Review of Records of Virginia Department of Mines, Minerals and Energy Uranium Exploration Permit 90484EX Issued to Virginia Uranium, Inc.

Prepared on Behalf of
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I. Executive Summary and Recommendation

This Report has been commissioned by the Roanoke River Basin Association to examine whether Virginia Uranium Inc. (thereafter, VUI) used best practices in its exploratory drilling activities conducted in 2007 and 2008 and groundwater monitoring thereafter, and whether the oversight by the state regulator, the Department of Mines, Minerals and Energy (thereafter, DMME), was effective in protecting water resources and the public’s health and welfare.

As DMME does not maintain an easily accessible public database of documents related to VUI’s Uranium exploration activities, this Report is based on the records obtained from DMME in 2011 and 2013 through the Freedom of Information Act requests by three Virginia citizens: Deborah Lovelace, Karen Maute, and Thomas Pakurar. The records obtained from DMME include over thousand pages of electronic files related to Uranium Exploration Permit 90484EX (thereafter, the Permit) issued to VUI in November 2007.

This Report identifies a series of potential violations of the terms of the Permit by VUI, which were never addressed by DMME. Among these potential violations is VUI’s failure to submit, prior to drilling, baseline data for one of the monitoring wells identified in the Permit.

Based on DMME records, following exploratory drilling conducted by VUI, Uranium and Radium concentrations in groundwater from the Coles Hill Uranium site rose to the levels exceeding maximum concentration limits listed in the DMME-issued Permit. In the only groundwater monitoring well drilled by VUI since exploratory work began in 2007, Uranium concentrations detected were more than 50 times the maximum concentration levels set by the US Environmental Protection Agency (thereafter, EPA), and Radium 226 concentrations were more than 28 times the EPA’s maximum concentration level. These maximum concentration levels exceedences were never investigated or otherwise addressed and remedied by VUI or DMME. It is not clear from the DMME records whether VUI made any effort to treat the contaminated water, as required by the terms of the Permit.

This Report identifies a range of requirements in the DDME-issued Permit which, it appears, VUI failed to comply with and the agency appears to have failed to enforce, including reporting daily water use from the area’s streams during exploration and depth to water for monitoring wells, and providing completion reports for exploratory wells drilled under the Permit. Also, VUI failed to provide an accurate map showing proposed drilling locations and did not have anyone identified in the Permit "as responsible for drilling operations" present at the site during exploration, according to DMME’s inspection reports.

Despite the fact that the Virginia Code gives DMME authority to impose a penalty of up to $10,000 for each violation of the terms of the Permit, the records made available reveal that DMME made no effort to enforce through penalty or otherwise the requirements of the Permit and Virginia Code.

In addition to violating the terms of the Permit, the Report concludes that VUI also failed to follow best practices widely accepted by the industry. Similarly, DMME failed to require adherence to best practices. None of the DMME records made available reveal the methods of erosion control and storm water management employed by VUI during Uranium exploration. No information was provided on the
depth, volume and flow rates of water in area aquifers near the drilling sites, to assess the impact of drilling activities on groundwater use for neighboring properties. Prior to drilling, water samples were collected and tested only once, instead of collecting baseline data over the span of at least one year prior to drilling. Moreover, subsequent water quality data were not accompanied by proper documentation, such as original Chain of Custody forms, Quality Assurance and Quality Control documents, and description of sampling procedures.

This Report also raises questions about the validity of DMME’s decision to issue the Permit to perform exploratory drilling without first promulgating regulations, as mandated by Virginia Code Section 45.1-279, which provides that, “[t]he Director shall promulgate such rules and regulations as may be necessary and proper to carry out the provisions of this chapter.” DMME issued the Permit in record time, less than two weeks after the receipt of VUI’s permit application. Since 2007 DMME has renewed VUI’s Permit multiple times without notifying the public or giving any consideration to VUI’s violations of the terms of the Permit.

This Report identifies other decisions by DMME that suggest that DMME may not have acted in public interest. Specifically, DMME failed to ensure that VUI notified neighboring landowners and local officials about exploratory activities at the Coles Hill site, as required by the terms of the Permit. It is also unclear whether the bond set by DMME was adequate and whether DMME released the bond without first ensuring proper reclamation of the drill sites, as required by the terms of the Permit. The $250 fee imposed by DMME barely covers the agency’s administrative costs associated with inspections and review of VUI’s submittals. The reasons for DMME’s subsidizing VUI’s activities are unclear.

