virginia

Photograph 1



Aftermath of a gas pipeline explosion in Appomattox, Virginia.

Photograph 2



Example of a fire due to a gas pipeline rupture in West Virginia.

Photograph 3



Oil discharging from the rupture of an above-ground high-pressure pipeline in Alberta, Canada. A similar release from a buried pipeline would potentially result in a significant amount of petroleum product entering into the karst aquifer.

Photograph 4



Numerous homes were destroyed by the explosion and subsequent fire following the rupture of a gas transmission line in California.

Photograph 5



Firefighters applying hundreds of gallons of water per minute to control the fire associated with the gas line rupture shown in Photograph 4. Runoff containing chemical residues from firefighting operations can contaminate groundwater resources, particularly in karst terrain.

Photograph 6



This oil spill in Utah from a ruptured pipeline illustrates the potential magnitude of a hazardous liquid pipeline failure.

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APPENDIX A

US DOT PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION (PHMSA) DATA

- **PHMSA Gas Transmission Pipeline Incidents 1994-2013**
 - **PHMSA Gas Transmission Pipeline Mileage**

Pipeline Incidents by System Type:

Date run: 10/28/2014

Portal - Data as of 10/27/2014

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration

PHMSA Pipeline Incidents: (1994-2013)

Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)

Calendar Year	Number	Fatalities	Injuries	Property Damage As Reported
1994	74	0	22	43,878,806
1995	54	2	7	9,719,250
1996	76	1	5	13,078,474
1997	68	1	5	11,658,117
1998	88	1	11	41,624,324
1999	48	2	8	15,656,834
2000	76	15	16	16,966,261
2001	75	2	5	13,731,347
2002	73	1	4	25,369,331
2003	93	1	8	48,815,101
2004	103	0	2	35,759,907
2005	160	0	5	298,074,982
2006	130	3	3	41,118,273
2007	111	2	7	62,029,166
2008	122	0	5	256,011,440
2009	105	0	11	55,911,891
2010	107	10	61	411,031,023
2011	119	0	1	98,034,649
2012	103	0	7	45,220,814
2013	106	0	2	42,275,974
Grand Total	1,891	41	195	1,585,965,964

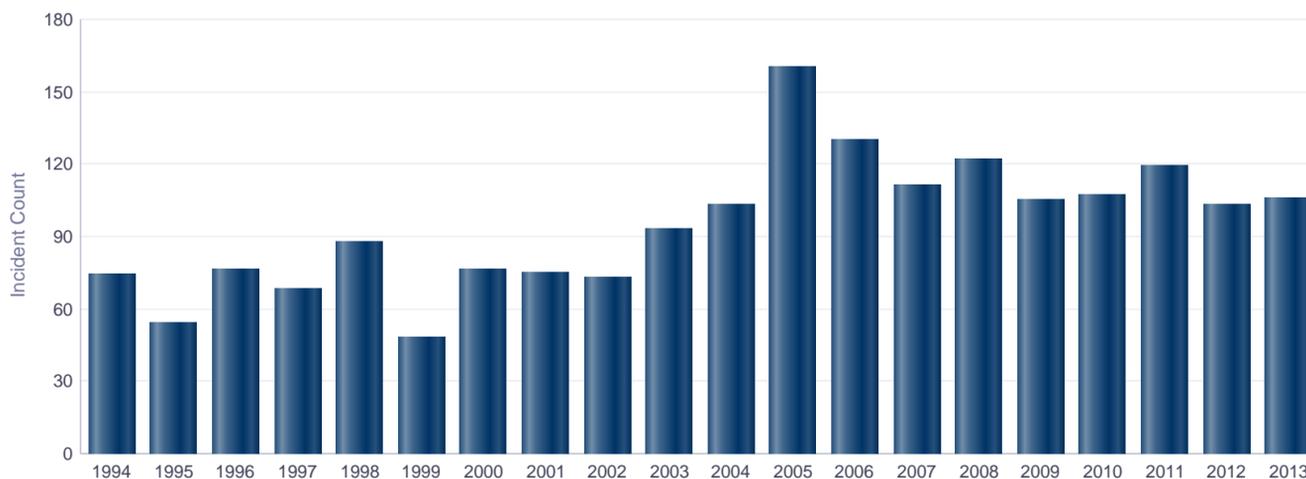
PHMSA Pipeline Incidents: Multi-Year Averages (1994-2013)

Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)

	Incident Count	Fatalities	Injuries	Property Damage	2014 Year-To-Date
3 Year Average - (2011-2013)	109	0	3	\$61,843,812	Incidents 89
5 Year Average - (2009-2013)	108	2	16	\$130,494,870	Fatalities 1
10 Year Average - (2004-2013)	117	2	10	\$134,546,812	Injuries 1
20 Year Average - (1994-2013)	95	2	10	\$79,298,298	Property Damage \$31,444,702

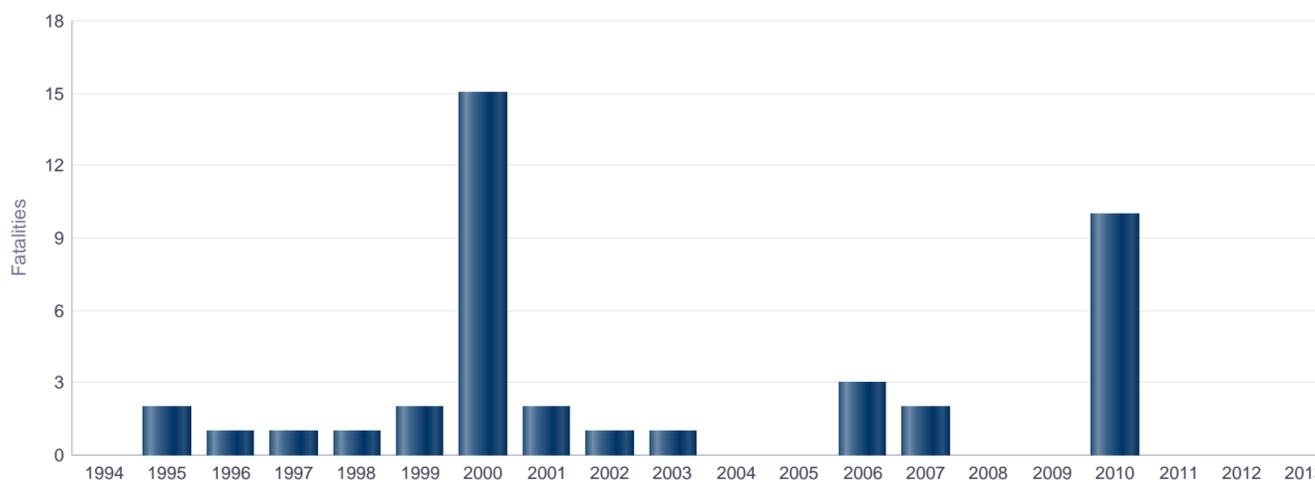
PHMSA Pipeline Incidents: Count (1994-2013)

Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)

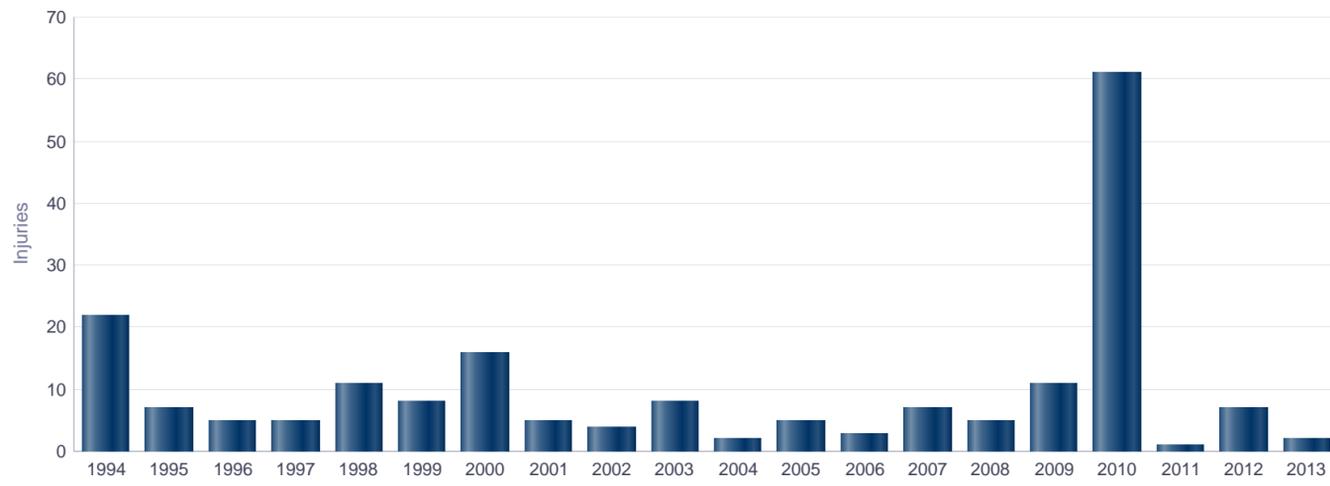


PHMSA Pipeline Incidents: Fatalities (1994-2013)

