A REPORT TO

THE HONORABLE ROBERT F. McDONNELL

AND

THE GENERAL ASSEMBLY OF VIRGINIA

ROANOKE RIVER BASIN BI-STATE COMMISSION

2012 ANNUAL REPORT

Executive Summary

The Roanoke River Basin Bi-State Commission was established in the executive branch of state government. The duties and powers of the Bi-State Commission are pursuant to Virginia Code § 62.1-69.36 *et seq*.

This report provides information regarding the Roanoke River Basin Bi-State Commission's activities during the 2012 calendar year.

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Introduction

The Roanoke River Basin Bi-State Commission was established as a bi-state commission composed of members from the Commonwealth of Virginia and the State of North Carolina. Its duties and objectives are pursuant to Va. Code § 62.1-69.36 *et seq*. The Bi-State Commission is composed of 18 members, nine from Virginia and nine from North Carolina. Composition of the membership is as follows: The six Virginia legislative members appointed to the Virginia Roanoke River Basin Advisory Committee and three non-legislative gubernatorial appointments. The North Carolina delegation is appointed in a similar fashion.

The purpose of the Commission is to:

Provide guidance, conduct joint meetings, and make recommendations to local, state, and federal legislative and administrative bodies, and to others as it deems necessary and appropriate, regarding the use, stewardship, and enhancement of the [Roanoke River] Basin's water and other natural resources;

Provide a forum for discussion of issues affecting the Basin's water quantity, water quality, and other natural resources;

Promote communication, coordination, and education among stakeholders within the Basin;

Identify Basin-related problems and recommend appropriate solutions; and

Undertake studies and prepare, publish, and disseminate information through reports, and other communications related to water quantity, water quality, and other natural resources of the Basin.

Meetings and Locations

The Roanoke River Basin Bi-State Commission meets throughout the Basin, alternating states, in an effort to make the meetings available to all Basin constituents in both states. This year, the Commission held a meeting in Danville, VA. The meeting agenda can be found in Appendix B.

Organization

In 2011, Edith Warren, Representative from North Carolina was elected by the membership to serve as Chair of the Commission. By-Laws were adopted in August 2009 and provide for the Chair to rotate annually between Virginia and North Carolina. Mike McEvoy from Virginia was elected by the membership to serve as 1st Vice Chair of the Commission. Elections are scheduled for late 2012, at which time a representative from Virginia will become Chair of the Commission.

Current Membership of the Roanoke River Basin Bi-State Commission

There are currently 18 members on the Commission, nine from Virginia and nine from North Carolina, as permitted by the statute. A list of current members is provided below.

Virginia	**North Carolina**
Senator William Stanley	Senator Douglas Berger
Senator Frank M. Ruff	Senator Clark Jenkins
Delegate James Edmunds II	Senator Michael Wray
Delegate Thomas C. Wright, Jr.	Rep. Michael Wray
Delegate Charles Poindexter	Rep. Edith Warren
Delegate Onzlee Ware	Rep. James Crawford
Mike McEvoy	Chuck Peoples
John H. Feild	Larry Yarborough
Haywood J. Hamlet	Nate Hall

Non-legislative Delegates to the Roanoke River Basin Bi-State Commission

Mike McEvoy, John Feild, and Haywood Hamlet are the Virginia non-legislative delegates to the Roanoke River Basin Bi-State Commission. They were recommended by the Virginia Roanoke River Basin Advisory Committee and appointed by the Governor.

Committees

The Roanoke River Basin Bi-State Commission has five standing committees: Agriculture and Forestry, Municipal Interests and Permit Holders, and River Interests. An ad-hoc committee on Water Allocation and a standing committee on Lake Interests have been established. Pursuant to the enabling legislation, the Bi-State Commission shall establish the above-mentioned standing committees, but may also establish other standing and ad hoc committees the Bi-State Commission deems necessary and appropriate. Membership and guidelines for the committees are under development.

The Virginia Roanoke River Basin Advisory Committee, which has been meeting since 2002, established similar standing committees to those required by the Bi-State Commission, although none met in 2012. The Advisory Committees' standing committees are structured to support the Bi-State Commission standing committees.

In 2009, the Commission created the Water Allocation Ad Hoc Committee to develop alternatives for allocating water supply storage from Kerr Reservoir. This Committee did not meet in 2012.

Issues and Topics of Interest

Uranium Mining – There has been a moratorium on uranium mining in the Commonwealth since 1982, although approval for restricted uranium exploration in the state was granted in 2007. Virginia Uranium, Inc. has indicated an interest in initiating mining and processing operations in Pittsylvania County in the Roanoke River Basin watershed, should the moratorium be lifted.

The Virginia Coal and Energy Commission (VCEC) proposed that the Virginia Center for Coal and Energy Research conduct a study on the impact of uranium mining in the Commonwealth. The VCEC commissioned the National Academy of Sciences to conduct this study. The VCEC also commissioned a socioeconomic study on the impact of uranium mining. Both studies were completed in late 2011.

At the RRBBC meeting held August 27, 2012, the Commission approved a resolution that resolves "….These risks, as well as others highlighted in the NAS report and various other studies, support a conclusion that the prohibition on uranium mining in Virginia should remain and the Commission hereby states its opposition to elimination or modification of the existing legislative moratorium." The resolution in its entirety is included in Appendix C.

Summary of 2012 Presentations to the Roanoke River Basin Bi-State Commission

Possible Impacts of Uranium Mining at Coles Hill, Virginia prepared by RTI International, presented by Katherine Heller, March 20, 2012.

The Socioeconomic Impact of Uranium Mining and Milling in the Chatham Labor Shed, prepared by Chmura Economics and Analytics, presented by Mike McEvoy, March 20, 2012

Phase II of the Uranium Mining Impact Study, Peter Pommerenk, Ph.D., P.E., City of Virginia Beach Public Utilities/Engineering, July 25, 2012

Uranium Mining Update, Roanoke River Basin Association, Olga Kolotushkina, July 25, 2012

Kerr 216 Study update, Frank Yelverton, Biologist, Environmental Resources Section, US Corps of Engineers, July 25, 2012

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Appendix A - Chapters 5.4 and 5.5 of Title 62.1 of the Code of Virginia

Chapter 5.4

§ 62.1-69.34. Virginia Roanoke River Basin Advisory Committee established; purpose; membership; terms; meetings.

A. The Virginia Roanoke River Basin Advisory Committee, hereinafter referred to as the "Committee," is hereby established in the executive branch of state government as an advisory committee to the Virginia delegation to the Roanoke River Basin Bi-State Commission. The Committee shall assist the delegation in fulfilling its duties and carrying out the objectives of the Commission, pursuant to § 62.1-69.39. The advisory committee shall be composed of 23 members as follows: two members of the Senate, whose districts include a part of the Virginia portion of the Roanoke River Basin, to be appointed by the Senate Committee on Rules; four members of the House of Delegates, whose districts include a part of the Virginia portion of the Roanoke River Basin, to be appointed by the Speaker of the House of Delegates in accordance with the principles of proportional representation contained in the Rules of the House of Delegates; one nonlegislative citizen member at large appointed by the Senate Committee on Rules; one nonlegislative citizen member at large appointed by the Speaker of the House of Delegates; 11 nonlegislative citizen members selected by the legislative members of the advisory committee such that two are chosen from recommendations of each of the following: the Central Virginia Planning District Commission, the West Piedmont Planning District Commission, the Southside Planning District Commission, the Piedmont Planning District Commission, and the Roanoke Valley Alleghany Planning District Commission; and one member selected by the legislative members of the advisory committee from among recommendations submitted by the New River Valley Planning District Commission; and the Virginia member of the United States House of Representatives, whose district includes the largest portion of the Basin, or his designee, and three representatives of the State of North Carolina appointed in a manner as the General Assembly of North Carolina may determine appropriate. Except for the representatives of North Carolina, all nonlegislative citizen members shall be citizens of the Commonwealth of Virginia. The Virginia member of the United States House of Representatives, the members of the Virginia General Assembly, and the representatives of North Carolina shall serve ex officio without voting privileges. Of the recommendations submitted by planning district commissions authorized to recommend two members, one member shall be a nonlegislative citizen who resides within the respective planning district. However, the New River Valley Planning District Commission may recommend either one nonlegislative citizen at large who resides within the planning district or one member, who at the time of the recommendation, is serving as an elected member or an employee of a local governing body, or one member of the board of directors or an employee of the planning district commission. All persons recommended by the planning district commissions to serve as members of the advisory committee shall reside within the Basin's watershed, represent the diversity of interests in the jurisdictions comprising the respective planning district commissions, and demonstrate interest, experience, or expertise in water-related Basin issues.

B. State and federal legislative members and local government officials appointed to the advisory committee shall serve terms coincident with their terms of office. Nonlegislative citizen members appointed by the Senate Committee on Rules and the Speaker of the House of Delegates to serve on the advisory committee, and ex officio members representing the State of North Carolina shall serve a term of two years. Initially, planning district commissions authorized to recommend two nonlegislative citizen members to the advisory committee shall recommend one member for a term of two years and one member for a term of one year. However, the nonlegislative citizen member recommended to serve on the advisory committee by the New River Valley Planning District Commission shall serve a term of one year. After the initial staggering of terms, the term of office of nonlegislative citizen members recommended by the planning district commissions shall be for two years. Nonlegislative citizen members recommended by planning district commissions shall be eligible for reappointment, if such members shall have attended at least one-half of all meetings of the Commission during their current term of service. Nonlegislative citizen members shall serve for no more than three consecutive two-year terms. Appointments to fill vacancies, other than by expiration of a term, shall be made for the unexpired terms. Vacancies shall be filled in the same manner as the original appointment. The remainder of any term to which a nonlegislative citizen member is appointed to fill shall not constitute a term in determining the member's eligibility for reappointment.
The advisory committee shall elect a chairman and a vice-chairman from among its voting members. A majority of the voting members shall constitute a quorum. The meetings of the advisory committee shall be held at the call of the chairman or whenever the majority of the voting members so request.

§ 62.1-69.35. Compensation and expenses.
Legislative members of the advisory committee shall receive such compensation as provided in § 30-19.12, and non-legislative members shall receive such compensation for the performance of their duties as provided in § 2.2-2813. All members shall be reimbursed for all reasonable and necessary expenses incurred in the performance of their duties as provided in §§ 2.2-2813 and 2.2-2825. Funding for the costs of compensation and expenses of members shall be paid from such funds as may be provided to the Department of Environmental Quality in the appropriations act for this purpose.

§ 62.1-69.35:1. Staffing.
The Department of Environmental Quality shall provide staff support to the advisory committee. All agencies of the Commonwealth shall provide assistance to the advisory committee, upon request.

§ 62.1-69.35:2. Chairman's executive summary of activity and work of the advisory committee.
The chairman of the advisory committee shall submit to the Governor and the General Assembly an annual executive summary of the interim activity and work of the advisory committee no later than the first day of each regular session of the General Assembly. The executive summary shall be submitted as provided in the procedures of the Division

of Legislative Automated Systems for the processing of legislative documents and reports and shall be posted on the General Assembly's website.

Chapter 5.5

§ 62.1-69.36. Definitions.
As used in this chapter, unless the context requires a different meaning:
"Basin" means the Roanoke River Basin.
"Roanoke River Basin" means that land area designated as the Roanoke River Basin by the Virginia State Water Control Board, pursuant to § 62.1-44.38, and the North Carolina Department of Environment and Natural Resources.