**Recommendation**

The Uranium Working Group (UWG) Report submitted to Virginia Governor Robert McDonnell on November 30, 2012 identifies the need for the Commonwealth of Virginia to extend the existing Uranium mining moratorium to include Uranium exploration, as the UWG recognized that the program in place is out of date. (p. 19; 40/125).

In June 2012, VUI’s consultants, Lyntek and BRS Engineering, recommended extensive additional core drilling, which is the Uranium exploration method approved by Permit 9048EX, at the Coles Hill site as the next step to advance the project (June 2012 NI43-101 Preliminary Economic Assessment Update, p. 12). The $2,000,000 in core drilling at 15 sites recommended by VUI’s consultants could be conducted under the current outdated program.

Because other Uranium occurrences have been identified throughout the Commonwealth, communities near these locations are too vulnerable to poorly regulated Uranium exploration.

In light of DMME’s decision not to promulgate Uranium exploration regulations prior to issuance of the Permit, its reluctance to involve the public in its decision-making and oversight of Uranium exploration, and demonstrated failure to enforce the terms of the Permit, this Report recommends Virginia implement the UWG Report recommendation that Virginia expand the Uranium mining moratorium to include Uranium exploration until a regulatory program for Uranium exploration is established by statute.
II. Summary and Review of Selected Key Permit 90484EX Documents Made Available By DMME

A. Observations Based on Selected Key Documents

This Report includes observations regarding DMME files related to Uranium Exploration Permit 90484EX issued to VUI in November 2007. Deborah Lovelace, Karen Maute and Thomas Pakurar, who received them in response to Freedom of Information Act requests filed with DMME in 2011 and 2013, provided the files reviewed in this Report. While the Uranium Exploration Permit and Application can no longer be found on the DMME website, an archival version of the Permit Application and attachments included with the Permit can be found at http://web.archive.org/web/20100414170831/http://www.dmme.virginia.gov/DMM/Uranium.shtml.

1. MISSING RECORDS IN DMME FILES - None of the DMME records on the VUI exploration show “date received” stamps or other indication when documents were received by the agency, are not accompanied by an index, and the records are not organized by tracking numbers or other indexing method.

The records made available by DMME do not include a table of contents or chronological record to determine whether the files made available are comprehensive or which documents may have been withheld by DMME. Some documents have “tracking numbers” or other indexing notations but no index is provided and the tracking numbers are not found on all documents.

Several of DMME documents are reconstructed from original documents not made available, and are not identical copies of original reports or records. All Inspections Forms dated from December 10, 2007 through March 20, 2008, the period when most of the drilling conducted by VUI occurred, are summarized from original, reportedly hand-written inspection reports. Chain of Custody forms to verify water sample handling and analysis methods for samples tested October 23 and 24, 2007 are “recreated” after the fact and do not include all relevant information signed by the appropriate sample handler.

No information is provided on whether the original Inspection reports and Chain of Custody records referred to remain in existence or were destroyed.

In addition, the DMME files provided do not include copies of completed versions of all of the DMME exploration application and completion forms available on the DMME web site at http://www.dmme.virginia.gov/dmm/permittingforms.shtml. Among other gaps, none of the drill holes constructed by VUI are accompanied by Uranium Exploration Drill Hole Completion Reports, a form available at http://www.dmme.virginia.gov/dmm/pdf/permitting/dmmu7.pdf. DMME apparently never received or required completed forms as part of permit compliance.

No records were made available by DMME identifying actual drilling logs for the specific exploratory holes drilled or the residential wells monitored. The general sketch of the drilling method in the Permit Application is not a record of completion log, driller’s log or other record of method of construction of the well and where water might have been encountered during drilling. This information would also
need to be accompanied by the geophysical logs that would provide Uranium content information on the rock surrounding the holes drilled.

The lack of accurate information on drilling and sampling methods throughout the DMME files on VUI’s Permit 90484EX is a significant shortcoming in the record, especially in light of the consistent and persistent exceedences of Maximum Concentration Limits (MCLs) for Uranium and Radium 226 in wells RW-1 and MW-1, as discussed in Part III of in this Report.

2. APPLICATION REVIEW AND PERMIT ISSUANCE - On November 9, 2007, Norman Reynolds, as VUI’s President and Chief Executive Officer, signed the Uranium Exploration Permit Application identified as “Uranium Exploration Permit Application 11-14-207.pdf”, and the Permit was issued by the DMME less than two weeks later.

On November 20, 2007, DMME issued a signed Permit – on a form titled “Permit/License Application,” issued by DMME for VUI as Permit 90484EX, that refers to a “Uranium Exploration Permit Application 11-14-207.pdf” as the “Permit Application” and the single attachment to the Permit as issued.