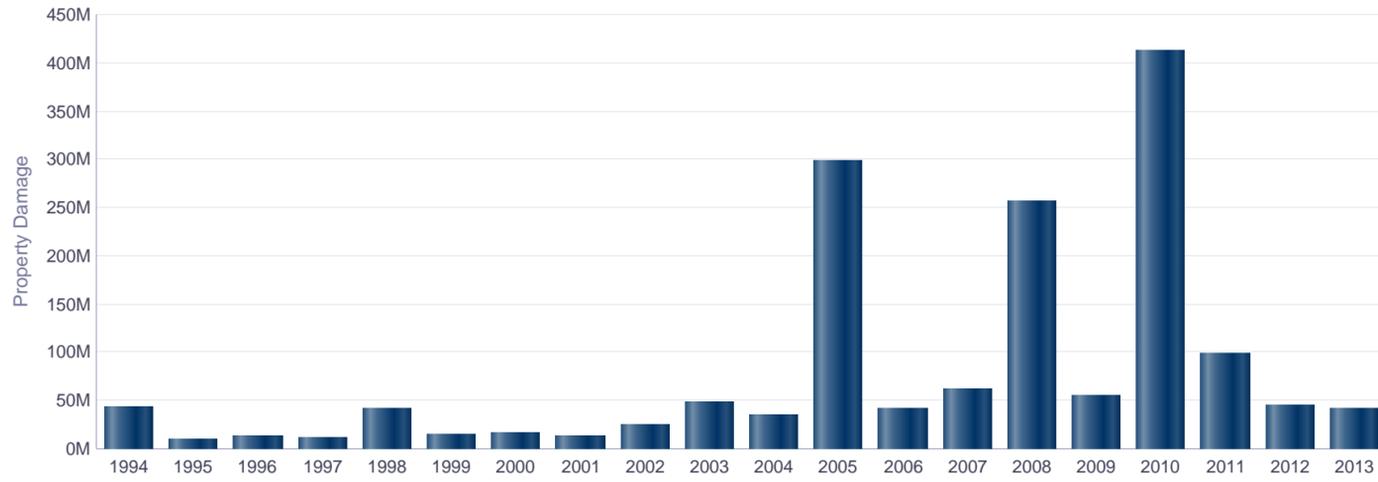
Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)



PHMSA Pipeline Incidents: Injuries (1994-2013)
Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)



PHMSA Pipeline Incidents: Property Damage (1994-2013)
Incident Type: All Reported System Type: GAS TRANSMISSION State: (All Column Values) Offshore Flag : (All Column Values)



Gas Transmission Pipeline Miles

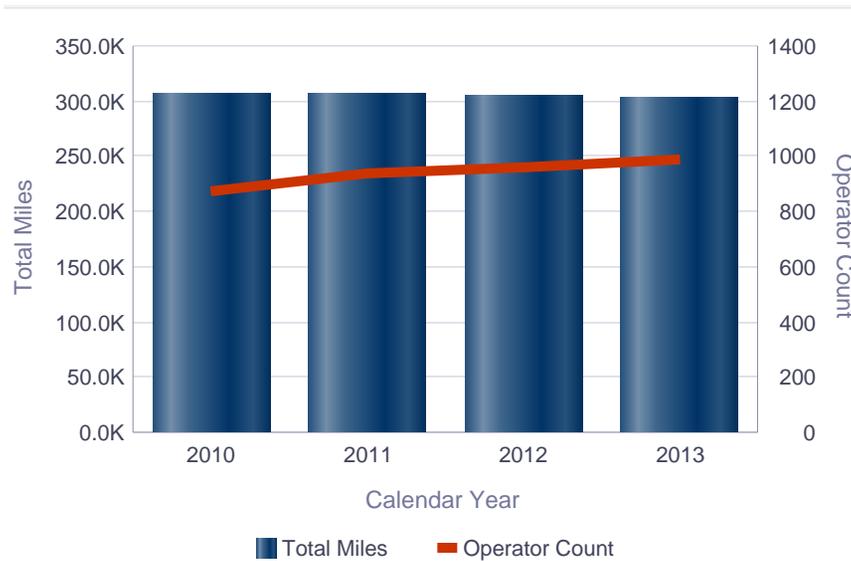
Time run: 10/28/2014 10:02:04 AM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
Portal Data as of 10/27/2014 9:57:31 PM

State: (All Column Values)

Calendar Year	INTERSTATE				INTRASTATE				Onshore Miles	Offshore Miles	Total Miles	Operator Count
	Onshore Miles	Offshore Miles	Total Miles	Operator Count	Onshore Miles	Offshore Miles	Total Miles	Operator Count				
2013	192,781.8	4,397.7	197,179.6	159	105,523.2	122.4	105,645.6	865	298,305.0	4,520.2	302,825.2	990
2012	192,514.9	4,620.4	197,135.3	154	106,047.5	148.8	106,196.3	836	298,562.3	4,769.2	303,331.5	960
2011	191,956.8	5,208.2	197,164.9	152	107,765.9	105.3	107,871.1	817	299,722.6	5,313.5	305,036.1	937
2010	191,572.0	5,336.5	196,908.5	146	107,770.7	95.9	107,866.6	766	299,342.7	5,432.4	304,775.1	874

GT Total Miles



APPENDIX B

US DOT PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION (PHMSA) DATA

- **PHMSA Hazardous Liquid Pipeline Incidents 1994-2013**
 - **PHMSA Hazardous Liquid Pipeline Mileage**

Pipeline Incidents by System Type:

Date run: 10/28/2014

Portal - Data as of 10/27/2014

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration

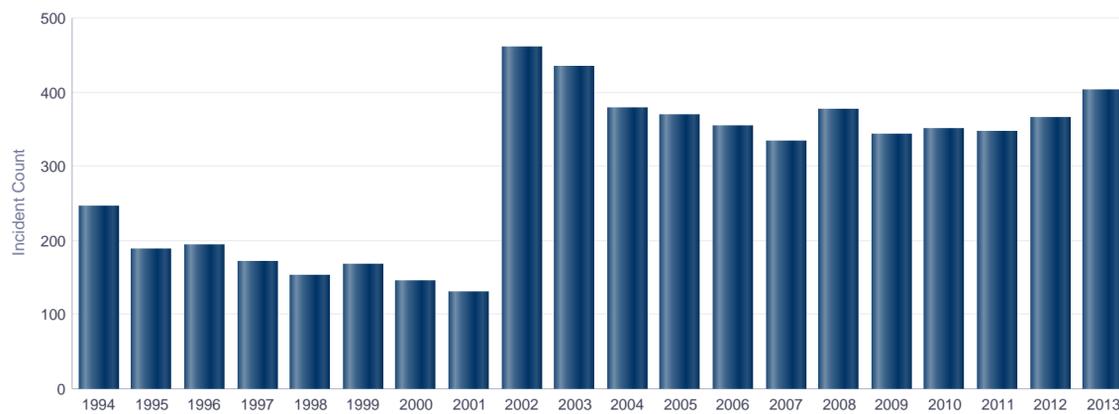
PHMSA Pipeline Incidents: (1994-2013)
 Incident Type: All Reported System Type: HAZARDOUS LIQUID State: (All Column Values)
 Offshore Flag : (All Column Values) Commodity: (All Column Values)