§ 62.1-69.37. Roanoke River Basin Bi-State Commission established; purpose.
The Roanoke River Basin Bi-State Commission is hereby established as a bi-state commission composed of members from the Commonwealth of Virginia and the State of North Carolina and hereinafter referred to as the Commission. The Commission shall:
1. Provide guidance, conduct joint meetings, and make recommendations to local, state and federal legislative and administrative bodies, and to others as it deems necessary and appropriate, regarding the use, stewardship, and enhancement of the Basin's water and other natural resources;
2. Provide a forum for discussion of issues affecting the Basin's water quantity, water quality, and other natural resources;
3. Promote communication, coordination and education among stakeholders within the Basin;
4. Identify Basin-related problems and recommend appropriate solutions; and
5. Undertake studies and prepare, publish, and disseminate information through reports, and other communications, related to water quantity, water quality and other natural resources of the Basin.

§ 62.1-69.38. Membership; terms.
A. The Commission shall be composed of 18 voting members that include nine members representing the Commonwealth of Virginia and nine members representing the State of North Carolina. The Virginia delegation shall consist of the six legislative members appointed to the Virginia Roanoke River Basin Advisory Committee, and three nonlegislative citizen members appointed to the Virginia Roanoke River Basin Advisory Committee, who represent different geographical areas of the Virginia portion of the Roanoke River Basin, to be appointed by the Governor of Virginia. The North Carolina delegation to the Commission shall be appointed as determined by the State of North Carolina. All members appointed to the Commission by the Commonwealth of Virginia and the State of North Carolina shall reside within the Basin's watershed. Members of the Virginia House of Delegates and the Senate of Virginia, the North Carolina House of Representatives and Senate, and federal legislators, who have not been appointed to the Commission and whose districts include any portion of the Basin, shall serve as nonvoting ex officio members of the Commission.
B. Legislative members of the Virginia delegation, federal legislators, and local government officials, whether appointed or ex officio, shall serve terms coincident with

their terms of office. Nonlegislative citizen members shall be appointed to serve two-year terms, unless the member is reappointed by the appointing authorities of each state. Appointments to fill vacancies, other than by expiration of a term, shall be made for the unexpired terms. Vacancies shall be filled in the same manner as the original appointment.
C. Each state's delegation to the Commission may meet separately to discuss Basin-related issues affecting their state, and may report their findings independently of the Commission. A majority of the voting members shall constitute a quorum.

§ 62.1-69.39. Roanoke River Basin Bi-State Commission powers and duties.
A. The Commission shall have no regulatory authority.
B. To perform its duties and objectives, the Commission shall have the power to:
1. Develop rules and procedures for the conduct of its business or as may be necessary to perform its duties and carry out its objectives, including, but not limited to, selecting a chairman and vice-chairman, rotating chairmanships, calling meetings and establishing voting procedures. Rules and procedures developed pursuant to this subdivision shall be effective upon an affirmative vote by a majority of the Commission members;
2. Establish standing and ad hoc advisory committees, which shall be constituted in a manner to ensure a balance between recognized interests. The purpose of each advisory committee shall be determined by the Commission;
3. Seek, apply for, accept and expend gifts, grants and donations, services and other aid from public or private sources. With the exception of funds provided by the planning district commissions and funds appropriated by the General Assemblies of Virginia and North Carolina, the Commission may accept funds only after an affirmative vote by a majority of the members of the Commission or by following such other procedures as may be established by the Commission for the conduct of its business;
4. Establish a nonprofit corporation to assist in the details of administering its affairs and in raising funds;
5. Enter into contracts and execute all instruments necessary or appropriate; and
6. Perform any lawful acts necessary or appropriate for the furtherance of its work.

§ 62.1-69.40. Standing and ad hoc committees.
To facilitate communication among stakeholders in the Roanoke River Basin, and to maximize participation by all interested parties, the Commission shall establish both standing and ad hoc committees. The Commission shall appoint the members of the standing and ad hoc committees, in accordance with guidelines adopted by the Commission. The standing committees shall include, but not be limited to, the following:
1. Permit holders. The Commission shall identify those entities that hold permits issued by a federal, state or local regulatory agency pertaining to the water of the Basin. Such entities may recommend a representative to be appointed to the committee by the Commission;
2. Roanoke River Basin interest groups. The Commission shall identify interest groups that may recommend a representative to be appointed to the committee by the Commission;
3. Public officials and government entities. The committee shall be composed of representatives of each county, city and town located completely or partially within the

Basin, and any other governmental entities that the Commission deems appropriate may recommend one member to be appointed to the committee by the Commission. The committee may also include the U.S. Senators from Virginia and North Carolina or their designees, and any member of the U.S. House of Representatives or his designee, whose district includes any portion of the Basin, if such members elect to serve on the committee; and

4. Agriculture, forestry and soil and water conservation districts. The Commission shall identify persons who represent agricultural and forestry interests throughout the Basin and representatives from the soil and water conservation districts within the Basin and shall appoint representatives from these groups to the committee.

§ 62.1-69.41. Staffing and support.

The Virginia Department of Environmental Quality and the North Carolina Department of Environment and Natural Resources shall provide staff support to the Commission. Additional staff may be hired or contracted by the Commission through funds raised by or provided to it. The duties and compensation of such additional staff shall be determined and fixed by the Commission, within available resources. All agencies of the Commonwealth of Virginia and the State of North Carolina shall cooperate with the Commission and, upon request, shall assist the Commission in fulfilling its responsibilities. The Virginia Secretary of Natural Resources and the North Carolina Secretary of the Department of Environment and Natural Resources or their designees shall each serve as the liaison between their respective state agencies and the Commission.

§ 62.1-69.42. Funding.

A. The Commission shall annually adopt a budget, which shall include the Commission's estimated expenses. Funding for the Commission shall be shared and apportioned between the Commonwealth of Virginia and the State of North Carolina. The appropriation of public funds to the Commission shall be provided through each state's regular process for appropriating public funds. The Virginia planning district commissions within the Basin shall bear a proportion of Virginia's share of the expenses, which may be in the form of in-kind contributions.

B. The Commission shall designate a fiscal agent.

C. The accounts and records of the Commission showing the receipt and disbursement of funds from whatever source derived shall be in such form as the Virginia Auditor of Public Accounts and the North Carolina State Auditor prescribe, provided that such accounts shall correspond as nearly as possible to the accounts and records for such matters maintained by similar enterprises. The accounts and records of the Commission shall be subject to an annual audit by the Virginia Auditor of Public Accounts and the North Carolina State Auditor or their legal representatives, and the costs of such audit services shall be borne by the Commission. The results of the audits shall be delivered to the appropriate legislative oversight committees in each state.

§ 62.1-69.43. Compensation and expenses.

A. Legislative members of the Virginia delegation to the Commission shall receive such compensation as provided in § 30-19.12, and non-legislative members shall receive such

compensation for the performance of their duties as provided in § 2.2-2813. All voting members shall be reimbursed for all reasonable and necessary expenses incurred in the performance of their duties as provided in § § 2.2-2813 and 2.2-2825. However, all such expenses shall be paid from existing appropriations and funds provided to the Commission or, if unfunded, shall be approved by the Joint Rules Committee.
Members of the Virginia House of Delegates and the Senate of Virginia, and members of the Virginia Congressional delegation, who have not been appointed to the Commission, whose districts include any portion of the Basin, and who serve as nonvoting ex officio members of the Commission shall serve without compensation and expenses.
Nonlegislative citizen members appointed to any standing committees or ad hoc committees shall serve without compensation and expenses.
B. The North Carolina members of the Commission shall receive per diem, subsistence, and travel expenses as follows:
1. Ex officio legislative members who are members of the General Assembly at the rate established in North Carolina G.S. 138-6;
2. Commission members who are officials or employees of the State or of local government agencies at the rate established in North Carolina G.S. 138-6; and
3. All other members at the rate established in North Carolina G.S. 138-5.

§ 62.1-69.44. Annual report required.
The Commission shall submit an annual report, including any recommendations, to the Governor and General Assembly of Virginia and the Governor and General Assembly of North Carolina.

Appendix B – Meeting Agendas and Presentations

ROANOKE RIVER BASIN BI-STATE COMMISSION
Meeting Agenda
Tuesday, March 20, 2012
10:00 am - 12:00 pm
Pepsi Building, Danville, VA

A. Call meeting to order

B. Recognition of Members and Guests - *Chairman Warren*

C. Minutes of May 23, 2010 Meeting

D. Committee Reports
   1. NC Roanoke River Basin Advisory Committee – *Rep. James Crawford*
   2. VA Roanoke River Basin Advisory Committee - *Mike McEvoy*

E. Presentations
   1. Chmura Economics & Analytics Report
      "The Socioeconomic Impact of Uranium Mining and Milling in the Chatham Labor Shed, Virginia"
      http://dls.virginia.gov/commissions/cec/files/chmura_study.pdf
      Mike McEvoy, Chairman, VRRBAC

   2. "Possible Impacts of a Uranium Mine and Mill at Coles Hill, Virginia,"
      http://danvilleregionalfoundation.org/news/2011/20111215-RTI-Uranium-Study.php
      Katherine Heller, RTI International

F. Next Meeting - Location and Topics

G. Other Business

H. Adjournment

Proposed Coles Hill Uranium Mine and Mill

An Assessment of Possible Impacts

March 20, 2012

RTI International

About RTI International

- Independent, nonprofit research and development organization
- Founded in 1958 through a partnership between business leaders, state government and area universities
- Mission: to improve the human condition by turning knowledge into practice

RTI International

RTI Study Purpose and Scope

- Independent, objective assessment of potential impacts of the proposed mining and milling operation on the surrounding region
  - A range of scenarios and assumptions
  - Comparison with similar mining operations elsewhere
- Specifically, we assessed likely impacts on:
  - Economy and employment
  - Environmental quality
  - Community well-being
  - Government revenues and the demand for public/government services
  - Competitiveness of the region

RTI Study Regio - 50 Mile Radius of Coles Hill

12 Virginia counties; six independent cities

3 North Carolina counties

Chmura study area: six Virginia counties, three independent cities

RTI International

Our Approach

- Well-established economic & environmental methods
- Engaged local/regional stakeholders in data collection
  - Formed a community advisory panel
  - Included experts, average citizens
  - Used focus groups to assess community values, issues and concerns

RTI International

Key Findings

- The proposed mine and mill could add more than 700 jobs and $150 million economic impact to the region's economy per year during peak operation
- Local and state revenues from facility operations are expected to cover the costs of required additional government services
- Even if fully compliant with expected environmental regulations, there would be measurable contamination, especially close to the facility
- Groundwater levels near the facility would be lowered, impacting local wells, springs
- Design of facility, including tailings management, is critical to limiting environmental impacts
- Within the region, both economic and environmental impacts would vary geographically

Regional Economic Impacts

- Annual economic impacts, years 1-21
  - Best case: 889 jobs; $220 million impact
  - **Reasonable: 724 jobs; $162 million impact**
  - Worst case: 385 jobs; $81 million impact
- Additional impacts (construction)
  - Roughly 550 to 1000 employees
  - Adds between $70 million and $138 million
- Increased disposable income locally
- Development of uranium "cluster"?