On December 3, 2007, VUI wrote to DMME saying that it anticipated commencing drilling under Permit 90484EX on December 10, 2007 and “no site preparation or drilling will occur on December 10, 2007 until a state inspector is on site.”

No additional information constituting a review of the Permit Application by DMME, Department of Health or Department of Environmental Quality is identified in the DMME documents made available.

In addition, no information is provided regarding any VUI meetings, such as phone conversations or email exchanges with DMME staff, and a log of DMME activities related to Permit 90484EX prior to issuance of the Permit.

3. BOND – On November 14, 2007, less than a week after the VUI Permit Application was signed (and presumably received by DMME), DMME Engineering Manager T.C. Bibb provided VUI Vice-President of Operations Mick Mastilovic with the following letter stating:

“After review of your revised permit application, approval is granted, conditional upon the receipt of bonding, permit fee, and the stipulations noted below:

1. As we discussed, the bonding amount needed is as follows: 10 Drill Holes @ $10,000 per hole $100,000
   10 Drill Pads with a total of 2 disturbed acres @ $2,000 per acre $4,000
   Total $104,000
2. The permit fee of $250.00 should be submitted, payable to the Treasure [sic] of Virginia.
3. VA Uranium agrees to provide 1 week notice before commencement of actual drilling operations.
4. VA Uranium agrees to provide 1 week notice for any planned hole closure.
5. VA Uranium will monitor stream flow rates on a quarterly basis at the noted stream sampling points identified in the application.

If we can be of any further service, please let me know.”

No additional information is provided on the mechanism for bond setting. Virginia Code Section 45.1 – 274 requires that, “[t]he bond shall ensure compliance with the provisions of this chapter and any regulations promulgated hereunder relating to the drilling, redrilling, plugging and abandoning of any
exploration activity. The bond shall be set by the Chief in such amount as may be deemed reasonable and necessary.”

No information is provided in the DMME files, or cited in the DMME approval letter, regarding a showing that the bond amount is “reasonable and necessary” or how the $10,000 per hole and $2,000 per acre costs were derived.

On November 26, 2007, DMME sent VUI a letter informing the company that it had issued exploration permit number 90484EX (signed by DMME staff on November 20, 2013) “after receipt of the permit fee and a cash bond.”

No DMME records reflect receipt of the $250 permit fee, the $104,000 cash bond, or any review of the application for its content by DMME staff or staff of other agencies.

Subsequently filed Bond Release Inspection and Approval Forms signed by DMME staff provide no information on the condition of surface or vegetation at the drill sites, the proposed post-mining land use, and the extent of the surface affected by drilling activity. The forms merely identify the drill hole being inspected and provide no other information. (File “Amend90484EXVAUranium1324.pdf”). This is despite the Permit’s requirement that the drill site be revegetated. The Permit Application at Part 19 provides, “[f]ollowing the revegetation and restoration activities, monitoring will be conducted to assure successful establishment of vegetation and no development of erosion problems. Revegetated areas that have not become established by the end of the growing season will be treated to prevent erosion and site degradation (i.e., mulching, contouring, water bars). The restoration will be monitored to ensure that it is successful.”

4. VUI PERSONNEL AT DRILLING SITES - The Permit Application at Part 14 (p. 3-5) identifies contractor personnel as “persons responsible for operating decisions.” Listed by name in Permit Part 14 are Boart Longyear, WT Moore, Century Geophysical, Marshall Miller, and Larry Roach. None of the personnel identified in the Permit are listed as present on site during any inspection while drilling was being conducted. DMME identifies “Patrick Wales (non-certified)” as “Foreman” on all inspection forms dated from December 14, 2007 through March 20, 2008 (when most of the drilling under the Permit was conducted). Patrick Wales is not identified in the Permit for any role in exploration activity, or as a responsible VUI official, or responsible drilling contractor representative. No explanation of “non-certified” designation is available in inspection records.

5. BASELINE AND MONITORING DATA - The Permit Application at Part 15 (p. 7) identifies residential well (RW) sampling sites for baseline data collection “prior to drilling.” The requirement includes four wells, RW-1, RW-2, RW-3 and RW-4, that are the only groundwater sampling sites identified in the Permit. Requirements include sampling for the contaminants identified in Table 1 of the Application are current water elevation, temperature, pH and total coli form.