Calendar Year	Number	Fatalities	Injuries	Property Damage As Reported	Barrels Spilled	Net Barrels Lost
1994	245	1	7	\$62,166,058	164,387	114,002
1995	188	3	11	\$32,518,689	110,237	53,113
1996	194	5	13	\$85,136,315	160,316	100,949
1997	171	0	5	\$55,186,642	195,549	103,129
1998	153	2	6	\$63,308,923	149,500	60,791
1999	167	4	20	\$86,355,560	167,230	104,487
2000	146	1	4	\$150,555,745	108,652	56,953
2001	130	0	10	\$25,346,751	98,348	77,456
2002	459	1	0	\$51,648,847	97,256	77,953
2003	434	0	5	\$67,416,845	81,308	50,889
2004	377	5	16	\$166,021,004	89,311	69,003
2005	369	2	2	\$306,454,691	138,095	46,246
2006	354	0	2	\$75,120,324	137,693	53,905
2007	332	4	10	\$60,443,450	95,600	68,942
2008	375	2	2	\$148,277,329	102,077	69,510
2009	342	4	4	\$74,169,877	55,014	32,308
2010	350	1	4	\$1,003,774,806	100,558	49,452
2011	346	1	2	\$269,052,946	89,111	57,474
2012	364	3	4	\$144,270,318	45,880	29,377
2013	401	1	5	\$267,305,337	119,291	87,762
Grand Total	5,897	40	132	\$3,194,530,457	2,305,414	1,363,702

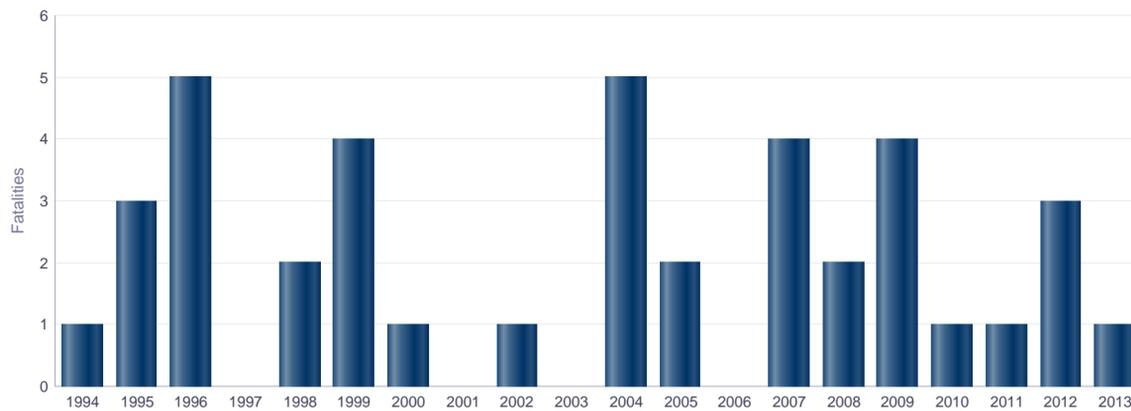
PHMSA Pipeline Incidents: Multi-Year Averages (1994-2013)
 Incident Type: All Reported System Type: HAZARDOUS LIQUID State: (All Column Values)
 Offshore Flag : (All Column Values) Commodity: (All Column Values)

	Incident Count	Fatalities	Injuries	Property Damage	Barrels Spilled	Net Barrels Lost	2014 Year-To-Date
3 Year Average -(2011-2013)	370	2	4	\$226,876,200	84,761	58,204	Incidents 354
5 Year Average -(2009-2013)	361	2	4	\$351,714,657	81,971	51,275	Fatalities 0
10 Year Average -(2004-2013)	361	2	5	\$251,489,008	97,263	56,398	Injuries 0
20 Year Average -(1994-2013)	295	2	7	\$159,726,523	115,271	68,185	Property Damage \$62,972,321
							Barrels Spilled 27,706
							Net Barrels Lost 12,091

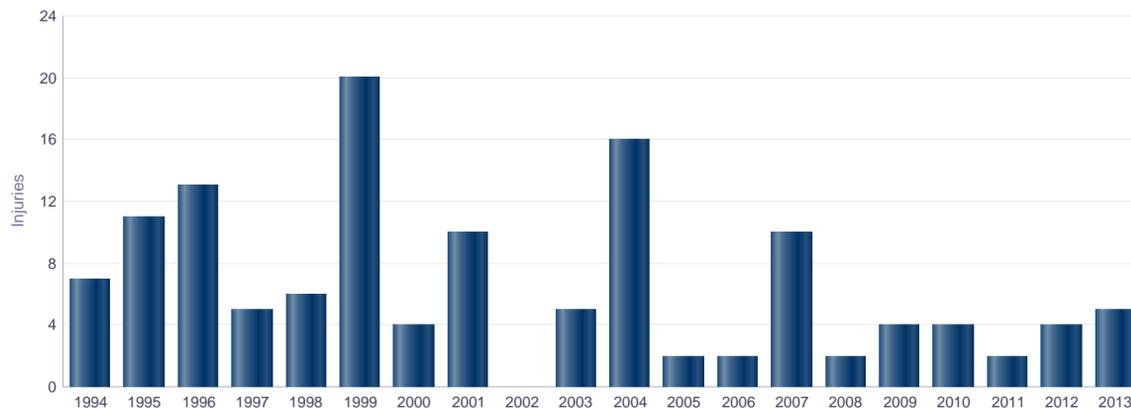
PHMSA Pipeline Incidents: Count (1994-2013)
 Incident Type: All Reported System Type: HAZARDOUS LIQUID State: (All Column Values)
 Offshore Flag : (All Column Values) Commodity: (All Column Values)



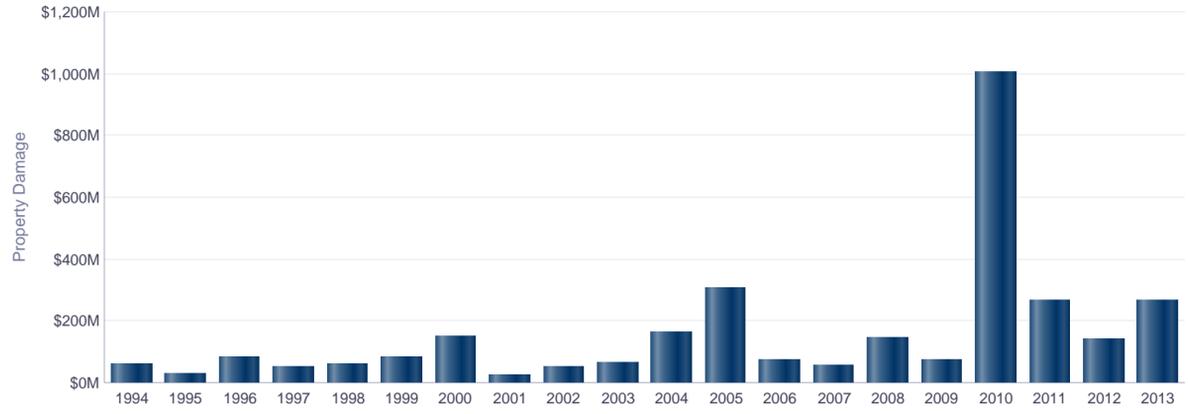
PHMSA Pipeline Incidents: Fatalities (1994-2013)
 Incident Type: All Reported System Type: HAZARDOUS LIQUID State: (All Column Values)
 Offshore Flag : (All Column Values) Commodity: (All Column Values)



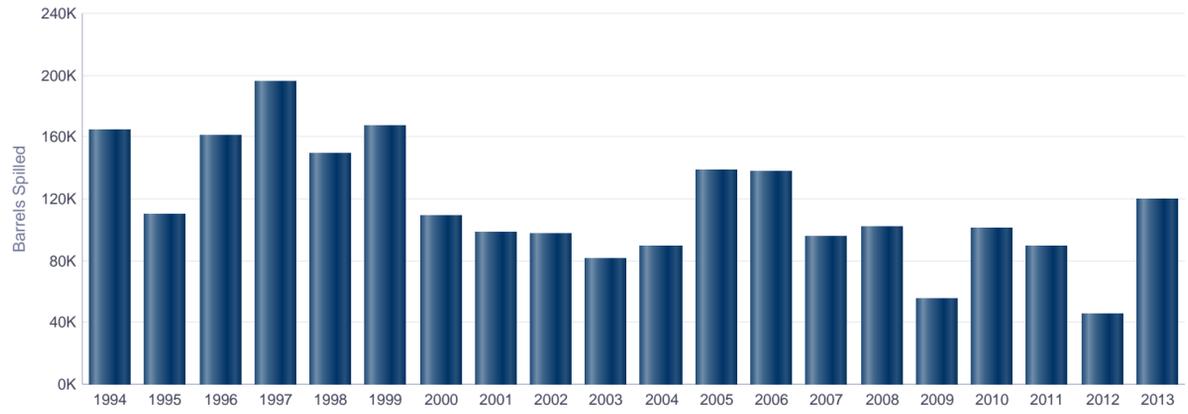
PHMSA Pipeline Incidents: Injuries (1994-2013)
 Incident Type: All Reported System Type: HAZARDOUS LIQUID State: (All Column Values)
 Offshore Flag : (All Column Values) Commodity: (All Column Values)