Basis for Estimate

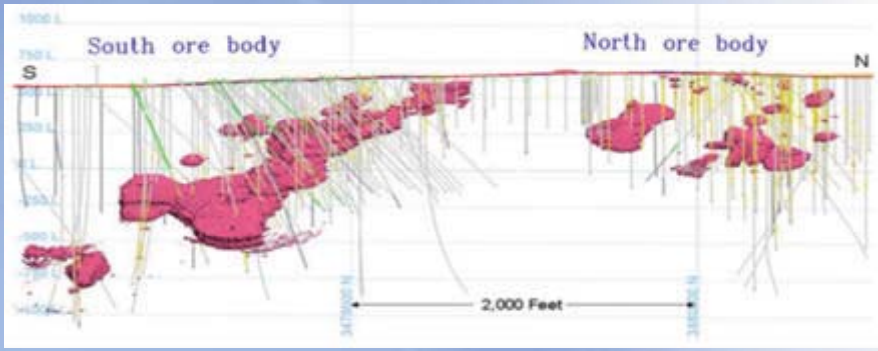
- Virginia Uranium Inc. estimates 3,000 ton per day ore production
  - = 324 employees (224 at the mine; 100 at the mill)
  - = $46 million annually on labor and materials
- Virginia Uranium Inc. plans to hire locally
  - Specialized training and licensing required for miners
  - Construction, ramp up provides time for training workers
- No significant influx of workers, or a large population increase

Impacts on State and Local Governments

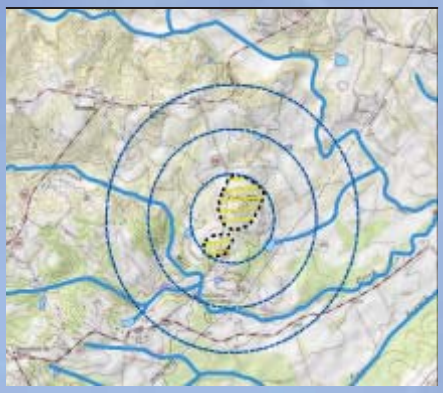
- No significant impact on schools, medical care, other services
- State and local governments would have additional responsibilities:
  - State: regulatory mechanisms, incident response, including impacts to transportation involving shipments
  - Local: emergency preparedness planning and training
- State and local revenues would increase by $11 million under the main scenario
- Costs expected to be covered by taxes and other fees*

** Assumes facility operations are fully compliant and that it has a good safety record.*

The Ore Deposit (VUI Scoping Study)



Environmental Impacts



Groundwater and Surface Water

Mine dewatering will affect groundwater levels. Site must be designed and operated to limit potential contamination

Storm water

Runoff and flooding may carry pollutants to streams; area prone to significant rain events

Tailings

Will remain radioactive for thousands of years; ongoing containment and isolation are critical

Mitigating Environmental Impacts

White Mesa Mill, Utah

- Assess baseline conditions to accurately measure impacts
- Design facility properly
- Use modern technology
- Implement best practices, with a constant focus on pollution prevention
- State must adopt rigorous regulatory, monitoring, and compliance program
- Develop effective restoration and tailings management plan

Overall Quality of Life Impacts

- Adverse environmental impacts would be greatest close to the facility, downwind and downstream, but they would be small if mine and mill meet regulatory standards
- Positive employment impact focused within commuting distance
- Increased incomes—more opportunities and amenities in the region
- Perception of region has potentially broader impact

RTI International

Community "Stigma," Perception of Risks

MacArthur River Mine, Canada

- Perceived risk can negatively effect region's image
- Transparency, community involvement can reduce unfounded concerns
- Communities near existing mines and mills have concerns, but generally express no adverse impacts on their reputation or on tourism and economy; data generally support this, although we don't know how things would have been without the mine and mill*
- ***We found no communities near existing operations that were as densely populated, economically diverse or dependent on water resources.***

RTI International

Impact on Regional Competitiveness

Provided the facility is appropriately regulated, operated, and monitored – and results of monitoring are publicized…

- Transportation, access to health care, schools largely unaffected
- Increased incomes and opportunities in the region may improve ability to retain workers
- May not significantly reduce regional competitiveness
- Housing demand could increase; within a mile or two of the site, property values are likely to decrease

Study Limitations

- Assessment is based on best available information, but many unknowns
- We found no similar facility/community that accurately illustrates risks or benefits
- Economic assumptions based on market price for uranium, local share of spending, safety reputation
- Detailed plans for mining and milling operations have not yet been developed
- Regulatory requirements have not been developed
- Detailed site characterization is required to accurately assess environmental and human health impacts

Why Do Study Findings Differ?

- Generally, approaches were similar and findings are consistent
- Studies had a slightly different geographic scope
- Used the same economic model, but used different sectors to represent uranium mine/mill
- Used different data to calculate tax revenue (total impact vs. direct impact only)
- Each team developed scenarios to illustrate impacts under a range of assumptions
- RTI environmental impacts based on site-specific modeling

Unanswered Questions

- Our study is based on limited information; we don't know what would actually happen in the future
  - How much water would have to be pumped out to safely mine the uranium?
  - What would the regulations and permits look like?
  - Would the mine and mill comply with regulations and operate safely?
- Our study is also based on compliance with appropriate regulation. One large, or several small accidents/spills would significantly change the outcome, affecting the area's reputation even if no serious harm to people or the environment occurred

For more information

- Project website
  - Full report including appendices (500 pages)
  - Executive summary (30 pages)
  - Non-technical summary (10 pages)
  - This presentation and handout
- https://coleshillimpacts.rti.org

RTI International

Questions

The Socioeconomic Impact of Uranium Mining and Milling in the Chatham Labor Shed, Va

Prepared for the
Virginia Coal and Energy Commission
By Chmura Economics & Analytics
11/29/2011

Presentation Overview

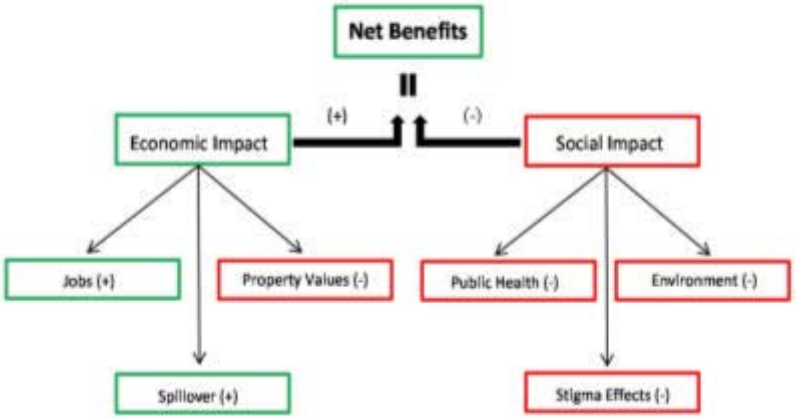
- Committee resources did not allow for presentation by Chmura directly.
- Digital copy of the report is available on Chmura's website (see agenda)
- Presentation is a direct summary of the report's statements
- Part of larger review of all reports

Report Findings

Figure 4.1: Chatham Labor Shed

Report Overview

The conceptual framework shown below depicts the process and components that underlie our assessment of the net benefit to Virginia from a uranium mining and milling operation:



Report Overview

Scenario 1: Negligible environmental impact. The qualities of air, water, noise, and soil are not materially altered from today's existing conditions.

Scenario 2: (BASELINE) Moderate environmental impact in terms of the qualities of air, water, noise, and soil—all contamination remains within limits set by current federal standards.

Scenario 3: Significant environmental impact in terms of the qualities of air, noise, or soil (but not water). At least in one of these three areas, (air, soil, or noise, but not water) contamination exceeds the limits set by current federal standards.

Scenario 4: Severe environmental impact in terms of the qualities of air, water, noise, and soil. Contamination of both water and at least one other area (air, soil, or noise) exceeds the limits set by current federal standards.

Assumes a uranium price of $60 per pound with a range of $45 to $75 per lb

Report Overview

Chmura's analysis concludes that under the first two scenarios, the net economic impact for Pittsylvania County as well as for Virginia is clearly substantial and positive. However, the risks and rewards are not balanced, and the adverse economic impact under the worst-case scenario is nearly twice as great as the corresponding positive impact in our best-case scenario. Under scenario 3, the Coles Hill operation would still provide a positive net economic impact over the long-term so long as the mine and mill operated for roughly 10 years before environmental contamination reached the levels assumed in this scenario. Under scenario 4, the Coles Hill site unambiguously has a negative net economic impact no matter how long the site operates before environmental contamination reached the levels assumed in this scenario. A key finding, however, is that the most significant driver of the socioeconomic costs is not the reclamation and remediation price-tag to clean-up the environment, but rather the potential negative stigma effects impacting agriculture, tourism, and possibly other industries. It may also be possible to mitigate some of these stigma effects to reduce the negative impact.

Report Findings

In the opinion of Chmura, the mining and milling operations would bring substantial and much needed economic benefits to Pittsylvania County, the immediately surrounding areas, and the state. During its projected 35 years of operations, the Coles Hill site is expected to support more than 1,000 jobs annually (direct, indirect, and induced)[1] and have an annual net positive economic impact of approximately $135 million. This net benefit comes after subtracting for a broad array of potential socioeconomic costs (such as public health and the environment) and negative "stigma" effects on some sectors (such as tourism and agriculture), which under specific circumstances, Chmura judges most likely to be minimal. Over the life of the operation, the Coles Hill site could generate almost $5.0 billion in net accumulated economic revenue for Virginia firms.

These impressive figures, however, are predicated on the assumption that the Coles Hill site will be continuously operated and ultimately decommissioned within established federal guidelines, which, by law, reduce environmental and public health risks to the surrounding communities to near negligible levels.

Discussion

ROANOKE RIVER BASIN BI-STATE COMMISSION
Meeting Agenda
Wednesday, July 25, 2012
1:00 pm to 3:00 pm

H. Leslie Perry Memorial Library
Farm Bureau Room
205 Breckenridge Street
Henderson, NC 27536

A. Call Meeting to order

B. Recognition of Members and Guests - Chairman Warren

C. Minutes of March 20, 2012 Meeting

D. Election of Officers
   1. Election of Chair (Virginia)
   2. Election of 1st Vice-Chair (North Carolina)
   3. Election of 2nd Vice-Chair (Virginia)

E. Committee Report
   1. NC Roanoke River Basin Advisory Committee
   2. VA Roanoke River Basin Advisory Committee
   3. Water Allocation Ad Hoc Committee

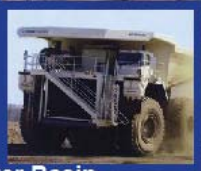
F. Presentations
   1. Uranium Mining Update, Roanoke River Basin Association (30 min)
   2. "Phase II of the Uranium Mining Impact Study," Peter Pommerenk, Ph.D., P.E., City of Virginia Beach Public Utilities/Engineering (45 min)

G. Next Meeting- Location and Topics

H. Other Business

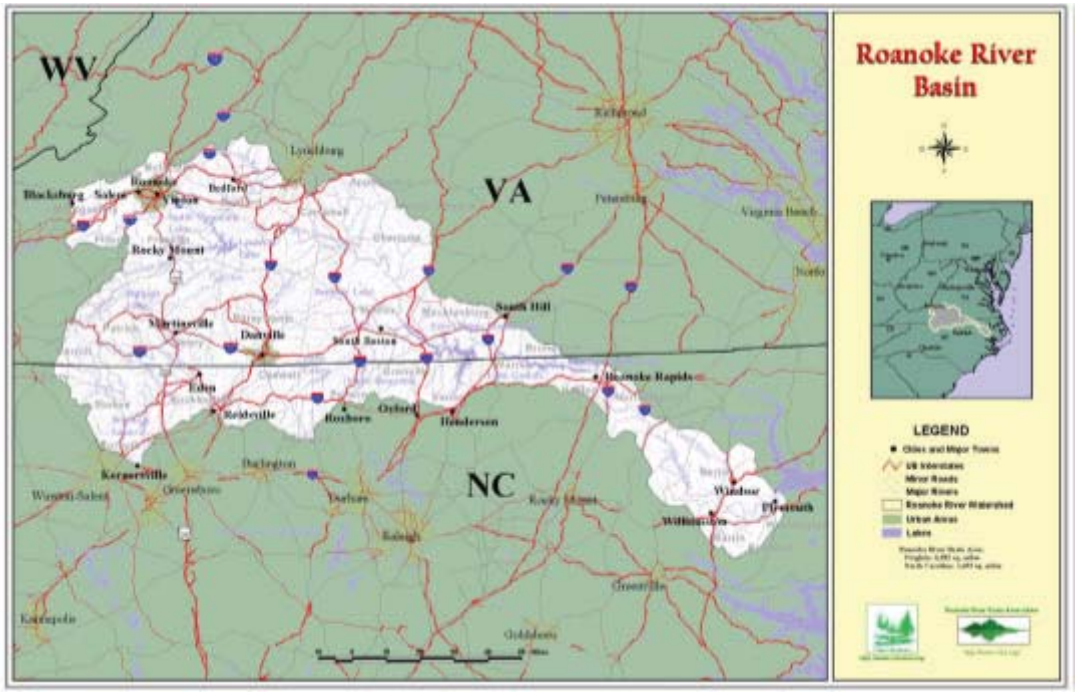
I. Adjournment

Proposed Uranium Mining, Milling, and Radioactive Waste Storage in the Roanoke's Watershed