No current water elevation data are reported in the lab analyses or Chain of Custody forms for RW-1, RW-3 and RW-4 in the December 10, 2007 Analytic Results Report represented as baseline data. The 1st Q 2008 Water Quality Data ARR has a notation regarding depth of water from the “top of the casing” for RW-2 but no such information for RW-1, RW-3 or RW-4.
None of the groundwater monitoring data through the life of the Permit for RW-1, RW-3 or RW-4 appears to provide depth to water information. Only RW-2 data is accompanied by a depth to water measurement.

No information on total coliform data from the RW wells, as required in the Permit, is identified in the DMME files available.

a. Missing Originals of the Chain of Custody Forms for Baseline Data. DMME’s December 10, 2007 records (“VUI DMME 102307.pdf”) include a VUI Analytical Results Report (ARR) with a cover letter dated December 10, 2007 (December 2007 Cover Letter) describing the contents as baseline data for surface water samples from sites identified in the VUI Permit. The data reported in the ARR is attributed to water sampling activities identified as occurring on October 23, 2007 and samples received on October 24, 2007, prior to the filing of the VUI exploration permit application. Six “Analytic Request and Chain of Custody Forms” (thereafter, “Chain of Custody Forms”) are also included with this ARR.

The Chain of Custody Forms attached to the December 2007 Cover Letter conveying the data for the October 2007 samples were not copies of the original Chain of Custody Forms filed by the staff collecting, packaging and delivering the samples to the lab on October 24, 2007. The Chain of Custody Forms for the October 2007 samples were “recreated for accuracy.” In the Comments section, the forms state that “COC Received by SM 10/26/07 – AEW,” and all but one Chain of Custody Form include the statement “then recreated for accuracy.”

Original Chain of Custody forms are the appropriate form to accompany samples during their collection, transport and deliver to the lab. Recreated forms or forms received two days after the samples are reported to have been received are not deemed to be official. The Chain of Custody Forms in the DMME files appear to say that the forms were received by a person with initials SM (who is unidentified) on October 26, 2007, two days after the samples are reported to have been delivered. The dates of sampling collection and delivery on the Chain of Custody Forms are not accompanied by times and dates and signatures of those doing the work. The forms are “recreated” and do not include the data and time that the samples were “relinquished or received” – (Box 17 and 18).

“Recreated for accuracy” is a contradiction in terms, as only the original Chain of Custody Form with original signatures and notations can be considered as an accurate record. A recreated Chain of Custody form that fails to identify key facts in the chain of custody cannot be reasonably considered accurate.

b. Missing Baseline Data - A second VUI ARR (“VUI DMME 110507.pdf”) submitted with the December 2007 Cover Letter provides data represented as baseline data on samples collected in November 2007 at sites identified in the original permit application as “SS, PS, or RW numbers” (“Uranium Exploration Permit Application 11-14-2007.pdf”, p. 6-7). However, this ARR does not include any information on the residential well RW-1.

No information is provided as to why RW-1 was not included among the wells for which data were provided on December 10, 2007, including whether the samples were mishandled or the data
for RW-1 samples were withheld from DMME or by DMME.

c. **No Record of DMME Review of Baseline Data** - DMME appeared to have accepted at face value all baseline data provided in the October and November 2007 ARRs, did not comment on the data or request additional baseline data to strengthen the sparse database provided by VUI. No verification sampling of baseline samples was requested or noted elsewhere after VUI exploratory drilling began on December 17, 2007.

d. **Lack of Information on Water Sampling Procedures** - The October and November 2007 ARRs do not identify the sampling procedures used for the residential wells (RW). The only hint about sampling procedures for RW-2, RW-3, and RW-4 is the word “GRAB” hand-written on the Chain of Custody Forms.

Typical groundwater sampling programs seek to sample aquifer water rather than water that may have been standing in a well casing or available at an open faucet. The typical method for sampling aquifer water is “purging the well” - pumping out water from the well until the field-measured temperature and conductivity stabilize – prior to “grabbing” a sample from the water in the well after purging.

No information is provided on the construction, depth, water level, age or use for the RW wells sampled.

None of the Quarterly Water Quality Data Reports for the 2008 – 2012 period include any Chain of Custody Forms, lab data or other documents indicating the Quality Assurance and Quality Control procedures used.

6. **FAILURE TO REPORT AND ACT ON PERSISTENT EXCEEDENCES OF MCLs FOR URANIUM AND RADIUM** - The November 2007 water sample from RW-2 exceeded the Radium 226 and Gross Alpha MCLs – 27.5 pCi/l vs. 5 pCi/l for Radium 226 and 161 pCi/l vs. 15 pCi/l Gross Alpha, as listed in Table 1 of the Permit Application.