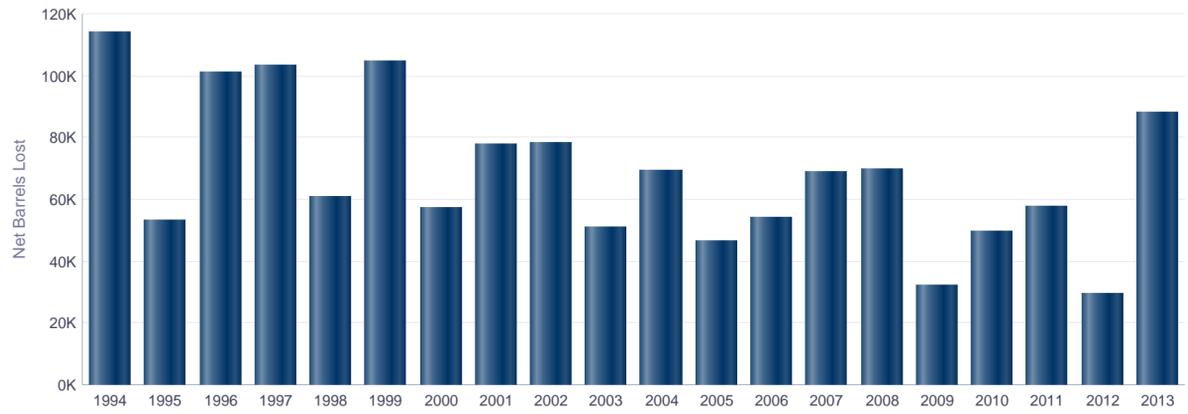
PHMSA Pipeline Incidents: Property Damage (1993-2012)
Incident Type: All Reported **System Type:** HAZARDOUS LIQUID **State:** (All Column Values)
Offshore Flag : (All Column Values) **Commodity:** (All Column Values)



PHMSA Pipeline Incidents: Barrels Spilled (1994-2013)
Incident Type: All Reported **System Type:** HAZARDOUS LIQUID **State:** (All Column Values)
Offshore Flag : (All Column Values) **Commodity:** (All Column Values)



PHMSA Pipeline Incidents: Net Barrels Lost (1994-2013)
Incident Type: All Reported **System Type:** HAZARDOUS LIQUID **State:** (All Column Values)
Offshore Flag : (All Column Values) **Commodity:** (All Column Values)



Hazardous Liquid Pipeline Miles and Tanks

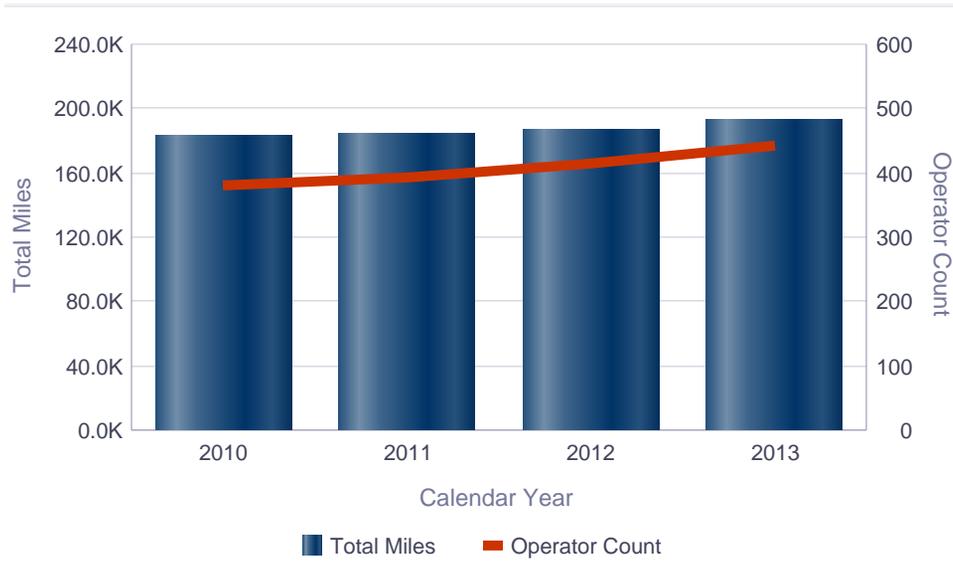
Time run: 10/28/2014 10:02:04 AM

Data Source: US DOT Pipeline and Hazardous Materials Safety Administration
 Portal Data as of 10/27/2014 9:57:31 PM

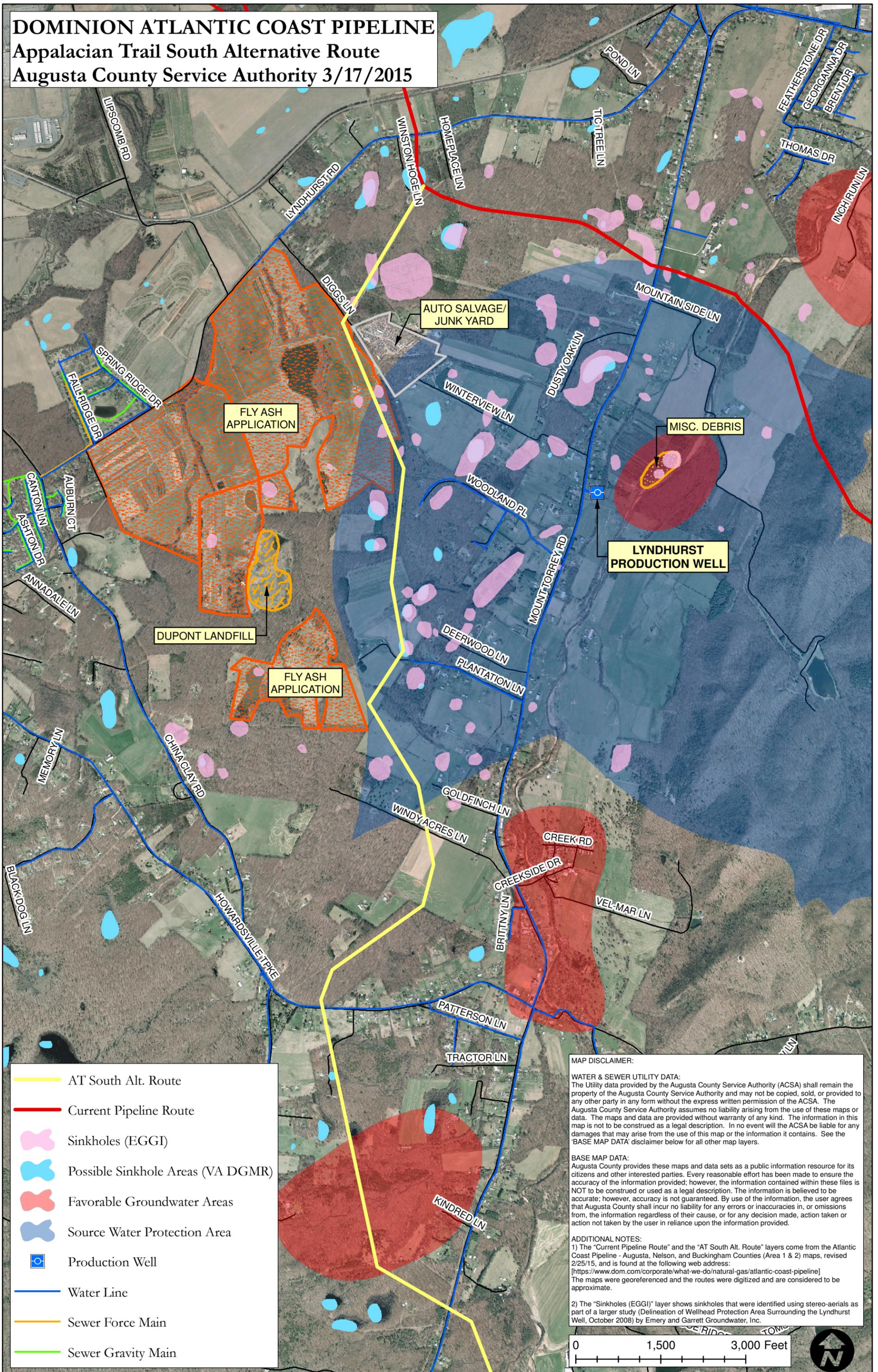
State: (All Column Values)