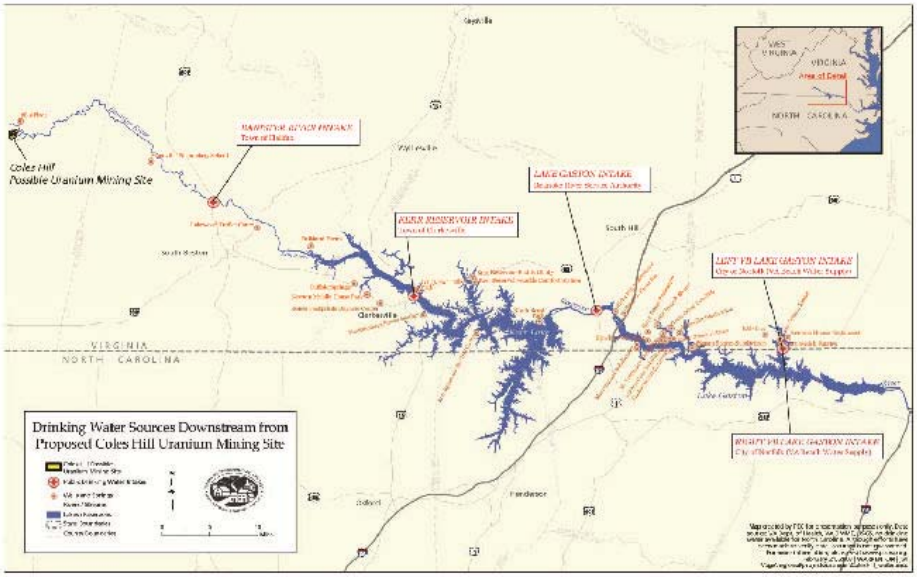


Roanoke River Basin
Bi-State Commission Meeting
Henderson, NC

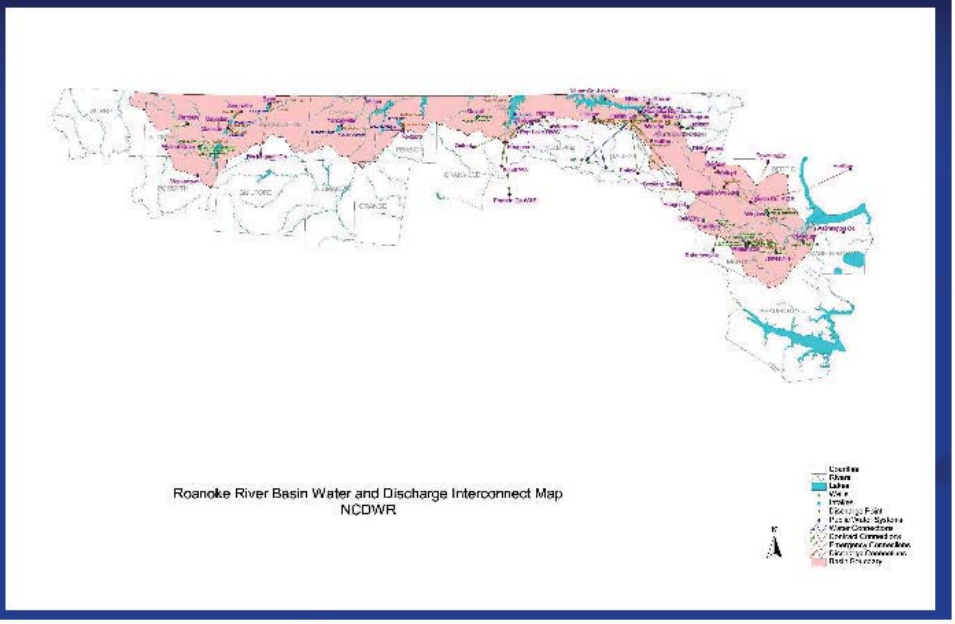
July 25, 2012



Downstream Water Intakes in Virginia



Downstream Water Intakes in North Carolina



Water Users Downstream of Coles Hill

VA Communities	76,121 residents
NC Communities	344,638 residents
Virginia Beach	770,000 residents
TOTAL:	**1,190,759 residents**

ADDITIONALLY:

Raleigh, NC	403,892 residents*
KLRWS Service Area in NC**	68,000 residents**

- *Raleigh, NC has requested an allocation from Kerr Reservoir
- **Based on 2008 estimates and does not include all service area

National Academy of Sciences Report, pages 124-25:

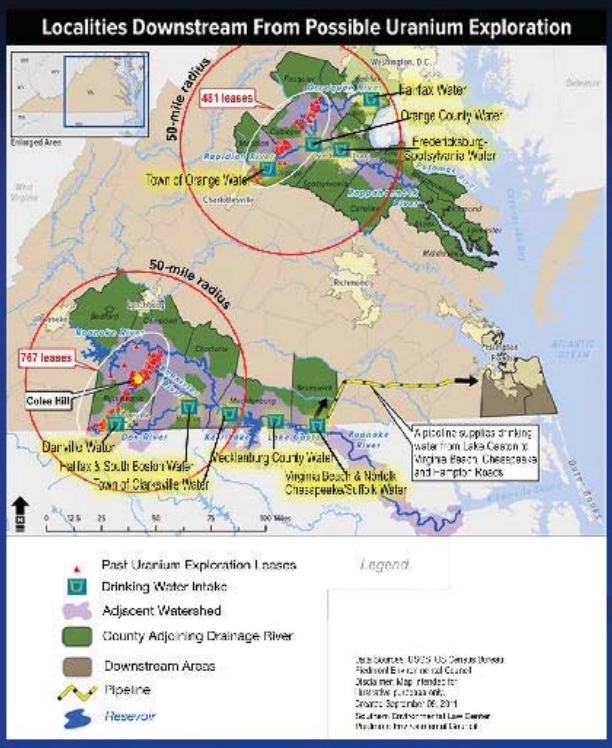
The US Environmental Protection Agency Nov. 10, 2011 model, based on a site in Culpeper, VA

ESTIMATES:

The maximum estimated population's dose living within 80 kilometers (50 miles) of the site was 200 person/rem/year, with a 1.4 per 1,000 chances of developing a latent cancer fatality.

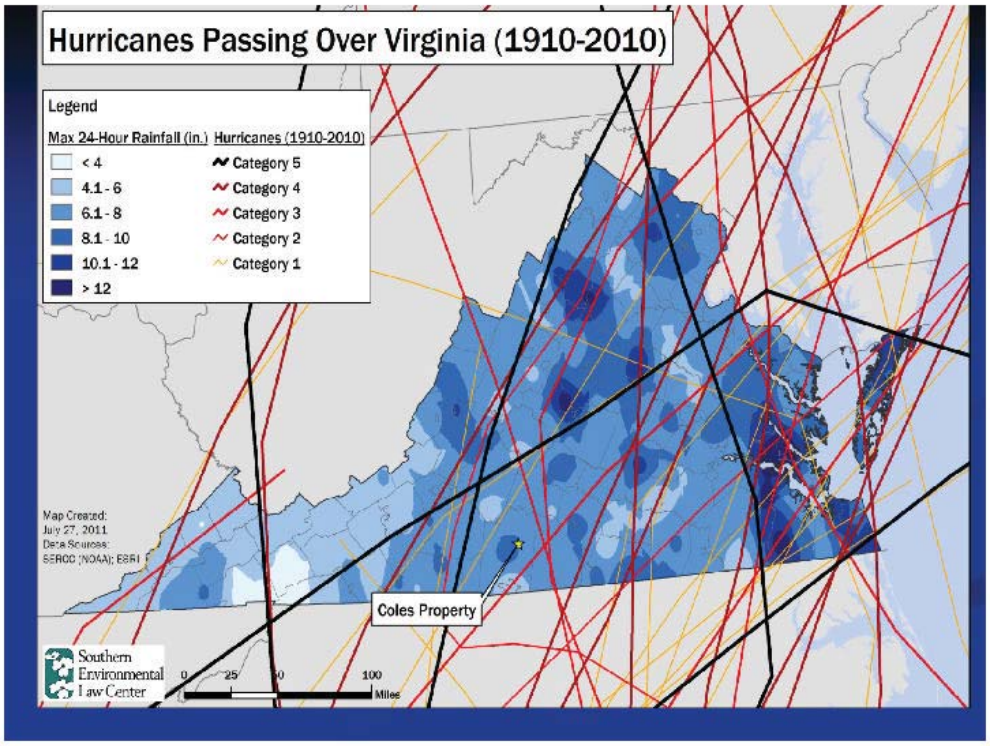
Did not address cancer risks for children, pregnant women unborn children, people with prior exposure and/or hereditary risks.

http://www.epa.gov/rpdweb00/docs/neshaps/subpart-w/historical-rulemakings/subpart-w-risk.pdf



RRBA Research

- RRBA has been the lead agency in the basin for almost 67 year.
- Our mission is to protect the natural resource and support its wise development
- RRBA has been researching implications of lifting VA's 30-year uranium ban on water quality and quantity in the basin
- 7 studies at a cost totaling $2.8 million
- The common denominator – risks are high and consequences are unpredictable mainly due to VA's climate



Tornado Cloud 5 miles from Coles Hill
April 2011

Tropical Storm Lee, August 2011
Northern VA

Franklin County, VA Spring 2012

NI 43 – 101 PRELIMINARY ECONOMIC ASSESSMENT

VIRGINIA URANIUM INC.
VIRGINIA ENERGY RESOURCES INC.

COLES HILL URANIUM PROPERTY
PITTSYLVANIA COUNTY, VIRGINIA
UNITED STATES OF AMERICA

PREPARED FOR:

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PREPARED BY:

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534 Industrial Park Road
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December 2010

Coles Hill Project : Facts

- Coles Hill Preliminary Economic Assessment (PEA), dated Dec. 2, 2010 filed with Canadian Securities Administrators, www.sedar.com
- Coles Hill Project will produce 46 million lbs of yellowcake. VUI PEA, p. 109, Table 107
- First 20 years: estimated production 37 million lbs, VUI PEA, p. 109, Table 107
- Last 15 years: ONLY 9 million lbs to be produce with 30% increase in costs of production
- US EIA projects that US nuclear power plants will need app. 55 million lbs of yellowcake per year for the next 15 years
- 46 million lbs over the 35-year lifetime of the proposed mine and mill will meet only 10 months of US annual demand

Coles Hill Project: Questions

- Walt Coles, Jr., CEO, Virginia Energy Resources, Inc., March 1, 2011:

for years '21 through '35, this is in here to show a commitment to the community that we're going to have a long mine life on this project. From an MPV perspective, the cost of mining and the profits that you would earn in years '21 through '35, it's insignificant. Once you get that far out in the future, it does not have an impact on MPV, but we wanted to, again, demonstrate that this is going to be a long life mining project.

