# A Pipeline in Paradise: Critical Analysis

Niiya Matthews & LaKeisha Cameron Environmental Science 03 March 2018

# The Farm.....

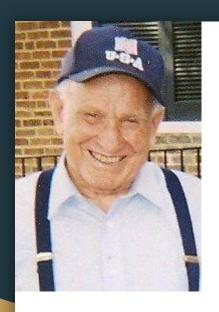


# Madison County, Virginia

#### **Quick facts**

Madison County is a county located in the Commonwealth of Virginia. As of the 2010 census, the population was 13,308. Its county seat is Madison.

- **Population:** 13,134 (2015)
- **Founded:** 1792
- Congressional district: 5th



#### Mr. Culton S. Goodall

Goodall was born in Madison County where he has lived his entire life. One of 10 children, he farmed the family's land in Oak Park before retiring in 1977. A real-life centenarian landowner named Culton Goodall, who owns a beautiful farm on the proposed pipeline route. Mr. Goodall's family has owned this farm for generations. Their care and love for the land is evident by their progressive and sustainable land use practices.



#### **Introduction**

## The Proposal

Spectra Energy wishes to route a natural gas pipeline that runs from the Marcellus shale hydraulic fracturing wells in Pennsylvania to Duke Power's generating plants in North Carolina.





sesync.org



Should Mr. Goodall allow Spectra Energy to run their pipeline through his land?

If Mr. Goodall refuses, can Spectra Energy/Enbridge proceed with construction? Are there any economic advantages of fracking? If so, what are they?



What are the environmental risks of the pipeline and how does it impact the residents of Madison County?

What are the social consequences of the pipeline construction? How will it impact the citizens of Madison County?

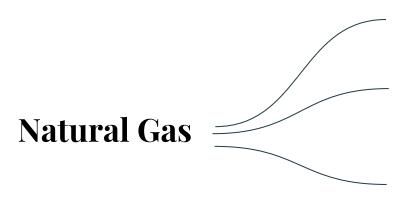
# What is the pipeline?



# Hydraulic Fracturing

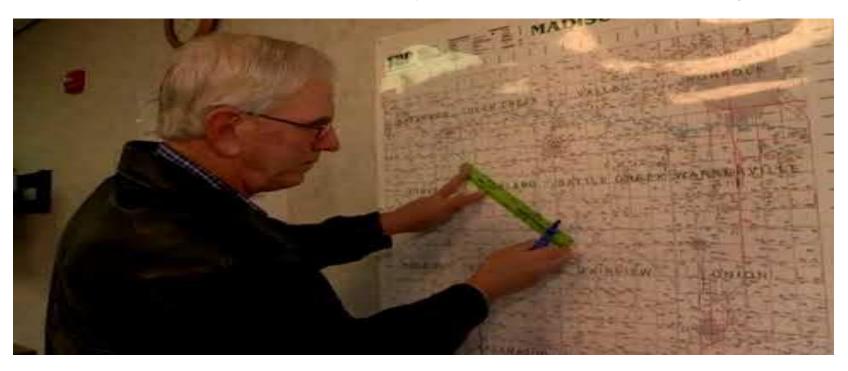


#### Why is natural gas important?



- Industrialization: Natural gas as a heat source in making glass, steel, cement, bricks, ceramics, tile, paper & other commodities.
- Domestic: space heating and water heating. It is also used in stoves, ovens, clothes dryers, lighting fixtures and other appliances
- Electricity: in the United States during 2013. About 34% of natural gas consumption was used to make electricity.

### What would it look like for Madison County?



#### Possible threats to residents of Madison County

- ★ There aren't any regulations prohibiting the company from changing the route after permission has been given.
- ★ No trust between the public and the representatives from the company.
- ★ High possibility that the route will interrupt waterways leading to contaminated ground water!



# The Union of Concerned Scientist: Water Use and Pollution

- ★ Groundwater near gas wells being contaminated with fracking fluids, methane and volatile organic compounds because of improperly constructed or failing wells that allow gas to leak from the well into groundwater.
- ★ The Environmental Protection Agency has identified more than 1,000 chemical additives that are used for hydraulic fracturing, including acids (notably hydrochloric acid), bactericides, scale removers, and friction-reducing agents.
- ★ EPA also estimates that **70 billion to 140 billion gallons of water** were used nationwide in 2011 for fracturing an estimated 35,000 wells.
- ★ The growth of hydraulic fracturing and its use of huge volumes of water per well may strain local ground and surface water supplies, **particularly in** water-scarce areas.
- \* "...a single well with horizontal drilling can require 3 million to 12 million gallons of water when it is first fractured."