Calendar Year	INTERSTATE				INTRASTATE				Total Miles	Miles of Gathering	Total Breakout Tanks	Operator Count
	Total Miles	Miles of Gathering	Total Breakout Tanks	Operator Count	Total Miles	Miles of Gathering	Total Breakout Tanks	Operator Count				
2013	135,483.4	890.4	4,818	169	56,912.8	2,785.8	2,152	360	192,396.2	3,676.1	6,970	441
2012	130,164.6	985.4	4,754	162	56,044.5	2,101.3	2,045	333	186,209.0	3,086.7	6,799	413
2011	128,426.9	1,069.6	4,635	153	55,140.9	1,847.5	1,860	312	183,567.8	2,917.1	6,495	393
2010	127,532.4	1,089.3	4,394	151	54,441.5	2,673.4	1,865	294	181,974.0	3,762.6	6,259	379

HL Total Miles



DOMINION ATLANTIC COAST PIPELINE
Appalacian Trail South Alternative Route
Augusta County Service Authority 3/17/2015



- AT South Alt. Route
- Current Pipeline Route
- Sinkholes (EGGI)
- Possible Sinkhole Areas (VA DGMR)
- Favorable Groundwater Areas
- Source Water Protection Area
- Production Well
- Water Line
- Sewer Force Main
- Sewer Gravity Main

MAP DISCLAIMER:

WATER & SEWER UTILITY DATA:
 The Utility data provided by the Augusta County Service Authority (ACSA) shall remain the property of the Augusta County Service Authority and may not be copied, sold, or provided to any other party in any form without the express written permission of the ACSA. The Augusta County Service Authority assumes no liability arising from the use of these maps or data. The maps and data are provided without warranty of any kind. The information in this map is not to be construed as a legal description. In no event will the ACSA be liable for any damages that may arise from the use of this map or the information it contains. See the 'BASE MAP DATA' disclaimer below for all other map layers.

BASE MAP DATA:
 Augusta County provides these maps and data sets as a public information resource for its citizens and other interested parties. Every reasonable effort has been made to ensure the accuracy of the information provided; however, the information contained within these files is NOT to be construed or used as a legal description. The information is believed to be accurate; however, accuracy is not guaranteed. By use of the information, the user agrees that Augusta County shall incur no liability for any errors or inaccuracies in, or omissions from, the information regardless of their cause, or for any decision made, action taken or action not taken by the user in reliance upon the information provided.

ADDITIONAL NOTES:

1) The "Current Pipeline Route" and the "AT South Alt. Route" layers come from the Atlantic Coast Pipeline - Augusta, Nelson, and Buckingham Counties (Area 1 & 2) maps, revised 2/25/15, and is found at the following web address:
[\[https://www.dom.com/corporate/what-we-do/natural-gas/atlantic-coast-pipeline\]](https://www.dom.com/corporate/what-we-do/natural-gas/atlantic-coast-pipeline)
 The maps were georeferenced and the routes were digitized and are considered to be approximate.

2) The "Sinkholes (EGGI)" layer shows sinkholes that were identified using stereo-aerials as part of a larger study (Delineation of Wellhead Protection Area Surrounding the Lyndhurst Well, October 2008) by Emery and Garrett Groundwater, Inc.

0 1,500 3,000 Feet

CHAPTER 25. ZONING

DIVISION H. OVERLAY DISTRICTS

Article LI. Source Water Protection Overlay (SWPO) Districts

- § 25-511. Purpose and Objectives.
- § 25-512. Applicability and Enforcement.
- § 25-513. Definitions.
- § 25-514. Boundaries of SWPO Areas.
- § 25-515. Exempted Uses in Areas 1 and 2.
- § 25-516. Prohibited Uses in Area 1.
- § 25-517. Prohibited Uses in Area 2.
- § 25-518. Uses Permitted by Special Administrative Permit in Area 2.
- § 25-519. On-site Sewage Disposal System Requirements.
- § 25-520. Prohibitions on Buildings and Structures.
- § 25-521. Criteria for Specific Utilities.
- § 25-522. Conditional Exemptions.
- § 25-523. Sourcewater Protection Overlay Areas.

3. Means to be employed to contain or restrict the spillage or migration of hazardous materials or hazardous wastes from the site into groundwater;
4. Means to be used to contain or remediate accidental spillage of such materials;
5. Means to notify the County Emergency Communications Center, ACSA, and any appropriate federal and state agencies, about any accidental spillage of such materials;

E. The applicant must demonstrate that the proposed use and/or activity would employ, to the maximum extent possible, best management practices to minimize the risk of potential groundwater contamination in the SWPO Area. This demonstration shall also include a professional evaluation by a qualified, state-licensed engineer or geologist that the otherwise prohibited use would minimize the risk of potential groundwater contamination based upon the proposed use, site soils, site geology, and any other relevant factors.

F. The County shall review, and shall approve or reject any Operations and Contingency Plan prior to the Board of Supervisors approving or denying the application for a change in land use or activity. Upon receipt of an application for Conditional Exemption and the approved Operations and Contingency Plan, the Director of Community Development shall send written notice to the Augusta County Service Authority and forward the request to the Board of Supervisors for their consideration. In the event that the Operations and Contingency Plan is rejected by the Department of Community Development, the applicant may appeal its decision to the Board of Supervisors. In such a case, the Board of Supervisors shall consider the Operations and Contingency Plan together with the application for a change in land use or activity.

G. Unless otherwise provided by the Board of Supervisors, an exemption granted pursuant to this section, shall be issued to the applicant and shall be non-transferable.

§ 25-523. Sourcewater Protection Overlay Areas.

Sourcewater Protection Overlay Area 1 shall consist of a one thousand foot (1000') radius around each of the following sources and are further identified on maps entitled "SWP Mapsets" which are declared a part of this ordinance and which shall be kept on file in the Offices of the Department of Community Development:

- Augusta Springs Spring
- Augusta Springs Well
- Berry Farm Spring
- Berry Farm Well
- Blue Hole
- Churchville Wells #1-8
- Craigsville Wells #1-4
- Craigsville Old Spring
- Craigsville New Spring
- Crimora Mines Well

Deerfield Spring
Deerfield Well
Dices Spring
Gardner Spring
Harriston Wells #1 and 2
Hershey Well
Hurdis Well
Lyndhurst Well
Middlebrook Well
Ridgeview Well
Vesper View Well

Blue Hole Source Water Protection Area 2- The boundary of the Blue Hole Source Water Protection Area 2 shall consist of that area highlighted in blue on a map entitled "SWP Mapset- Map #24, which is declared a part of this ordinance and which shall be kept on file in the Offices of the Department of Community Development.

Dices Spring Source Water Protection Area 2- The boundary of the Weyers Cave Source Water Protection Area 2 shall consist of that area highlighted in blue on a map entitled "SWP Mapset- Map #10, which is declared a part of this ordinance and which shall be kept on file in the Offices of the Department of Community Development.

Hershey, Hurdis,, Ridgeview Source Water Protection Area 2 - The boundary of the Hurdis, Hershey, Ridgeview Source Water Protection Area 2 shall consist of that area highlighted in blue on a map entitled "SWP Mapset- Maps #12/13 which is declared a part of this ordinance and which shall be kept on file in the Offices of the Department of Community Development.

Lyndhurst Source Water Protection Area 2 - The boundary of the Lyndhurst Source Water Protection Area 2 shall consist of that area highlighted in blue on a map entitled "SWP Mapset- Maps #14 which is declared a part of this ordinance and which shall be kept on file in the Offices of the Department of Community Development.