Transcript of March 1, 2011 Webcast of Virginia Energy Resource, Inc. Presentation, p. 6 available for fee from Wall Street Energy Forum, http://www.analyst-conference.com/

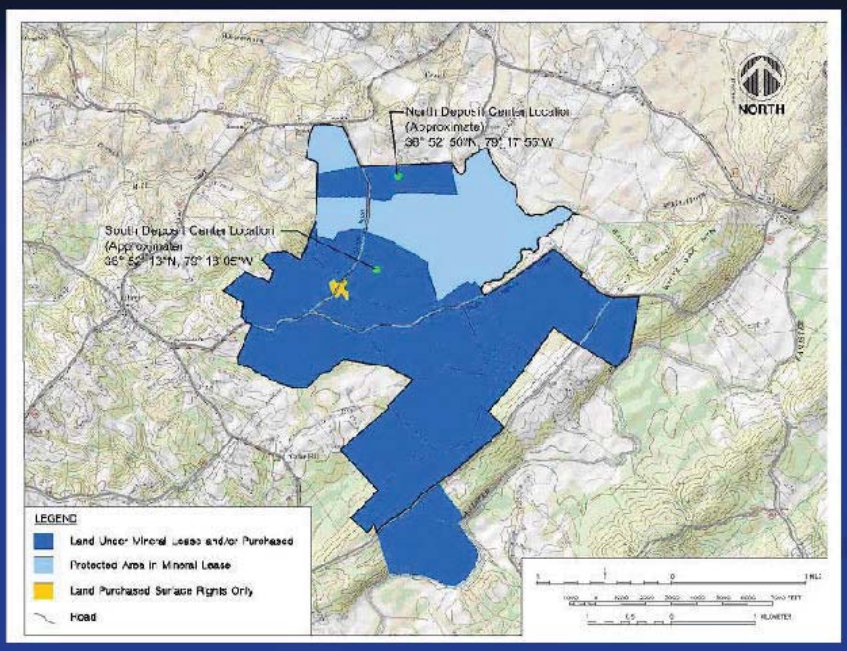
Moran Report

- **In August 2011, RRBA commissioned Dr. Robert Moran, PhD, to perform a site-specific evaluation of the Coles Hill site**
- **Dr. Moran has 40 years of related experience at hundreds of mining, natural resource, and industrial sites**
- **The Moran Report focuses on water-related, technical issues.**
- **The report findings are based on review of the original data and reports (1979 to 1984), and the recent, publicly-available, company documents (2007-2010), as well as Dr. Moran's involvement in 1983 as a hydrogeological and water quality consultant to Marline and Union Carbide on many of the water-related activities at Coles Hill.**
- **The objective of the Moran Report is to assist the public and regulators in making better-informed, long-term decisions, not to tell them what should be done.**

Moran Report: Site Characteristics

- Unlike most U.S. uranium mining sites, which occur in desert or semi-desert, sparsely-populated regions, the Coles Hill site is wet, with annual precipitation equal to about 42 inches.
- Within a radius of 2 to 3 miles, Coles Hill has roughly 250 private wells, at least one dairy and numerous hay / forage fields
- Over 1268 people reside within a 3-mile radius of the site.
- 3 "Class A" FEMA Flood Hazard Zones" -- a 1% annual chance of flooding and a 26% chance of flooding over a 30-year period.
- Flood zones are contiguous with Mill and Whitehorn Creeks and the Banister River.
- Springs and several acres of wetlands located within the bounds of the Coles Hill South Exploration Area.

Coles Hill Project Location, VUI PEA, p. 1



Sping on Coles Hill Site off South Meadows Road, page 7

Flooding at Coles Hill. Year 2009
ROAD
CLOSED
HIGH
WATER

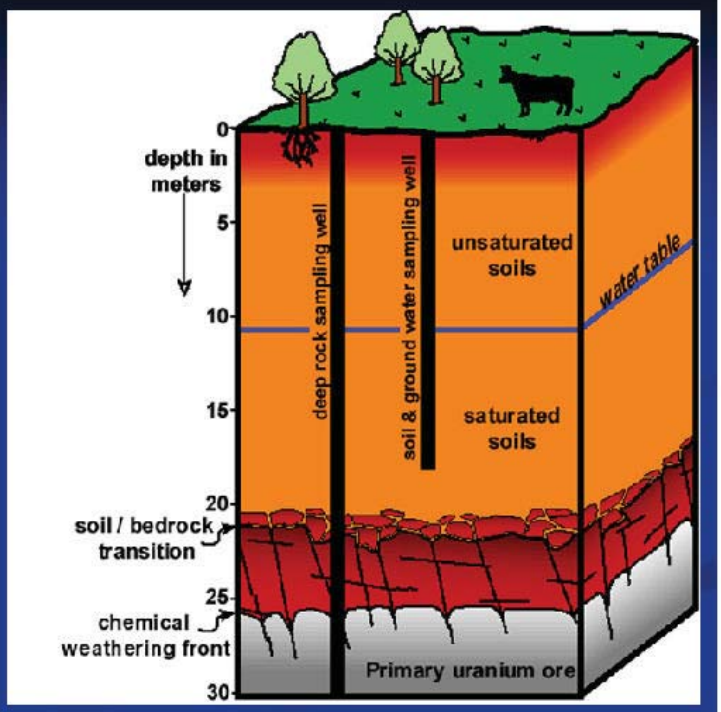
Flooding at Coles Hill. Year 1996
9/ 4/1996
9/ 4/1996

Moran Report: Wastes

- Mining Waste/Waste Rock: contains uranium concentrations too low to be economically processed. Often *discarded in huge piles, somewhere on the land surface, often near the pit perimeter.*
- When exposed air, explosive chemicals, other gases and bacteria, mineralized rocks chemically-react with the local waters forming in some cases acidic waters.
- Several sources of mine rock release contaminants into the environment: the walls of the open pit, walls of the underground workings, waste rock piles, and road cuts.
- The confirmed presence of sulfides in the Coles Hill rock raises the possibility that long-term, active water treatment may be required, in perpetuity.

Moran Report: Uranium Mill Tailings

- The project as proposed may generate at least 28 million tons of solid uranium mill tailings and roughly the same amount of liquid waste
- The solid wastes would remain on site forever, requiring maintenance forever
- Uranium mill tailings would contain radionuclides, heavy metals and other
- The Coles Hill Preliminary Economic Assessment states that the Coles Hill site will host eight (8) "surface impoundments" up to 40 acres each that will hold over 19 million tons of solid waste, not including liquids
- NRC allows above the grade waste storage where:
  - a ground-water close to the surface or not very well isolated
  - Too expensive or impractical



Source:
VA Tech
http://www.research.vt.edu/resmag/ColesHill/Figure2_low_res.jpeg

Moran Report: Water

- **Undiluted tailings liquids may contain 1160 to 1460 times the existing Safe Drinking Water Act standard for uranium. Undiluted tailings liquids may contain *2300 to 2900 times the allowable uranium concentrations when compared to the short-term Canadian aquatic life guidelines.***
- **Numerous factors (i.e., natural permeability of the rock due to fractures and faults; increased fracturing due to mine blasting; open or leaking boreholes and blastholes; high permeability in the nearby sediments; long-term degradation of tailings liners and other mine structures; and seismic activity) combine to provide long-term pathways for the migration of contaminants into local waters.**
- **The Coles Hill project may use over 2,030 tons of explosive per year, releasing potentially-toxic concentrations of nitrate, ammonia, and other organic compounds into the environment**

Moran Report: Water

- As proposed, the Coles Hill project would require over 5 billion gallons of water. During the start-up period, the project would use at least 525.6 million gallons per year.

- It has been estimated that at least 136 million gallons of ground water (mostly) would flow into the open pit, per year. This water would become contaminated with numerous radioactive and non-radioactive contaminants. To allow mining, this contaminated water must be pumped out of the pit and discharged to some undefined location.

CONCLUSION:

Such a project would cause long-term, chronic degradation of water quality and increase water competition in the region.

Questions?

CONTACT:

Olga Kolotushkina

Legislative and Regulatory Advisor

oolukas@yahoo.com

202-641-7835

Uranium Mining Impact Study

City of Virginia Beach

Roanoke River Basin Bi-State Commission

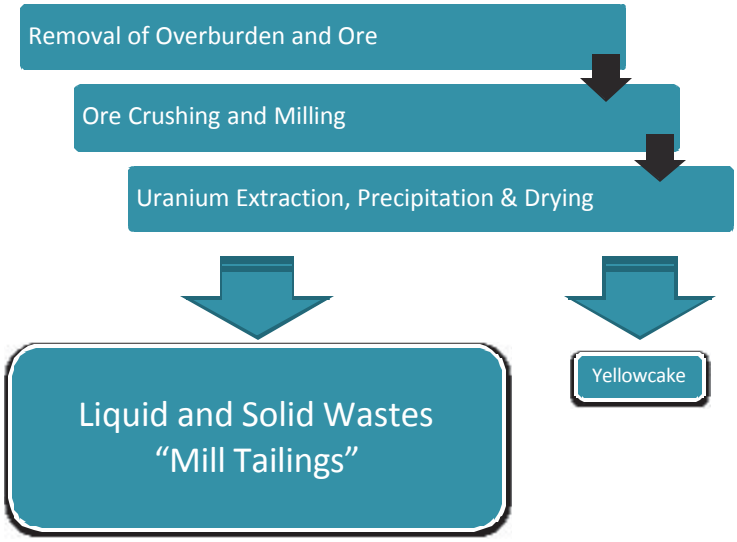
25 July 2012

Concerns about Uranium Mining at Coles Hill

- Proposed mining location is upstream of Lake Gaston, a water source for Virginia Beach
- Refining activities will yield large amounts of radioactive and toxic waste material (tailings) that have to be stored on-site
- A catastrophic failure of a tailings confinement cell can result in contamination of the City of Virginia Beach's water supply

Study Area

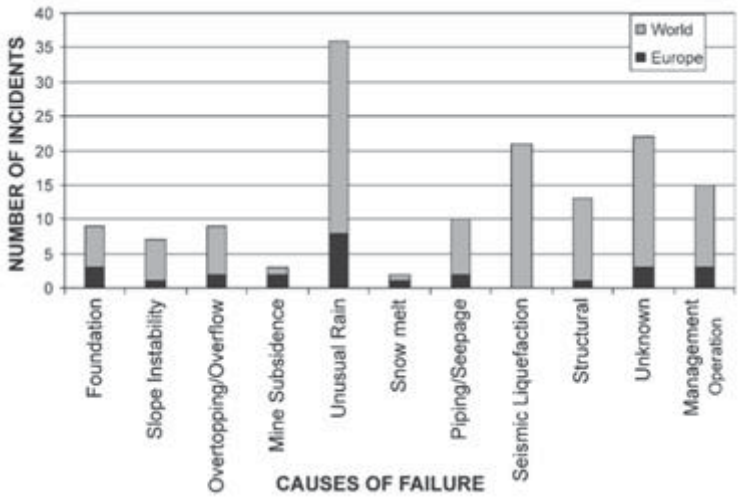
Uranium Mining & Milling



Current Mining Plan

- Foresees mining approximately 30 million tons of ore to yield 63 million pounds of U_3O_8
- Proposes deep shaft mining
- Calls for underground storage roughly half of the 22 million cubic yards of tailings
- Up to eight surface impoundments would hold the remainder of the tailings (up to 1.6 million pounds per cell, 40 acre maximum)

Causes of Tailing Cell Failures



Weather Hazards

- Precipitation in Virginia is 5 to 10 times greater than in traditional uranium mining areas in the arid West.
- Topography and climate in the region supports extreme rain events and flooding
- Region is highly susceptible to landslides

Hazard Scenario

- Containment failure due to extreme weather and flooding
- Discharge of mill tailings into the Roanoke watershed
- Transport of contaminated sediment and bulk water downstream to Kerr Lake and Lake Gaston

City of Virginia Beach Study

- Goal: Determine the impact of a discharge of mill tailings into Roanoke or Banister River on water quality downstream
- Provided the results of the Phase 1 Study to the National Academy of Sciences Committee on Uranium Mining.
- Phase 2 expanded the study area to Lake Gaston and focused on Coles Hill site.