Reporting on that sample would have been the first opportunity for VUI to demonstrate compliance with the Permit Application Part 22 commitment that “[a]ny water that does not meet the radionuclide standards in Table I will either be treated until standards are met and it can be safely discharged or will be transported to an appropriate site for disposal.”

No action is identified for this water that does not meet the radionuclide standards in Table 1 ”or any other water exceeding the standards identified in the groundwater sampling activities associated with the Permit.

Neither the cover letters submitted with the ARRs nor others letters conveying the monitoring data reports between 2008 and 2012 mention or highlight any of the MCLs exceedences identified in the data submitted with the cover letters.
7. DAILY WATER USAGE - The Permit Application at Part 16 states, “[t]he driller will be responsible for keeping a daily log of estimated water usage from surface streams to ensure that it does not exceed 10,000 gallons per day as averaged over a 30-day period.”

No information related to daily water usage from surface streams or any other source is provided in the files made available by DMME. VUI’s Quarterly Water Quality Data Reports state surface stream flow volumes but provide no summaries of daily water usage from streams.

8. TREATMENT OF CONTAMINATED WATER - The Permit Application includes a commitment in Part 22 that “[a]ny water that does not meet the radionuclide standards in Table I will either be treated until standards are met and it can be safely discharged or will be transported to an appropriate site for disposal.” The Radionuclide Standards in Table 1 include, but are not limited to, the Uranium MCL of 30 ug/l (micrograms/l) and the Radium 226 MCL of 5 pCi/l established by the US Environmental Protection Agency (EPA). Despite continuous exceedences of these MCLs in groundwater extracted from wells RW-1 and MW-1 from 2008 – 2012, no information is provided regarding the volume of water collected from these wells, how it was collected, treated or discharged, as required in the Permit.

B. Observations Regarding Confidentiality

The “Correspondence” folder of DMME records includes a “VUI Confidentiality Request – April 2011” which is a letter from VUI requesting an extension of “confidentiality for all data” pursuant to Virginia Code Section 45.1-285. No other documents associated with confidentiality are found in the records provided. No mention of a confidentiality request is found in the Permit Application or in the Permit as issued.

Code of Virginia Section 45.1-285 provides that “[t]he Chief shall hold confidential all logs, surveys, plats and reports filed under this chapter by those engaged in the exploration for Uranium for a period of two years after the completion of the exploratory activities. Further, upon written request by any person engaged in the exploration for Uranium, the Chief shall hold confidential all logs, surveys, plats and reports filed under this chapter for all additional two-year periods. Such request shall be granted by the Chief if the requesting party certifies that he considers all such information to be of a proprietary nature relating to his competitive rights.” (Emphasis added).

No confidentiality request or certification is found in the DMME files from before the date of the Permit Application though April 2010. No basis has been identified in the documents provided that demonstration that the Chief has received the required certification from VUI for the documents VUI is seeking confidentiality for is all “information … of a proprietary nature necessary for the issuance of confidentiality.”

The statutory language does not specifically provide for retaining water quality data from monitoring wells as confidential. The DMME files do not appear to contain the mandatory certification from the Permittee necessary for the Agency to determine that all agency inspection records, monitoring reports, proposed modifications of permitted activity and other correspondence filed by VUI, and DMME correspondence related to those VUI’s proposed modification and other correspondence can reasonably be considered to meet the statutory standard of “information of a proprietary nature relating to his competitive rights.”
Review of the Application, the Permit and other DMME documents available shows that a certification “that all information to be made confidential be of a proprietary nature related to his competitive rights” has not been offered by VUI, nor enforced as the requirement necessary for a confidentiality determination by DMME, as provided in Virginia Code Section 45.1-285.

C. Observations Regarding Application Completeness

DMME Permit 90484EX for VUI Exploration signed by Anne Grassler on November 20, 2007 identifies a series of “Items to be Submitted.” DMME did not require VUI to submit – as indicated by N (for No) rather than Y (for Yes) – the following items: “2. Permit notifications (Forms DMM-103, 103A); 3. Certified mail receipts for adjacent property owners within 1000 feet of property boundary; 3. Proof of notification of local administrative officials; 5. Proof of notification of utility companies with facilities within 500 feet of permit boundary.”

No basis is identified in the DMME files for its determination to not require that VUI provide the notice to neighbors, local administrations or other interested parties.

Each of the annual permit renewal applications in the DMME files has the same series of “Items to be Submitted” listed and no submittal was required. No information is available as to why the notifications of local property owners, administration officials, utility companies was not required at any time for the VUI exploration program.

Virginia Code Sections 45.1 -272 through 285 do not explicitly require the notifications identified on the Permit Application form but not filed by VUI, and not enforced by DMME.