(Ordinance 1/27/2011, effective 2/1/2011)

Dominion Resources Services, Inc.
701 East Cary Street, Richmond, VA 23219
Mail Address: P.O. Box 26666
Richmond, VA 23261
Web address: www.dom.com



March 5, 2015

Mr. Michael L. Shull
Chairman
Augusta County Board of Supervisors
18 Government Center Lane
Verona, VA 24482

Dear Mr. Shull,

Thank you, again, for the opportunity to address the Augusta County Board of Supervisors at the February 4 public hearing on the Atlantic Coast Pipeline (ACP). As I said that night, we believe an open dialogue with county leaders and other stakeholders is the best way to ensure the most-appropriate route is chosen for the project. We look forward to continuing discussions with the county.

I also want to take this opportunity to compliment the county administrative staff as well as the Augusta County Service Authority staff for their professionalism, hard work and insight as we continue to move through this process.

Please allow me to address some of the comments and concerns that were raised at the public hearing:

- ACP's estimate for the amount of taxes to be paid to the county by the Atlantic Coast Pipeline has not changed. We expect it will be about \$1.5 million a year once the full value of the project is incorporated in the tax payments. My comment to the board that the annual payment would be "well in excess of \$1 million a year" was not meant to be interpreted otherwise.
- This is not a project with "no gain" for Augusta County and its residents. In addition to the direct tax payments, there are a variety of benefits:

- There will be good-paying construction jobs available for qualified county residents as part of the project. I will be happy to put you in touch with labor officials who know that to be true. A study issued last September laid out at a high level the economic benefits from the construction work, totaling more than \$2 billion in three states. Additionally, there will be benefits from increased purchasing in the county during the construction.
 - A study we released recently shows \$377 million in annual savings in Virginia and North Carolina from lower electricity and natural gas prices. The report does not break down the savings by county, but it is reasonable to believe all electricity consumers in Augusta will benefit – even those who are not Dominion Virginia Power customers. Those savings will result in the creation of more than 2,200 permanent, full-time jobs in the two states, with some of those jobs also likely to be in Augusta. A copy of the study can be found on the Atlantic Coast Pipeline web page on the Dominion web site, www.dom.com/acpipeline.
 - All Virginians will enjoy the benefits of cleaner air as natural gas replaces older coal plants to generate electricity.
- Availability of new natural gas supplies provide the opportunity to attract new business investment and jobs to the county, just as the Columbia natural gas pipeline has done over the years. As you are aware, Dominion announced this week that it has made a route adjustment in the county at the request of Augusta County Development & Planning that better aligns to potentially serve an industrial park development. We will continue to work with the county regarding the best route with the least impacts to the environment, historic and cultural resources. We would like to find one that provides the greatest benefit to Augusta while meeting the other needs of the project. As you know, we face many restrictions – including legal, engineering, environmental, topographical and geological – in selecting a route. The route planners have considered more than 3,000 miles of potential routes in arriving at the current preferred route. Co-location of the pipeline is our first choice where it is feasible. However, as we have explained, there are many issues that often make it impossible. The route planners will continue to examine all options and we look forward to your continued participation in the routing process.
 - We share the county's concern in protecting water resources. We have hired the best experts available to provide an understanding of the county's karst topography and hydrology. These are experts well experienced in the hydrology of Augusta County. We also expect to learn from the Service Authority's experience in installing many miles of pipelines in the county.

- Regarding the suggestion that ACP place the pipeline in a culvert instead of burying it, we believe that would not be in the best interest of the county. This idea would leave an open “ditch” traversing the county, which is not prudent from a safety, environmental, and pipeline integrity perspective. As experience with the Columbia line shows, the pipeline goes unnoticed by most once it is in the ground and buried.
- Regarding the issue of insurance, the ACP joint venture is committed to constructing and operating the project safely, with the objective of minimizing impacts on environmental, cultural and historic resources. Dominion and its partners believe in being good stewards of the communities they serve, operate, and live in, which includes taking the necessary actions to repair third-party damage directly attributable to the construction and operation of the ACP. Furthermore, it is FERC’s expectation that interstate pipeline companies take responsibility for damages that result from construction of the jurisdictional pipeline facilities. To the extent necessary, ACP will provide compensation for any construction-related property damage directly caused by ACP consistent with any agreements that ACP may have with private landowners. ACP maintains a comprehensive liability insurance program that will remain in place during the construction and operation of the project. In addition, the construction contractors will be required to have liability insurance covering claims for third party property damage.

We have also attached a written response to the county’s consultant report and ACSA staff’s comments on Dominion’s Guidelines for Construction Activities on Rights-of-Way and in the Vicinity of Dominion Transmission, Inc. (DTI), Pipelines. These responses have required input from many different departments at Dominion and have taken longer than we would have liked to complete. We apologize for the delay.

As I mentioned at the February 4th meeting, many of the other questions expressed by the supervisors and county residents will be addressed in detail in the resource reports that we file with the Federal Energy Regulatory Commission. We plan to submit all 12 reports this spring and they will be available for public inspection and comment.

Please let me know if I can be of further assistance.

Sincerely,



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cc: Patrick J. Coffield
Emmett Toms

**Supplemental Information and Responses to
Augusta County Service Authority Questions on the Guidelines for Construction
Activities on Rights-of-Way and in the Vicinity of Dominion Transmission, Inc.
(DTI), Pipelines**

Dominion's Guidelines for Construction Activities on Rights-of-Way and in the Vicinity of Dominion Transmission, Inc. (DTI), Pipelines ("Guidelines") are intended as a reference for future utility crossings of existing Dominion pipelines. They set expectations for those that interact with our facilities and are critical for protection of the excavator, the public and our facilities. Crossing or maintenance work within DTI's rights of way requires review and approval by our field engineering staff. Notification of a pending project is typically received via letter, phone call or by receipt of a notice of excavation ("One Call" or "Miss Utility" ticket through the 811 system). Approval is typically granted via a simple letter stating expectations and requirements for the encroachment. The Guidelines are not intended to hinder or delay another utility from maintaining their customer obligations. In instances where a utility such as the Augusta County Service Authority (ACSA) seeks to cross the Atlantic Coast Pipeline (ACP) in the future, ACP will work cooperatively with the utility to develop a crossing plan suitable for both parties. Responses to ACSA's specific questions about Dominion's Guidelines are provided in greater detail below.

In situations where existing utilities, such as those of the ACSA, will be crossed by the construction of the pipeline, ACP will work cooperatively with the current utility to negotiate a mutually agreeable plan to install the pipeline. It is our current understanding that the ACP will cross ACSA property near the Augusta County Landfill. ACP is currently developing easements for property owners along the pipeline route. ACP will engage ACSA at an appropriate future time to negotiate the terms of that easement specific to ACSA-held property. ACP also anticipates that it will cross ACSA infrastructure at other locations, as determined by field surveys. In such instances, ACP is also committed to crossing those existing utilities in a manner that will not adversely disrupt current operations and is consistent with maintaining the vital civic responsibility of the ACSA.

Please note that these guidelines are for Dominion Transmission, Inc. existing pipelines. Although ACP will be operated by Dominion, the ACP may develop its own guidelines for the Atlantic Coast Pipeline.

- a. (Page 1, 1A.) DTI must have 72 hours notice prior to any earth disturbances across, on, or within 100' of its facilities. How can the ACSA respond in a timely manner to emergency situations involving water or sewer lines where customers are out of service or sewer is backing up in the lines? How can DTI enforce restrictions outside of its easements?**

Response: ACP can enforce construction-related activity within its easement or that impact its easement via the terms of the easement agreement or in accord with state law. In addition, the applicable "One Call" or "Miss Utility" requirements are intended, in part, to notify operators of pipelines and similar facilities about construction activity that could impact those facilities. ACP prefers to be alerted to earth disturbance within 100-feet of the pipeline so that the work can be monitored to insure the safety of the pipeline. If another utility were to have the need to excavate to make emergency repairs, they would utilize the "One Call" or "Miss

Utility” system to generate an emergency ticket. Dominion would receive notification of the ticket (any time of the day or week) and respond appropriately.