Study Qualifiers

- The study simulated a rare event that regulations are supposed to prevent
- The model does not address the issue of whether there will be a catastrophe – it only simulates the outcome if one did occur

Modeling Approach

- 1-D and 2-D hydrodynamic river model
  - Simulate flow of water (1-D: Banister, Dan, Roanoke; 2-D: Kerr and Gaston)
- Sediment transport/morphological model
  - Simulate suspended and bed load transport of sediment and changes in bed elevation/cross-sections as a result of erosion/deposition
- Water quality model
  - Transport and fate of contaminants (U, Th, Ra)

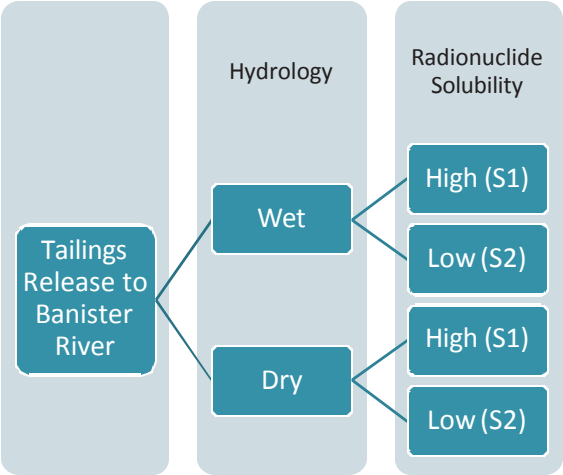
Other Model Characteristics

- Most recent river cross sections available from FEMA, VDOT, USACE were used
- Hydrology was simulated based on historical stream flow data. Tailings release to Banister River is followed by either
  - Wet period (Sep 1996 – Aug 1998)
  - Dry period (Jun 2001 – May 2003)

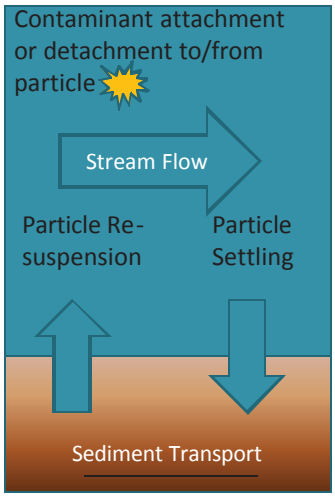
Other Model Characteristics

- Estimated tailings release volume based on current mining proposal and historical tailings dam failure data
  - Release of 720,000 yd^3 of tailings
- Assumed that the City's Lake Gaston pump station would not operate after tailings release

Scenarios in the Phase 2 Study



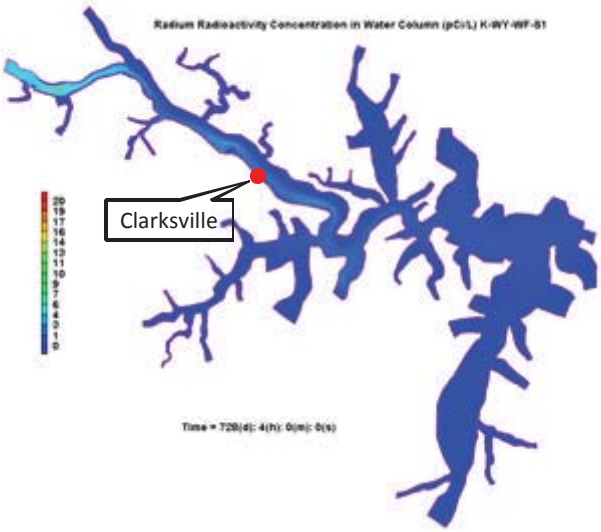
Contaminant Fate and Transport



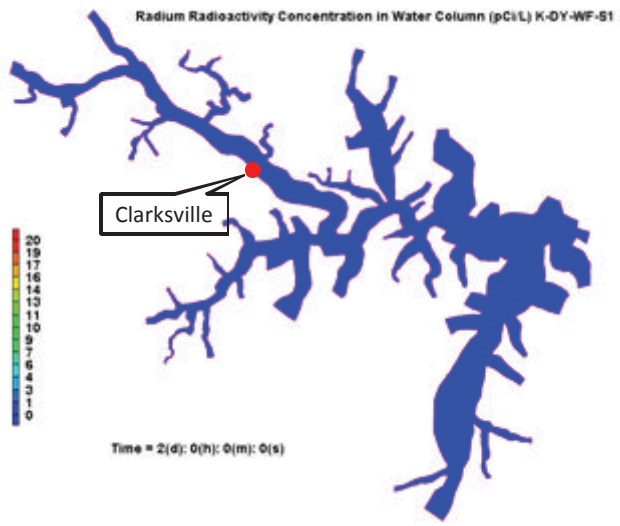
Water Column: Contains dissolved contaminants and contaminants attached to suspended particles

Sediments: Contains dissolved contaminants in pore water and contaminants attached to settled particles

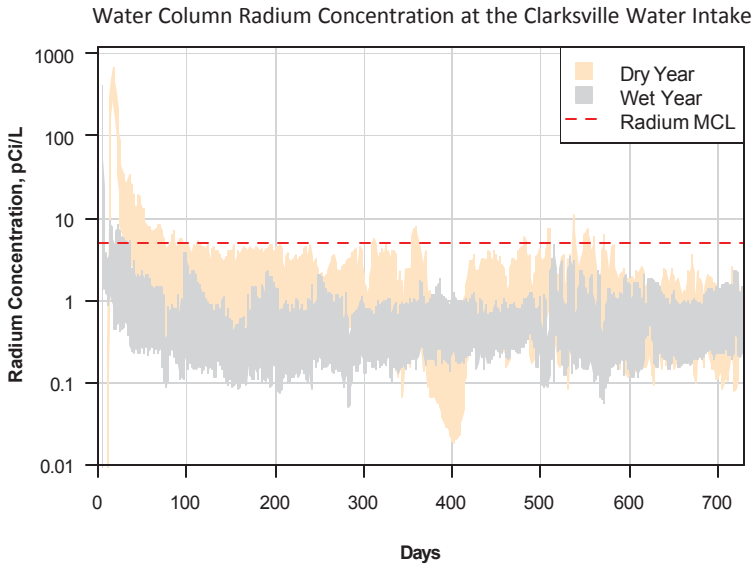
Impact to Kerr Lake
(Wet Year – High Solubility - Radium)



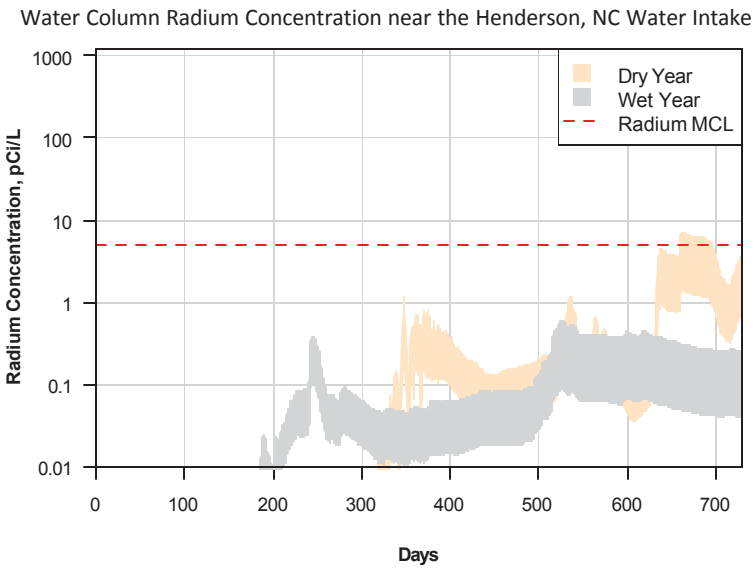
Impact to Kerr Lake
(Dry Year – High Solubility - Radium)



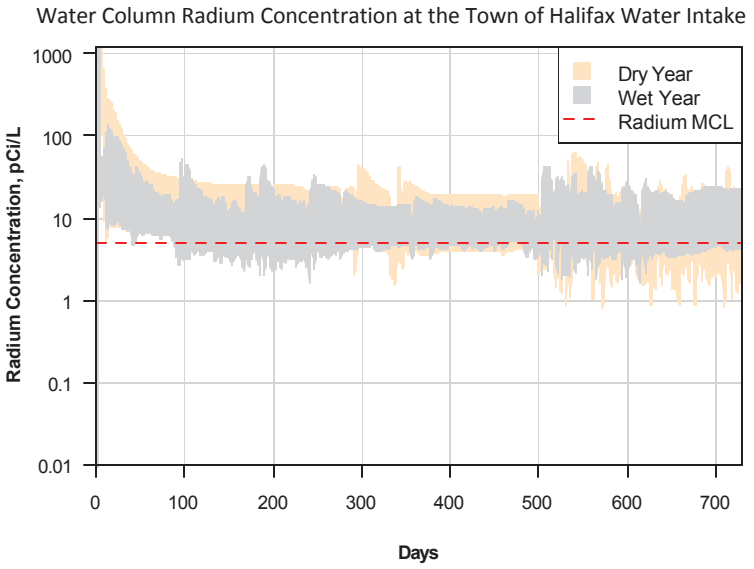
Impacts to Kerr Lake



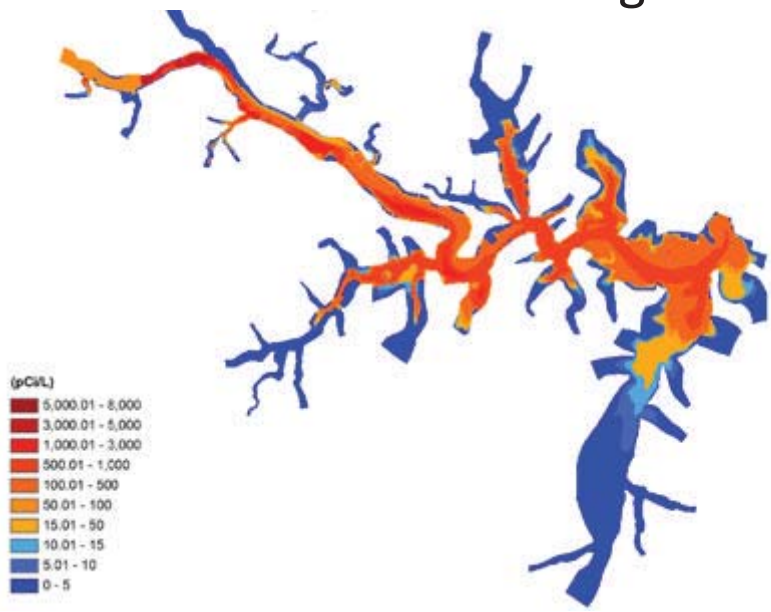
Impacts to Kerr Lake



Impacts to Banister River



Fate of the Tailings



Fate of the Tailings

Water Body	Fraction of Contaminants Remaining in Sediments 2 years After Tailings Release		
	Radium	Thorium	Uranium
Banister River	54% - 83%	77% - 84%	67% - 78%
Kerr Lake	0.1% - 3.4%	2.3% - 4.2%	0.4% - 3.3%
Lake Gaston	0.03% - 0.4%	0.2% - 0.5%	0.1% - 0.6%

General Conclusions

- The impact of a tailings release into the Banister River is highly dependent on the stream flows in the watershed.
- Under any scenario, the partial release of the contents from only one containment cell, will likely result in contaminant concentrations above the SDWA levels.
- The impact is most significant upstream and in the main channels of the reservoirs

General Conclusions (2)

- Contaminant concentrations in the water column of the reservoirs will decrease below SDWA levels within 2 years, but they will be will likely remain elevated for several years in Banister River.
- Most of the contaminated particulate matter will remain in the Banister River bed sediments for the foreseeable future.
- The contaminated sediments can be re-mobilized during flood events and flushed downstream

Lake Gaston near Pea Hill Creek

- Radioactivity (radium and thorium) would remain above the MCL
  - For 1 to 21 days during wet years
  - For 7 to 10 months during dry years
- Radium Levels would remain above the MCL
  - For 2 to 8 weeks during wet years
  - For 6 to 16 months during dry years
- Uranium would be elevated but not exceed the MCL

City of Virginia Beach Intake

- If the pump station remained offline, no contamination would migrate into Pea Hill Creek
- However, the inability to withdraw water from Lake Gaston for up to 1.5 years would result in severe water shortages for the Cities of Virginia Beach, Chesapeake and Norfolk

Questions

http://www.vbgov.com/government/departments/public-utilities/pages/uranium-mining.aspx

The Nature Conservancy
Protecting nature. Preserving life.