#### Air Pollution

Residents living less than half a mile from unconventional gas well sites were at greater risk of health effects from air pollution from natural gas development than those living farther from the well sites.



Respiratory symptoms, cardiovascu lar disease, and cancer.

Drilling causes increases in concentrations of hazardous air pollutants and two of the six most dangerous pollutants have to be regulated by the EPA because of their harmful effects on health and the environment.



**Global warming emissions** *Methane is emitted to the atmosphere during the drilling and extraction of natural gas from wells and its transportation in pipelines results in the leakage of methane.* 





### Wildlife and land preservation

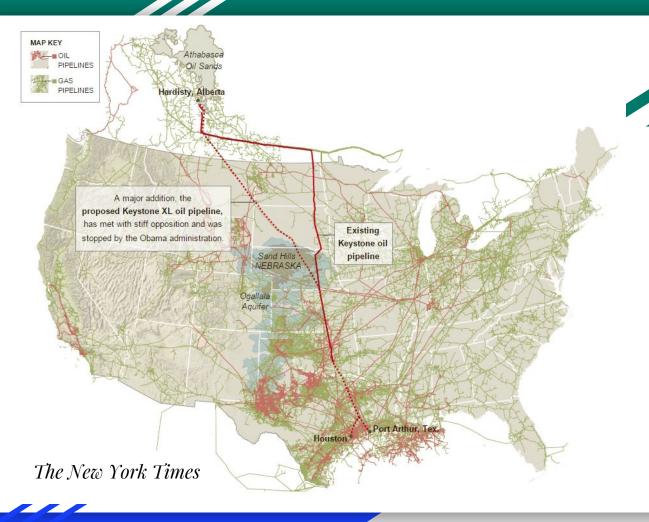
- ★ The land required for gas drilling can alter land use and harm local ecosystems by causing erosion and fragmenting wildlife habitats and migration patterns.
- ★ Clearing a site to build wells, pipelines, and access roads, causes the erosion of dirt, minerals, and other harmful pollutants into nearby streams.
- \* "...increased risk of aquatic contamination from chemical spills or equipment runoff, habitat fragmentation, and reduction of surface waters as a result of the lowering of groundwater levels."

#### Clean up your mess America!

- ★ The United States National Research Council (NRC) published a report in 2002 that said that, globally, approximately 1.3 million tonnes of oil are released into the sea each year.
- ★ The largest oil spill in American history occurred in March 1989. An oil tanker called the Exxon Valdez struck a reef in Prince William Sound, Alaska, spilling more than 41.6 million litres of oil.
- ★ On June 14, a natural gas pipeline ruptured and burst into flames near Cuero, Texas, releasing an estimated 165,000 pounds of toxic volatile organic compounds into the air.
- ★ Since 2010, over 3.300 incidents of crude oil and liquefied natural gas leaks or ruptures have occurred on U.S. pipelines. These incidents have killed 80 people, injured 389 more, and cost \$2.8 billion in damages. They also released toxic, polluting chemicals in local soil, waterways, and air.







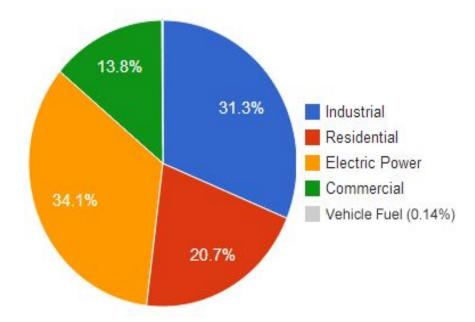
# Oil and Gas Pipeline Facts

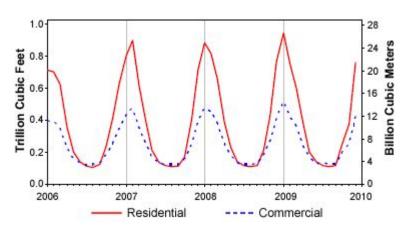
- Nearly half of America's crude oil pipelines are more than 50 years old, increasing the chance of corrosion and failure.
- Only 139 federal pipeline inspectors are responsible for examining over 2.6 million miles of pipelines. That's nearly 18,000 miles of pipeline per inspector clearly not enough to ensure the integrity of our nation's aging pipeline infrastructure.