- b. (Page 2, 2.) Preparation of plan and profile drawings for all construction and maintenance activities, which must be submitted to DTI prior to any construction or maintenance work. What types of maintenance work is covered by these requirements?**

Response: Maintenance work typically covered includes excavation or ground penetration where there is potential to impact our pipeline.

- c. (Page 2, 3) Easement and Reimbursement Agreement – will be required for each crossing of existing and future ACSA pipelines? Can a copy of this document be provided for ACSA review? This is in addition to a deed of easement?**

Response: This guideline typically applies only to future construction or maintenance within ACP’s right-of-way.

- d. (Page 2, 5.) Crossing pipelines with heavy equipment is required to have a field survey and study, which will detail protective materials that will be placed at no cost to DTI. This will impact ACSA’s ability to perform regular maintenance and will increase costs. Is there a maximum equipment weight and type (rubber tire vs. tracked) that can cross the pipelines without a study and the application of protective materials over the pipeline?**

Response: ACP will determine if a field survey and study were required for any future crossing and would perform the study at no cost to ACSA. ACSA would be responsible for installation costs of future facilities across the pipeline and for of any required protective measures.

- e. (Page 3) Would the limited excavation associated with the installation of water/sewer mains and laterals, which may be installed by open cut and rotary or pneumatic boring, be covered by the requirements for engineering studies, plan and profile drawings, and excavation of the gas main to 60” below the invert?**

Response: The need for studies, plans, and profile drawings will be evaluated on a case-by-case basis. ACP will require enough information to determine that certain activities could be performed without impacting the safety and integrity of the pipeline.

- f. (Page 4, 7.) The prohibition of above ground structure applies only to DTI’s permanent easements, not temporary construction easements?**

Response: This applies only to the permanent 75-foot easement.

- g. (Page 4, 7.) Fire hydrants, manholes, utility sheds, and buildings (and valves, horizontal and vertical bends on page 5) are specifically named in the prohibited aboveground structures. Would the ACSA be required to relocate any existing structures to accommodate DTI’s proposed pipeline?**

Response: ACP will seek to avoid all existing structures such as those discussed above during routing of the proposed pipeline. In the event existing structures cannot be avoided, Dominion

will work cooperatively with the ACSA to relocate those facilities in a manner that would not adversely disrupt the utilities current operation. Any relocation of existing facilities during construction of the ACP will be done at ACP's expense.

- h. (Page 4, 8.) This section says that all underground utility lines should cross beneath DTI's pipelines (which may be 30-36" deep or in special cases could be 48-60") with a minimum of 24" vertical clearance. Would existing ACSA utilities need to be relocated to accommodate these requirements? Who performs this work and who covers the costs?**

Response: ACP does not anticipate that existing utilities would need to be relocated to accommodate these requirements. This requirement generally applies to utilities installed in the future. If field surveys indicate a need to relocate any existing facilities, ACP will work cooperatively with the ACSA to do so in a manner that would not adversely disrupt the utilities current operation. Any relocation of existing facilities during construction of the ACP will be done at ACP's expense.

- i. (Page 4, 8.) This section also notes that "despite any agreement" the owner of any other line could be required to remove its line at no cost to DTI, "if at any future date, DTI deems the removal or other accommodations necessary for the operation, maintenance or construction of DTI's facilities." Under what authority can DTI include such requirements that can have significant implications on another utility owner's finances and operational stability?**

Response: Dominion does not anticipate that existing utilities would be required to be removed or relocated in the future. If ever a need arises to relocate any existing facilities, Dominion will work cooperatively with the ACSA to do so in a manner that would not adversely disrupt the utilities current operation. Any future relocation of existing facilities during operation necessary for the purposes of ACP will be done at ACP's expense.

- j. (Page 5, B.) Where DTI's proposed main would cross existing ACSA pipes, would changes be required to ACSA pipes to conform to this section? If yes, at whose expense?**

Response: This guideline only applies to future crossings of the pipeline. If any changes to existing pipelines are required from construction of the ACP, it will be done at ACP's expense.

- k. (Page 6, 9.) Would this section regarding roads, streets, and commercial driveways apply to access drives (driveways) utilized by the ACSA to access its facilities?**

Response: This guideline would apply to any future ACSA access roads. Dominion will determine if a field survey and study were required on a case-by-case basis for any future access crossing and would perform the study at no cost to ACSA. Dominion will require enough information to determine that certain activities could be performed without impacting the safety and integrity of the pipeline. ACSA would be responsible for installation costs of any required protective measures.

- l. (Page 6, 9E.) Should the proposed pipeline impact any existing paved drives maintained by the ACSA, the ACSA would take exception to DTI's position that DTI would not be responsible for restoration of pavement following maintenance or construction activities.**

Response: If any damages to ACSA access roads or facilities are directly attributable to ACP, we will repair the damage at our expense.

- m. (Page 7, 12.) The blasting plan applies only to explosives? Chemical rock breaking and rock excavation with hydraulic hammers or rotary rock cutters? ACSA may have additional questions regarding this section once a final route for DTI's pipeline is provided.**

Responses: This guideline pertains only to blasting. If alternative excavation measures such as those listed above were to be employed, Dominion field engineering staff will evaluate each proposal on a case-by-case basis.

- n. (Page 9, 17.) The ACSA will need further review of any proposed indemnification clause.**

Response: Indemnification clauses are intended to protect Dominion from the activities of others in the vicinity or limits of our pipeline easements.

- o. (Page 9, 20.) This section notes that this document is "required". All utility owners are required by law to execute this document in its current form? This document is required for each existing and future crossing in addition to an easement document?**

Response: Dominion will work collaboratively with the ACSA on all proposed and future crossings between the two pipelines so that suitable crossing plans can be developed and not interfere with either entity's operations.

- p. (Page 10) An emergency number is provided on this page. Is this for emergencies that also involve the need for other utilities to make a repair in DTI's easement? When inspectors come to the site, is the other utility owner expected to pay for DTI's inspection time whether for emergency or general maintenance?**

Response: The number provided is a standard emergency number that can be used for any reason by an outside entity. Calls to this number are directed to Dominion's Gas Control department that is staffed 24 hours/day, 7 days/week. If another utility were to have the need to excavate to make emergency repairs, they would utilize the "One Call" or "Miss Utility" system to generate an emergency ticket. Dominion would receive notification of the ticket (any time of the day or week) and respond appropriately.

Dominion routinely does not invoice anyone for the time to inspect for emergency or general maintenance. Exceptions to this include major projects that require constant monitoring.

Supplemental Information and Responses Regarding the Conclusions and Recommendations from the Emery & Garrett Groundwater Investigations, LLC (EGGI) Report to the Augusta County Service Authority

EGGI Conclusions, Part C

- 1. The Augusta County Service Authority (ACSA) and Augusta County should avoid all high pressure gas pipeline construction operations within sensitive groundwater recharge and protection areas.**

Response: Atlantic Coast Pipeline (ACP) is undertaking a multi-step process to reduce the potential of adverse effects on groundwater resources in Augusta County and elsewhere along its route. ACP's first step was to obtain from ACSA its geo-referenced data on the locations of sensitive groundwater production wells, potable water supply production springs, source water protection areas, and future groundwater development areas. Using that information, ACP's routing team reviewed the location of the route across Augusta County and refined and relocated it, as necessary, to minimize exposure to groundwater production and development areas. ACP's next step was to engage GeoConcepts Engineering, Inc. from Ashburn, Virginia, to assist ACP in determination of the locations and potential to affect groundwater resources in karst-prone areas crossed by the pipeline. GeoConcepts geotechnical karst experts are undertaking field reviews and survey with ACP engineers to identify existing karst surface features along the current route across Augusta County. The focus on the review is on those features that would result in direct incursion of surface water and/or sediment into the subsurface such as sinkholes with open "throats", sinkholes that show signs of receiving surface drainage, and sinking or losing streams.

Simultaneously with this review, ACP routing staff are adjusting and refining the route to avoid previously recorded karst features or features identified during the field review of the centerline.

Step 3 will be to develop specific avoidance and minimization measures to be used during construction that will:

- Address construction monitoring of the trenching process to identify and (if necessary) avoid previously unidentified or subsurface karst features;
- Develop mitigation to stabilize or prohibit subsurface water flows; and
- Design site-specific surface grading and water drainage pathways to prevent the direct flow of surface waters into known karst features.

The plan outlining the avoidance, minimization and mitigation measures will be submitted to the FERC for review and approval prior to implementation.