Similarly, Virginia Code Sections 45.1 -272 through 285 fail to explicitly provide for public notice of applications, public review of applications, requirements for public hearings on applications if requested, opportunities for appeal of decisions regarding the application by the public or the applicant, requirement for fees to cover the full cost of agency performance. The identified activities are fundamental elements of public involvement in mineral exploration in many states where Uranium exploration is conducted.

III. Summary and Review of VUI Water Quality Data

This discussion focuses on the groundwater data reported by VUI to DMME pursuant to Permit 90484EX.

The DMME files available do not include any information regarding the construction, depth, age, use or depth of water for monitoring wells RW-1, RW-2, RW-3 or RW-4, other than depth to water for RW-2. This information does not appear in either the Permit Application or other documents.

In the single set of data from before drilling began for RW-2, RW-3 and RW-4 included in the October and November 2007 ARRs, the data for RW-2 lists Gross Alpha radioactivity of 161 pCi/l, a Uranium content of 8.34 ug/l and Radium 226 level of 27.5 pCi/l for a sample collected November 7, 2007 (p. 23/55). The exceedences of the Gross Alpha MCL – 15 pCi/l and Radium 226 MCL – 5 pCi/l, are not
noted in VUI’s December 2007 Cover Letter accompanying the ARRs. DMME also provides no commentary on the data from this or other water quality data for the next 5 years.

RW-3 data showed Gross Alpha - 5.73 pCi/l, and Radium 226 - J 0.518 pCi/l – with “J” indicating that the concentration detected is below the “quantification limit” for the analytic method used.

RW-4 data showed Gross Alpha radioactivity - <3.000 pCi/l, Uranium - 0.259 ug/l, and Radium 226 - <1.000 pCi/l.

In the VUI Permit Application, RW-2 is identified as “Walter Coles Well near Storage Shed,” RW-3 is identified as “Walter Coles Cattle Well,” and RW-4 is identified as “Well at Roy Crider’s House”

No November 2007 data is reported for RW-1, identified in the VUI Application as “Well at Walter Coles House.”

Data for RW-1 is first reported in the DMME records in the March 13, 2008 1st Quarterly DMME Monitoring Report. Uranium is reported as 85.9 micrograms/l (ug/l) - almost three times the 30 ug/l MCL established by the EPA and listed in the DMME-issued Permit, and combined Radium 226/228 of 3.81 pCi/l (at p. 4/5).

The Uranium content of RW-1, 85.9 ug/l reported in March 2008 is:
- more than 70 times the Uranium content of RW-2 of 1.2 ug/l in the same report;
- more than 20 times the Uranium content of RW-3 of 4.17 ug/l in the same report; and
- 268 times the Uranium content of the RW-4 of 0.32 ug/l, in the same report for the single non-“Walter Coles” residential well for which data is reported.

Uranium content as high as 8.34 ug/l in RW-2 was not reflected in future samples; the Uranium content of RW-2 reported in March 2008 fell to 1.2 ug/l at the same time the first RW-1 Uranium content data indicated 85.9 ug/l.

The Radium data for the residential wells RW-1 through 4 in March 2008, reported as “combined 226 and Radium 228”) are: RW-1 – 3.81 pCi/l; RW-2 – 3.225 pCi/l; RW-3 – 4.3 pCi/l; and RW-4 – ND.

The elevated Gross Alpha radioactivity detected in the November 2007 data for RW-2 is also not reflected in future data for RW-2, as Gross Alpha data dropped from 161 pCi/l to 12.6 pCi/l, Uranium dropped from 8.34 u(ug/l to 1.2 u(ug/l, and Radium fell from 27.5 pCi/l to 4.3 pCi/l combined Radium 226 and Radium 228, between the November 2007 and March 2008 samples.

In the 2nd Q 2008 Water Quality Report, Combined Ra 226 and 228 in RW-1 water was reported as having risen to 10 pCi/l, while RW-2 -4 were shown as “ND” – Not Detected. Also, the Uranium content of RW-1 water rose to 166 ug/l, while RW-2 was ND, RW-3 was 2.26 ug/l and RW-4 was 1.50 ug/l.

No Chain Of Custody or lab data sheets are provided for any of the 2008, 2009, 2010, 2011 and 2012 Quarterly Water Quality Data Reports filed by VUI, according to DMME records made available. Data for RW-2, RW-3 and RW-4 in the 2007 baseline data reports included data for Radium 226, which has a
MCL established by the EPA and listed in the DMME-issued Permit. The 2008 Water Quality Data Reports only report data for “combined Radium 226/Radium 228”, not directly comparable. After year 2008, VUI began to provide DMME Radium 226 and Radium 228, as well as combined Radium 226 and Radium 228 data.