#### A Race to the Bottom: Political & Economic Approach

- \* "Shale gas offers the means to vastly increase the supply of fossil fuels for transportation, which will cut into the rising demand for oil—fueled in part by China's economic growth—that has dominated energy policy making over the last decade."
- ★ The initial drilling only accounts for 40 percent of the total cost. Extracting the oil costs roughly \$1 million for each well.
- ★ The U.S. alone added \$385 billion to the country's GDP in 2008. The shale gas industry contributed more than \$76 billion to the U.S. GDP in 2010 and is expected to add \$118 billion by 2015 and \$231 billion in 2035 to the country's economic performance.

The International Gas Union





Electric power generation, industry, residences and commercial buildings were the major natural gas consuming sectors in the United States during calendar year 2013. Only 0.14% went to use as a vehicle fuel.

Residential and commercial demand for natural gas is highest in the winter when people burn gas to heat their homes and businesses

#### Pros of Pipeline

- ★ Allows regions to access to natural gas.
- ★ Gives factories the opportunity to make the shift and decrease the amount of fuels they emit.
- ★ Meet tighter air quality regulations while making a profit.
- ★ With the access of natural gas, the possibility of using it as a transportation fuel increase.

#### Cons of the Pipeline

- ★ The economic advantages for the working class are temporary.
- ★ Would not lower gas prices for American consumers
- ★ Companies do not have to comply with the Safe Drinking Water Act
- ★ Disrupts ecosystems on land and in the water.
- ★ America has made lackadaisical efforts in reference to a major environmental issue: oil spills

## NO to Keystone's pipeline!

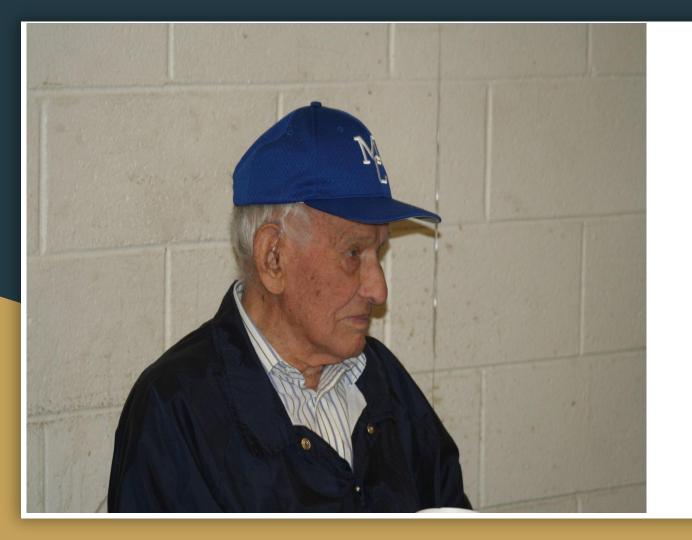




### The Magnetic Wand

- ★ Until America can effectively monitor pipelines and its harmful effects, we need to halt all pipeline construction.
- ★ Explore other energy alternatives such as solar and wind energy.
- ★ Invest in programs to raise awareness as well as technologies that can be used to improve the gas and oil industry.





# Culton Goodall

November 18, 1911-

November 14, 2017

# Culton S. Goodall Obituary

Culton S. Goodall died at home on Tuesday, November 14, 2017. He was born on November 18, 1911, to Joseph Philander and Lillian Bowman Goodall. He will be buried on his 106th birthday. He was predeceased by five brothers, four sisters and their spouses. He is survived by his wife of 70 years, Christine Seale Goodall; his two sons, Joe and his wife, Gave, and Paul and his wife, Amy; and six grandchildren, Daniel and his wife, Mindy, Mary Chris Escobar and her husband, Mike, Jonathan and his wife, Kate, Noah and his wife, Trisha, Isaiah, and Hannah Zwanzig and her husband, Coleman. He is survived by eight great-grandchildren, Grant, Molly, Annie, Fisher, Peter, Culton, and Etta Goodall and Benjamin Zwanzig. He is also survived by many wonderful nieces and nephews. Culton was a faithful member of Mount Zion Baptist Church having served as Deacon, trustee and treasurer. He was a life-long farmer with a love of nature and a great interest in the upkeep and improvement of the land he was allowed to care for. He served Madison County on many boards including eight years on the Board of Supervisors, serving as chairman for four vears. He also served on the boards of many farm related organizations including the Orange Madison Co-op, Culpeper Petroleum Co-op, Farm Bureau, and Culpeper Agricultural Enterprises. He served as an original and long-time trustee on the Future Farmers of America board. As a retired farmer he found enjoyment in yard work, growing beautiful flowers, and especially being part of the Co-op Coffee Club. Culton always showed great love for, support of and interest in his wife and their sons and their sons' families.