Together these steps will significantly reduce or avoid the potential for impact to groundwater supplies associated with surface to subsurface drainage. These steps, together with implementation of the FERC's strict Wetland and Waterbody Construction and Operation Procedures and its Upland Erosion Control, Revegetation and Maintenance Plan will ensure that ground surfaces are restored to pre-construction elevations and drainage pathways and that the proper erosion control devices are installed and maintained until vegetation on the right-of-way is restored.

2. The ACSA and Augusta County should avoid the use of any high pressure gas pipeline for transporting "Other" hazardous liquids.

Response: ACP does not plan to transport any product in its proposed pipeline other than pipeline quality natural gas (e.g., natural gas that has been processed to remove natural gas liquids, water, and other impurities to within FERC approved tariff specifications).

3. The ACSA and Augusta County should confirm that the pipeline design is sufficient to be protected from natural environmental hazards.

Response: The pipeline is designed in accordance with the United States Department of Transportation's (USDOT) Pipeline and Hazardous Materials Safety Administration (PHMSA) regulations and Dominion's Standard Operating Procedures. The design specifications for minimum wall thicknesses, design pressures, and valve spacing requirements are met or exceeded.

The pipeline will be lowered in the ditch on top of a 12-inch bed of soft screened dirt. It will then be covered with approximately 24-inches of screened material and an additional 12-36 inches (depending on the land usage) of unscreened material. In very rocky areas the pipe is wrapped with rock shield to protect the fusion-bonded epoxy (FBE) coating. In addition to the FBE coating, the pipe is further protected from corrosion by a cathodic protection (CP) system. A soil resistivity study is conducted along the entire length of the pipeline route. The CP system is then designed based on the results of this study.

As mentioned above, valves will be installed at predetermined intervals along the pipeline. They will have the capability to be operated remotely by Dominion's Gas Control group. Gas Control monitors the system 24 hours a day 7 days a week. Additionally local personnel are "on call" to respond as necessary.

To provide a reference to the strength of the pipe, the 42-inch (at 0.864-inch wall thickness) pipeline can free span up to a nominal length of 60 feet without any deflection. The pipeline can safely deflect without failure over spans much greater than 60 feet. Dominion currently participates in longwall mining mitigation of its pipelines that exist over top of mining operations. The pipelines successfully remain in service as the ground subsides underneath them.

1. Development of legally binding pipeline Construction Management and Blasting Plan (including Groundwater Monitoring Plan)

Response: The FERC requires that interstate natural gas pipeline proponents develop and submit for review and approval, prior to project approval, a detailed blasting plan and groundwater monitoring plan to be used during and subsequent to construction. These plans will include steps to address actions previously taken to avoid karst features, steps to identify previously unidentified or subsurface karst features during construction, and steps to be taken to address and/or mitigate both surface and subsurface karst features during construction and restoration of the right-of-way. These plans will pertain to the entire project and not just Augusta County and will be reviewed and commented on at the federal level by the FERC. In addition, Dominion is currently developing a Construction Management Plan for use during the construction of the project. This is expected to take several months to be completed.

2. Development of operations plan

Response: PHMSA provides guidelines for operation of the pipeline. Once the pipeline is in-service, the following activities will occur:

- The pipeline is monitored (pressures and volume) 24 hrs/day, every day of the year by our Gas Control department. Much of the equipment (including mainline valves) is equipped with alarm capability that communicates any irregularity via our SCADA system to our controllers. The controller has the ability to make changes on the pipeline remotely including valve closure in the event of an emergency.
- Area staff monitors all notices of excavations (via “one calls” through the 811 system) within a quarter mile wide corridor along our pipeline. All notices are investigated (during both regular and after hours) for level of involvement, if any. All encroachments upon the easement are personally monitored by Dominion staff to protect the excavator, the public and the facility.
- Once established, the vegetation on the easement is maintained by mechanical means (brush-hogging). The maintenance frequency for this type of facility is typically once every three years in accordance with FERC requirements.
- Multiple inspections are performed at varying frequencies (dependent upon class location, as defined by PHMSA) in addition to the aforementioned activities to include:
 - Line patrols by walking (quarterly, annually, every third year)
 - Aerial patrols (monthly)
 - Road crossing inspections (quarterly, twice/year)
 - Test station inspections (annually)
 - Valve inspections (annually)
 - Regulator and over-pressure protection devices (annually)
 - Pressure indication devices (annually)
 - Close interval surveys (every 7-10 years)

- Inline (smart-pigging) inspections (every 4-7 years)
- Encroachments monitored as stated above (as necessary)
- Final staffing levels have yet to be determined, but at a high level, this work is accomplished with the following skill-sets stationed along the pipeline at varying locations. These locations range from an office combined with a compressor station to an employee that works from a remote location and/or from a company vehicle.
 - Utilityperson
 - Corrosion Technician
 - Instrumentation and Controls Technician
 - Measurement, Communication and Controls Technician
 - Gas Measurement Specialist
 - Compressor Station Operator
 - Engine Mechanic
 - Electrician
 - Supervisor – Gas Transmission Operations

3. Development of mitigation plan

Response: Once all studies are completed relative to identifying and avoiding karst surface features and determining the potential for unidentified karst features to occur within the ACP proposed survey corridor, ACP will develop a karst mitigation plan that addresses, but may not be limited to the following:

- mapping of identified surface features;
- mapping of surface water flow patterns adjacent to and within the vicinity of each feature and karst recharge areas;
- determine the need for and the delineation of construction buffer areas around karst features;
- determine specialized construction activities and erosion control requirements, including specified placement of trench spoils and surface water control measures relative to downstream surface flow patterns, to be implemented within specified distances of karst features and karst recharge areas during pipeline construction; and
- flagging and protection of open throat drainages and other karst recharge areas from refueling and equipment maintenance, and hydrostatic discharge activities.

Any proposed mitigation will be submitted, reviewed and approved by the FERC and other appropriate agency staff and authorities prior to implementation.



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EPA Environmental News

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Augusta County Twice Honored by EPA For Protecting Waters

(PHILADELPHIA - December 15, 2011) - The U.S. Environmental Protection Agency has awarded two prestigious awards to the Augusta County Service Authority, in Augusta County, Va.; the Source Water Protection Award for protecting existing and potential drinking water sources and the PISCES award recognizing leadership and innovation in utilizing clean water infrastructure funds.

“Drinking water is a finite and precious resource, and we commend Augusta County’s leadership in protecting it,” said EPA Regional Administrator Shawn M. Garvin. “Other municipalities would be well-served to follow their example in adopting source water protection ordinances.”

The Augusta County Service Authority coordinated the development of one of the strongest source water protection zoning ordinances in the Commonwealth of Virginia. The ordinance, passed in February 2011, helps to protect ground water sources of drinking water from adverse impacts such as contamination from hazardous materials or petroleum products, or loss of water in underground aquifers which supply drinking water in the County.

“We’ve invested a lot of resources in establishing our drinking water supply,” said Augusta County Service Authority Executive Director Ken Fanfoni. “The ordinance will help to prevent it being jeopardized by careless actions or unforeseen events.”

The Source Water Protection Award recognizes organizations and communities that take steps to protect drinking water sources in EPA’s mid-Atlantic region. For more information on source water protection, visit: <http://www.epa.gov/reg3wapd/drinkingwater/swp/>

EPA also presented the 2010 PISCES Award to the Authority. The PISCES award stands for Performance and Innovation in the State Revolving Fund Creating Environmental Success.

(more)

Water Awards...P2

December 15, 2011

The Augusta County Service Authority is recognized for performance and innovation in utilizing Clean Water infrastructure funds. The PISCES award highlights projects that successfully further the goal of clean and safe water with exceptional planning, management, and financing.

The Augusta County Service Authority is making use of Clean Water State Revolving Fund Loans to fund projects that reduce the amount of nitrogen and phosphorus discharged to tributaries of the Potomac, Shenandoah and Chesapeake Bay watersheds. Projects were initiated at several wastewater treatment plants to enhance nutrient removal and increase energy efficiency. These projects will increase the sustainability and effectiveness of the wastewater treatment process protecting local waterways and the Chesapeake Bay.

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In recognition of the

**AUGUSTA COUNTY
SERVICE AUTHORITY**

For their leadership in
source water protection

2011

EPA Region III