Roanoke River Field Office
PO Box 327,
105 S. King Street
Halifax, NC 27839

Tel (252) 583-0007
Fax (252) 583-1187

nature.org

May 15th, 2012

Colonel Steven Baker, Commander
U.S. Army Corps of Engineers
Wilmington District
P. O. Box 1890
Wilmington, NC 28402-1890

Dear Colonel Baker,

The Nature Conservancy (TNC) appreciates the opportunity to assist the United States Army Corps of Engineers (ACOE), Wilmington District in conducting the Section 216 study of the John H. Kerr Dam and Reservoir. Our participation in this process began prior to initiation of the study as TNC was one of the initial proponents for the work and helped garner Congressional support. We view the Kerr 216 study as an opportunity to pursue the shared goals of the Corps of Engineers and the Nature Conservancy to balance flood control, reservoir management, hydropower, natural resource conservation, economic development and other resources along the lower Roanoke River in sustainable ways. These shared goals are further expressed within the ACOE/TNC National Sustainable Rivers Partnership, within which the Roanoke was one of first rivers identified as a focal site and continues to be featured as one of only eight rivers nationwide.

At present, the 216 study is concluding the technical studies phase of data collection, modeling, etc. and progressing through the now parallel process of plan formulation and evaluation, prior to selection of a preferred alternative for final approval. Currently, there are three proposed water management alternatives that modify operations of Kerr dam. Based on the status of the study and TNC's participation within the Operating Policies & Administrative Procedures and Downstream Flow & Riparian Ecosystem working groups, among others, I write to request ACOE follow-through on analyses of reservoir water-level management and flood risk reduction benefits derived from the current operations and the 3 proposed alternatives for operation. This is an important aspect of the 216 study that has yet to receive appropriate study, though TNC made requests for inclusion of this research. Our first request was in a letter, dated 18 April 2000, from Dr. Sam Pearsall, former Director of Science for the NC Chapter of The Nature Conservancy, to W. Eugene Tickner, Deputy District Engineer, USACOE, Wilmington District, requesting that the Section 216 study include comparison of lake-level deviation between the current actual operation of Kerr and several re-operation strategies and analysis of the associated economic benefits derived from the re-operation strategies effects on lake levels. And, in my review of the Feasibility Study Draft report, provided by digital submission on March 5th, 2010 to Wilmington District ACOE Kerr 216 Study Project Leads, I noted on Page 27 of the draft that the proposed flow alternatives had an economic benefit both on the Reservoir side and to users of the floodplain that needed to be included in the assessment of alternatives.

Our request is grounded in the fact that the proposed water management alternatives not only provide downstream environmental benefits by reducing the duration of floodplain inundation, but also significant economic benefit derived from stabilizing lake-levels, which reduces bank erosion, diminishes impacts to reservoir recreation resources, and diminishes impacts to regional infrastructure and increases reservoir flood risk reduction capacity. These benefits are further explained in the following paragraphs.

Regarding Kerr Reservoir bank erosion, in ACOE's 2010 Environmental Assessment of shoreline stabilization projects for Kerr Reservoir, the preparers identify under Section 7.0, Cumulative Impacts the following concerns and opportunities:

- Since completion in 1952, operations of Kerr Lake have produced fluctuating water levels, affecting shoreline bank stability and impacting surrounding resources;
- Fluctuating water levels, coupled with high winds, are the primary contributing factors of moderate to severe erosion along approximately half of the shoreline at Kerr Lake (400 miles);
- Since 1999, North Carolina Parks and Recreation spent approximately $2,000,000 on erosion control measures along public recreation areas at Kerr Lake in North Carolina;
- Minimizing water level fluctuation, both magnitude and frequency, will serve to reduce the need for future shoreline stabilization; however, such minimization will not occur until the operations at Kerr Lake are modified;
- Towards this goal a Section 216 Feasibility Study is in process; evaluating structural and operational alternatives for Kerr Lake and including consideration of revising operations;
- One consideration is better control of fluctuating water levels experienced at Kerr Lake by tracking inflow rates more accurately and developing more precise water balance management responses; this could reduce or eliminate future shoreline erosion issues.

Table 5 provides a summary of reservoir deviation from the guide curve under existing operations for the period from January 1st, 1972 through April 30th, 2010. As you can see from this summary, reservoir water levels are 3 feet above the recommended elevation 20 percent of the time and greater than 5 feet above 12 percent of the time. Looking at total deviation, the water level in Kerr Reservoir is 3 feet or more above or below the recommended level 27 percent or 3,780 days out of the 14,000 days in the sample in the period.

Kerr Reservoir provides quality natural resource-based recreation for area residents and desirable outdoor experiences for visitors each year. Lake level fluctuations substantially affect commercial and recreational activities on the Reservoir and within the surrounding region. There are 30 recreation areas on Kerr with a total of 1,322 campsites, 228 picnic sites, and 38 boat ramps. ACOE manages 12 of these areas and leases land to the State of North Carolina and the Commonwealth of Virginia to manage 15 other areas. Three marina areas are managed by private companies and 15 quasi-public recreation areas under lease to various churches, civic, and scout organizations. Lake level impacts to these resources are contained in Tables 1-4. Twenty-six wildlife management areas are located around the reservoir, which are used by hunters and nature enthusiasts. Use of these wildlife management areas by both wildlife and outdoor enthusiasts, primarily hunters, is significantly impacted by reservoir water-levels. Visitors to these recreation sites average 2.9 to 3.5 million visitor days of recreation per year.

Based on the above information and given the comprehensive nature of the 216 Study, it is imperative to include analysis of the economic impacts that fluctuating lake levels have on lake shore real estate, lake-based and near shore recreation, regional tourism, and local infrastructure. It is recommended that these analyses include current operation of Kerr compared to the 3 proposed water management operation strategies designed to benefit downstream ecosystems and which help stabilize lake levels and provide additional flood risk reduction benefits. This effort should analyze lake levels for each flow scenario and develop information related to deviation from Guide Curve, impacts to boat ramps, roads, tourism, fishing, etc. Such study should also quantify the respective flood risk reduction for each flow scenario based on the risk levels to capital infrastructure downstream, similar to the way the ACOE currently calculates annual flood benefits derived from Kerr Dam.

In addition to the Reservoir analysis work, the existing ACOE study conducted by RTI International regarding downstream floodplain impacts from the effects of current operations and one alternative operation strategy should be completed for the other two operation alternatives. Further, this work should be updated to include the portions of the floodplain inundated by floods of various magnitudes as delineated and accepted by ACOE. Revisiting this work would complete the downstream analysis of benefits and impacts for users of lower Roanoke River floodplain resources.

As we enter the alternative formulation and evaluation phase of the 216 study, it would benefit TNC and other stakeholders for ACOE to provide us with the Roanoke River Basin Operations Model outputs utilized in the study. These outputs were created from model runs developed by Hydrologics, Inc. for ACOE and include the 3 operation alternatives and existing operations scenarios. ACOE planning staff examined the potential and need for additional alternatives and developed feasible reoperation strategies that provide the benefits detailed above. Data within the model runs include among other variables, the projected flow out of the dams and water levels Kerr Reservoir and will help work group members better our understanding of the alternative management outcomes.

I appreciate the countless hours of work by ACOE staff to carry out a study of magnitude and complex nature as the section 216 for J.H. Kerr Reservoir. In order to ensure the study provides a comprehensive assessment of alternative impacts and benefits, it is critical that the above components be included in the analysis and outcomes. I look forward to working with ACOE staff and others to complete this timely work.

Sincerely,

Chuck Peoples

Chuck Peoples, Northeast North Carolina Program Director

ROANOKE RIVER BASIN BI-STATE COMMISSION
Meeting Agenda
Monday, August 27, 2012
1:00 pm to 3:00 pm

Visitor's Center at John H. Kerr Dam & Reservoir
1930 Mays Chapel Road
Boydton, VA 23917

J. Call Meeting to order

K. Recognition of Members and Guests - Chairman McEvoy

L. Minutes of July 25, 2012 Meeting

M. Committee Reports
   4. NC Roanoke River Basin Advisory Committee

   5. VA Roanoke River Basin Advisory Committee

N. Resolutions
   1. Consider resolution regarding Virginia's moratorium on Uranium Mining

O. Presentations
   1. Kerr 216 Study update – Frank Yelverton, Biologist, Environmental Resources Section, US Army Corps of Engineers

P. Next Meeting- Location and Topics

Q. Other Business

R. Adjournment

John H. Kerr Dam and Reservoir
Virginia and North Carolina (Section 216)

Wilmington District, Corps of Engineers

August 27, 2012

- Authorized under Section 216 of Public Law 91-611, the River and Harbor and Flood Control Act of 1970, as amended.
- Non-federal sponsors are the State of NC and Commonwealth of VA

US Army Corps of Engineers
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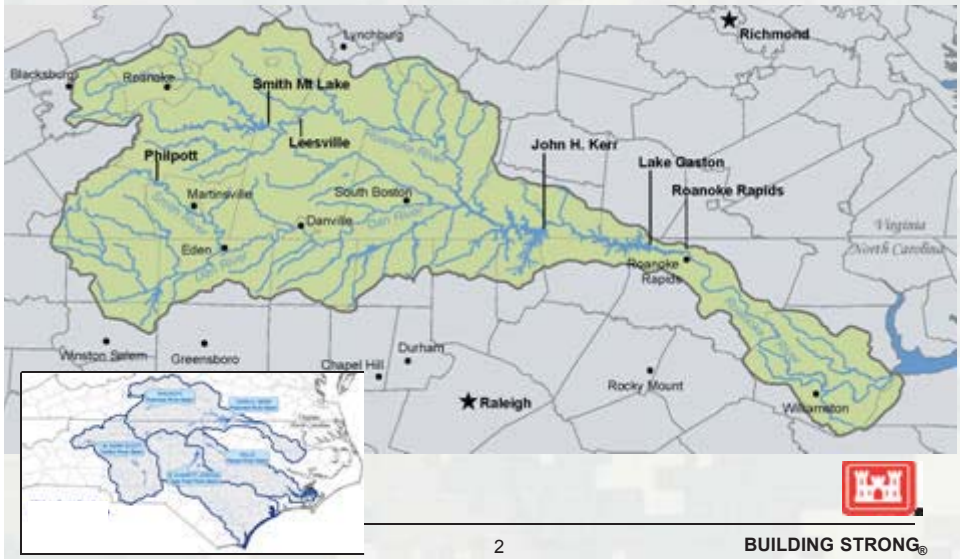
Roanoke River Basin