#### dailyprogress.com

#### References

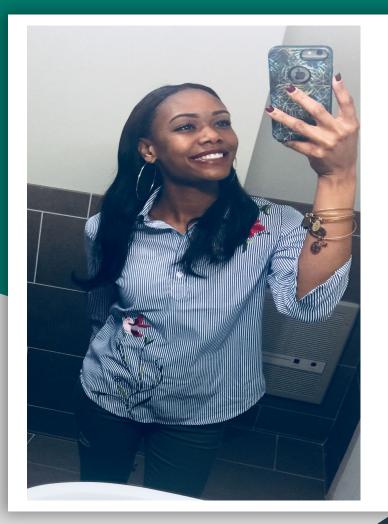
- "A Pipeline in Paradise, Part 1: Learning the Relevant Science (2014–6)." *SESYNC*, 8 Feb. 2015, www.sesync.org/a-pipeline-in-paradise-part-1-learning-the-relevant-science-2014-6.
- "Goodall, Culton Sibert." *The Daily Progress*, 16 Nov. 2017, www.dailyprogress.com/obituaries/goodall-culton-sibert/article\_531a8eod-a8c4-57ab-9656-3878dbf01ee9.ht ml.
- "Natural Gas Powers Economic Growth." *Natural Gas Powers Economic Growth* | *IGU*, www.igu.org/natural-gas-powers-economic-growth.
- "Oil Spills." Safe Drinking Water Foundation, www.safewater.org/fact-sheets-1/2017/1/23/oil-spills.
- "Overview of Greenhouse Gases." *EPA*, Environmental Protection Agency, 14 Apr. 2017, www.epa.gov/ghgemissions/overview-greenhouse-gases.
- Riley, Alan. "Opinion | The Shale Revolution's Shifting Geopolitics." *The New York Times*, The New York Times, 25 Dec. 2012, www.nytimes.com/2012/12/26/opinion/global/the-shale-revolutions-shifting-geopolitics.html?module=Arro wsNav&contentCollection=Global Opinion&action=keypress®ion=FixedLeft&pgtype=article.

#### References

Starbuck, 6/22/2015 Amanda. "Map Displays Five Years of Oil Pipeline Spills ." *Center for Effective Government*, www.foreffectivegov.org/blog/map-displays-five-years-oil-pipeline-spills.

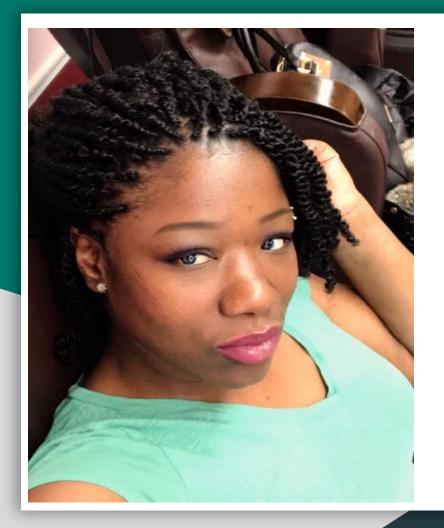
"Uses of Natural Gas." *Geology*, geology.com/articles/natural-gas-uses/.

"What we know about fracking." *Energy Factor*, 23 Feb. 2017, energyfactor.exxonmobil.com/perspectives/what-we-know-about-fracking/.



#### Niiya Zhan'e Matthews

Approaching her junior year at Trinity, with a 3.5 gpa, Niiya is majoring in Elementary Education and minoring in Women Studies in hopes of becoming a grade school teacher upon graduation. Her passion for education stems from experiencing various curriculums of the Prince George's County Public Education system, the District of Columbia Public School System and numerous employment positions in the Early Childhood Education field. Niiva's home life sparked an interest in the academic success of African American males as she is a mother of two young boys. In her spare time, Niiva practices writing, poetry, culinary arts, dancing and reading.



My name is Lakeisha Cameron, Senior at Trinity Washington University. Currently, I am a Early Childhood Education Major. My expected graduation date is May 19, 2018. I will start Trinity's Graduate program May 29. 2018.

I am an entrepreneur, I own/run a child development facility in SE, DC. My passion is providing quality child care to children, from low income families. My long term dream is to do this on a larger scale. I believe all children should be allowed an environment were they can feel safe, learn and thrive.