The 2008 Quarterly Water Quality Reports show that Uranium content of RW-1 groundwater rose significantly in 2008, more than doubling by the end of the year; while the Uranium content of RW-2, RW-3 and RW-4 changed very slightly and remained well below the MCL, as shown in the data summary below:

RW-2 Uranium data for 2008: 1st Q – 1.2 ug/l, 2nd Q - ND; ug/l, 3rd Q – ND ug/l; 4th Q – ND ug/l
RW-4 Uranium data for 2008: 1st Q – 0.32 ug/l; 2nd Q - 1.50 ug/l; 3rd Q – ND; 4th Q – ND. (MCL Exceedences in Bold)

In 2009 – 2012 data for RW-1, the Gross Alpha, Uranium and Radium 226 content remain significantly elevated compared to other RW wells sampled, and consistently exceeded the MCLs for Uranium and Radium 226.

In the 3rd Q 2009, DMME approved elimination water quality data reporting for RW-3 and RW-4 at VUI’s request. This activity reduced the number of groundwater sampling sites identified in the permit to two, one of which consistently exceeded the Uranium and Radium 226 MCLs.

For 2009 4th Q, RW-1 had Uranium - 168 ug/l and Radium 226 - 6.72 pCi/l.
For 2010 4th Q, RW-1 had Uranium - 208 ug/l and Radium 226 - 3.8 pCi/l.
For 2012 4th Q, RW-1 had Uranium - 121 ug/l and Radium 226 - 7.8 pCi/l
(MCL Exceedences in Bold)

The most recent groundwater quality data, 2012 4th Q Water Quality Report, shows significant increases in Uranium and Radium 226 content of RW-1 water between 2008 and 2012, as follows:

- Uranium content in RW-1 water in 4th Q 2012 was 41% higher than the first data from 1st Q 2008 – 121 vs. 85.9 ug/l; and
- Radium content in RW-1 water in 4th Q 2012 was more than 100% higher than the first data from 1st Q 2008 – 7.8 pCi/l vs. 3.81 pCi/l.

DMME records show that, on April 2, 2008, the Agency approved VUI’s February 21, 2008 Amendment application to convert Exploratory Well 41-019 into a monitoring well. This well became designated MW-1 in VUI’s Quarterly Water Quality Data Reports.

Without explanation or discussion, MW-1 data was not reported in the Quarterly Water Quality Data Reports until 3rd Q 2009, more than a year after the request to convert Exploratory Well 41-019 to a monitoring well was approved.
other records of actual construction of MW-1 are available in DMME files made available.

No records of actual construction of any exploration wells or monitoring wells appear to have been required by DMME or provided by VUI. The sketch of Exploratory Well 41-019 called “Cross-section of Monitoring Well 41-19” does not provide details on the diameter of the hole, or depth of casing features and is not an as-built log of the well as completed for monitoring use. Completed Uranium Exploratory Drill Hole Completion Reports, DMME Form DMME-7 posted on its website, are not provided for any of the exploratory wells or the conversion of Exploratory Well 41-019 to MW-1.

Water Quality Data for MW-1 was reported in 3rd Q 2009 and 4th Q 2009 Reports. MW-1 has the highest Uranium content, Gross Alpha radioactivity and Radium 226 content of any well for which data has been provided by VUI, higher than each of the RW wells.

For 3rd Q 2009, the first water quality data was reported for MW-1, Gross Alpha radioactivity is 361 pCi/l, Uranium content is 36.9 ug/l and Radium 226 is 292 pCi/l, with all three constituents exceeding their respective MCLs listed in the Permit Application.

VUI’s 3rd Q Water Quality Report notes that it has changed analytical laboratories, ceased sampling RW-3 and RW-4 “due to the lack of drilling activity” and MW-1 had “not been fully developed prior to sampling event. A verification/re-sample shall be conducted after well development.”

Since VUI ceased reporting and DMME ceased requiring reporting of RW-3 and RW-4 data in the 4th Q 2009 Report, of the three ground water wells currently being sampled by VUI, RW-1, RW-2 and MW-1, only one, RW-2, does not consistently exceed MCLs for Gross Alpha, Uranium and Radium 226.

The change in analytic labs by VUI did not result in more complete filings of sampling methodology or water quality data Quality Assurance and Quality Control documentation, as no information is provided on the preparation of the wells for sampling – purging of standing water to insure sampling of aquifer water, Chain of Custody forms or lab results, or information on the lab certification and staff handling samples.