JH Kerr Watershed -- 7800 Sq Mi



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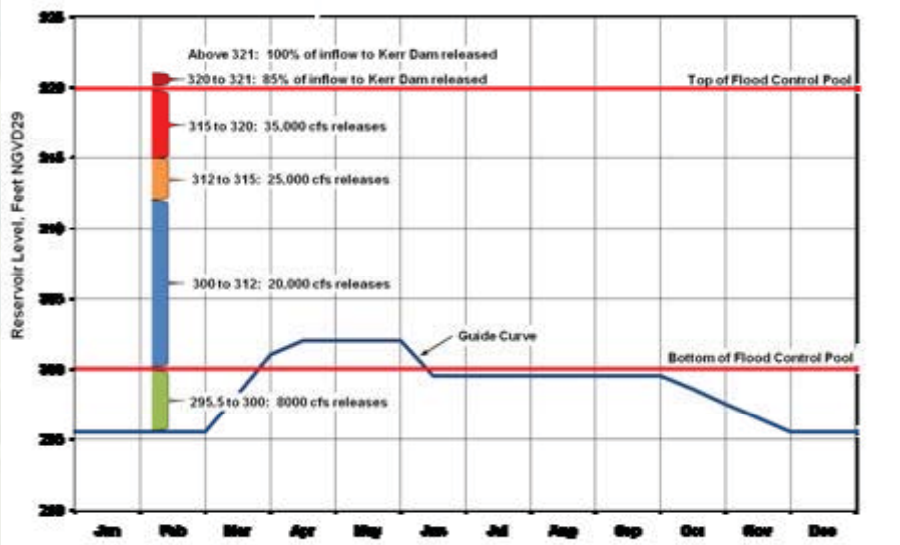
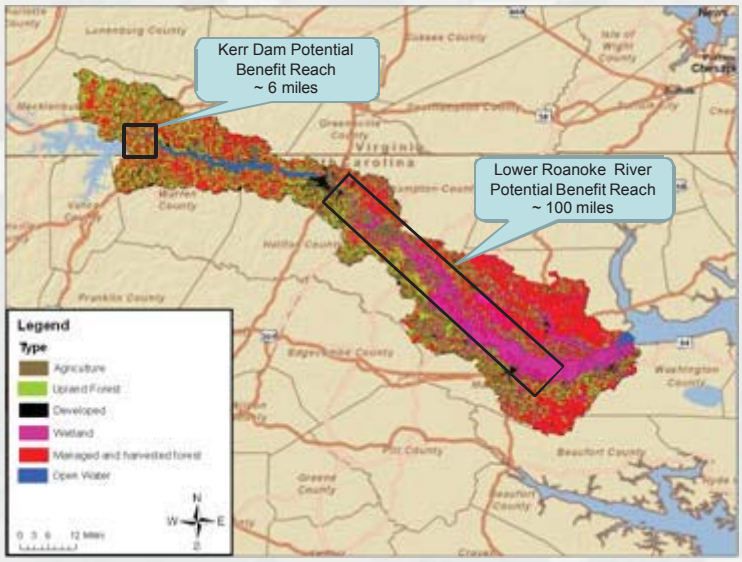
John H Kerr – Existing Operations



John H Kerr 216 – Primary Objectives

1. Improve the riparian ecosystem of the lower Roanoke River by restoring a more natural hydrology
2. Improve dissolved oxygen (DO) levels in water that drains back into the channel from the floodplain of the Roanoke River to improve fish habitat
3. Increase DO levels in the waters released from Kerr Dam during the summer to improve fish habitat for at least 6 miles downstream

Lower Roanoke River Basin
Land Use and Benefit Reaches



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John H Kerr – Potential Alternatives
Stand Alone Measures

Improve Lower Roanoke River Ecosystem

Potential measures to address objectives 1&2

1. Modify reservoir guide curve and more frequent release of 35,000 cfs (MGC_35K). MGC = modified guide curve
2. MGC_35K Year Round
3. Quasi Run-of-River, weekly outflow ˜weekly inflow up to 35,000 cfs

Improve DO Downstream of Kerr Dam

Potential measures to address objective 3

4. Inject oxygen into the hypolimnion upstream of the dam
5. Place a fabric weir upstream of the dam

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Fabric Weir of Oxygen Injection

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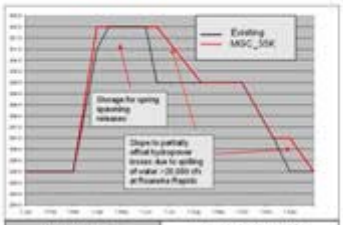
MGC_35k

Measure MGC_35K
January 1-June 30



Existing Operations		Alternative MGC_35K	
East lake level (ft msl)	Ecomadia Rapids releases (cfs)	East lake level (ft msl)	Ecomadia Rapids releases (cfs)
Below 300	Up to 8,000	Below 302	Up to 11,000*
300 – 312	Up to 20,000	302 - 303	Up to 20,000*
312 – 315	Up to 25,000	303 - 315	Up to 33,000*
315 – 320	Up to 35,000	Above 315	Existing operations
320 – 321	85% of inflow or up to 35,000, whichever is higher	* During April 1 – June 30: • From Jan 1 – March 31, release up to 20,000 cfs whenever the elevation exceeds the guide curve up to an elevation of 303 feet. Above 303, follow the release protocol indicated above. • During the rest of the year, follow existing operations	
Above 321	Inflow		

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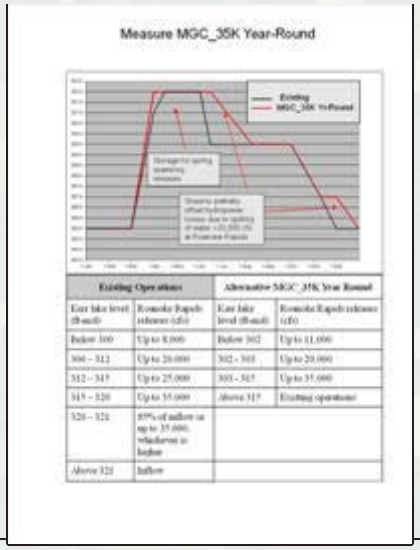
MGC_35k_year_round



Existing Operations		Alternative MGC_35K Year Round	
Kerr lake level (ft msl)	Roanoke Rapids releases (cfs)	Kerr lake level (ft msl)	Roanoke Rapids releases (cfs)
Below 300	Up to 8,000	Below 302	Up to 11,000
300 – 312	Up to 20,000	302 – 303	Up to 20,000
312 – 315	Up to 25,000	303 – 315	Up to 35,000
315 – 320	Up to 35,000	Above 315	Existing operations
320 – 321	85% of inflow or up to 35,000, whichever is higher		
Above 321	Inflow		

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Quasi Run-of-River

Existing Operations		Quasi "Run-of-River" Proposed Operations
Kerr (ft, msl)	Rapids Releases (cfs)	Roanoke Rapids Releases (cfs)
below 300	up to 8000	• Operated as quasi "Run of River" year round. • Above Guide Curve: Outflow ~ Inflow up to 35,000 cfs but comply with fishery releases April 1-June 15, if feasible. • Below Guide Curve: 1) FERC minimum releases at Roanoke Rapids Dam, and 2) comply with fishery releases April 1-June 15, if feasible, and Minimum (Firm) Energy Generation • Above 320: Existing Operations
300 – 312	20,000	
312 – 315	25,000	
315 – 320	35,000	
320 – 321	85% of inflow	
321	inflow	

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Hydropower Impact

Alternative	John H Kerr	Gaston	Roanoke Rapids	System Average Annual Generation	Difference from Baseline	
	mwh	mwh	mwh	mwh	mwh	%
Baseline	479,008	349,142	356,018	1,184,167	---	---
MGC_35k	473,066	349,127	345,459	1,167,652	16,515	1.39%
MGC_35k_ yr_rnd	471,194	349,303	339,462	1,159,960	24,207	2.04%
Plan QRR	462,729	349,490	332,870	1,145,090	39,078	3.30%

Environmental Benefit Lower Roanoke

Measure	Acres Affected	Average Annual Habitat Unit Change
Fabric Weir	501	254
O2 Injection	501	254
MGC_35k	91,500	-288
MGC_35k_yr_rnd	91,500	-170
QRR	91,500	1,976

Environmental Benefit

Measure	Acres Affected	Average Annual Habitat Unit Change
Fabric Weir	501	254
O2 Injection	501	254
MGC_35k	91,500	-288
MGC_35k_yr_rnd	91,500	-170
QRR	91,500	1,976

Other Issues

- Water Supply - No significant impact by any release alternative since they only affect flood pool
- Flood reduction benefits of alternative releases
- Recreation in reservoir and downstream – boating, fishing, camping, etc
- Agriculture – Impacts of increased flooding downstream
- Costs of alternatives

Next Steps

1. AFB Meeting – **Fall 2012**
2. Draft Report (Public Review) – **Spring 2013**
3. Division Engineer Submits Final Report to HQ – **August 2013**
4. State and Agency and Public Review of Final Report – **Fall 2013**
5. Final Washington Level Review - **Spring 2014**
6. Chief's Report Submitted to Congress - **Summer 2014**

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Appendix C – Resolution on the Mining and Milling of Uranium in Virginia

A Resolution Advising the General Assemblies and Governors of the Commonwealth of Virginia and State of North Carolina on the Mining and Milling of Uranium in Virginia

WHEREAS, the Roanoke River Basin Bi-State Commission is a body created by legislation enacted by the Commonwealth of Virginia and the State of North Carolina, Virginia Code §62.1-69.37 and N.C.G.S. §77-91, in part to provide guidance, conduct joint meetings, and make recommendations to local, state and federal legislative and administrative bodies, and to others as it deems necessary and appropriate, regarding the use, stewardship, and enhancement of the Basin's water and other natural resources; and

WHEREAS, the Commonwealth of Virginia has deposits of uranium in various regions, including deposits in the Roanoke River Basin such as the Coles Hill deposit, the mining of which has been prohibited by legislative moratorium since 1982 by an act of the Virginia General Assembly; and

WHEREAS, at the request of the Virginia Coal and Energy Commission, the National Academics of Sciences (NAS) has completed a study entitled *Uranium Mining in Virginia: Scientific, Technical, Environmental, Human Health and Safety, and Regulatory Aspects of Uranium Mining and Processing in Virginia* which, along with other reports sponsored by various interested parties, have explored the risks and benefits of uranium mining; and

WHEREAS, significant opposition to the mining and milling of uranium has been expressed by local governments, citizen organizations, and landowners in the Roanoke River Basin;

NOW, THEREFORE, THE ROANOKE RIVER BASIN BI-STATE COMMISION RESOLVES TO ADVISE THE GENERAL ASSEMBLIES AND GOVERNORS OF THE COMMONWEALTH OF VIRGINIA AND THE STATE OF NORTH CAROLINA THAT:

1. Uranium mining and milling in Virginia has unique challenges associated with extreme natural events. The Commonwealth's climate and hydrology are major challenges to mining in the Virginia.

2. Virginia has experience regulating hard rock and coal mining, as well as monitoring electrical production at nuclear power plants, but the Commonwealth has no regulatory structure to address uranium mining and no experience with such operations. The federal agency with oversight responsibilities for uranium milling has little experience at locations with Virginia's climate and hydrology.

3. The long term risks of tailings disposal are poorly defined. An off-site release of radioactive compounds or heavy metals from the operation proposed at the Coles Hill site would negatively impact communities that rely on the Roanoke River Basin's water resources for potable water, tourism and agricultural production as well as basin's fisheries and wildlife. Such impacts are likely to be a combination of actual damages and public perception of contamination that could extend over a significant period of time.

THE ROANOKE RIVER BASIN BI-STATE COMMISION FURTHER RESOLVES THAT:

These risks, as well as others highlighted in the NAS report and various other studies, support a conclusion that the prohibition on uranium mining in Virginia should remain and the Commission hereby states its opposition to elimination or modification of the existing legislative moratorium.

Adopted this the 27th day of August 2012.

Michael T. McEvoy, Chair
Roanoke River Basin Bi-State Commission

Larry Yarborough, Vice Chair
Roanoke River Basin Bi-State Commission