The 3rd Q 2009 Uranium content of MW-1 water is 20% higher than the MCL of 30 ug/l; however the Radium 226 content of MW-1 water is more than 58 times the Radium 226 MCL of 4 pCi/l.

In 3rd Q 2009, RW-1 water is reported to have Gross Alpha -187 pCi/l, Uranium - 312 ug/l and Radium 226 - 6.47 pCi/l, exceeding their respective MCLs.

In 3rd Q 2009, RW-2 showed Gross Alpha of 16.8 pCi/l; Uranium content of 1.37 ug/l; and Radium 226 content of 3.35 pCi/l; exceeding the Gross Alpha MCL of 15 by 10%.

As approved by DMME, VUI ceased reporting data from RW-3 and RW-4 in the 3rd Q 2009.

In 4th Q 2009, both RW-1 and MW-1 continued to show exceedences of the Gross Alpha, Uranium and Radium 226 MCLs while RW-2 showed Gross Alpha, Uranium and Radium 226 content below their respective MCLs, as summarized below.
In 4th Q 2009, MW-1 had Gross Alpha - 2,437 pCi/l, Uranium - 2,716 ug/l and Ra 226 - 251 pCi/l. RW-1 had Gross Alpha - 115 pCi/l; Uranium - 168 ug/l and Ra 226 of 6.72 pCi/l; and RW-2 had Gross Alpha - 13.2 pCi/l; Uranium - 0.738 ug/l and Ra 226 of 4.17 pCi/l. (MCL Exceedences in Bold)

VUI contractors conducted a promised “Verification Event” of a second test of MW-1 due to the exceedences of the Uranium and Radium 226 MCL noted in the 3rd Q 2009 Water Quality Data Report. The data from the “Verification Event” was collected on January 28, 2010 and included with the 4th Q 2009 Water Quality Report.

The data from the MW-1 Verification Event was very close to the data from the 4th Q 2009 samples collected a month and a half earlier, on December 4, 2009. The 4th Q 2009 data is significantly higher in Gross Alpha, Uranium and Radium 226 content than the 3rd Q 2008 samples from the sample well. The “Verification Event” data for MW-1 shows Gross Alpha – 2495 pCi/l (vs. 2437 pCi/l for the 4th Q 2009 sample); Uranium – 2250 ug/l (vs. 2716 ug/l) and Combined Ra 226 and Ra 228 – 315.79 pCi/l (vs. 253 pCi/l). (MCL Exceedences in Bold)

The 4th Q 2009 data from MW-1 – the one sample associated with a second “Verification Event” sample of all VUI groundwater data - identifies Uranium content more than 80 times the Uranium MCL of 30 ug/l and a Ra 226 content more than 50 times the Radium 226 MCL of 5 pCi/l.

DMME files indicate no acknowledgement of the MCL exceedences at MW-1, interest in disposal of water produced there or the origin and flow characteristics of the water found at MW-1.

A summary of the RW-1 data for 4th Q of 2010 – 2012 shows

In the 4th Q 2012 data, the most recent monitoring data available, RW-1 water contains 4 times the Uranium MCL and more than 50% above the Radium 226 MCL.

A summary of the MW-1 data for 4th Q 2010 – 2012 shows:

In the 4th Q 2012 data, the most recent monitoring data available, MW-1 water contains more than 56 times the Uranium MCL and more than 28 times the Radium 226 MCL.

The only other well included in the VUI monitoring system, RW-2, after DMME allowed VUI to stop reporting water quality data at RW-3 and RW-4, continued to show relatively low levels of Gross Alpha,
Uranium and Radium 226 as compared to their MCLs through the most recent report for 4\textsuperscript{th} Q 2012.

A summary of the RW-2 data for 4\textsuperscript{th} Q 2010 – 2012 shows:
4\textsuperscript{th} Q 2010 data for RW-2 -- Gross Alpha – 4.11 pCi/l; Uranium – 1.28 ug/l and Ra 226 – 0.681 pCi/l.
4\textsuperscript{th} Q 2011 data for RW-2 -- **Gross Alpha – 23.5 pCi/l**; Uranium – 1.06 ug/l and Ra 226 – 1.38 pCi/l.
4\textsuperscript{th} Q 2012 data for RW-2 -- Gross Alpha – 7.09 pCi/l; Uranium – 0.222 ug/l and Ra 226 – 1.53 pCi/l
(MCL Exceedences in **Bold**

None of correspondence in the DMME files made available acknowledged the content of the water quality data or sought to gather additional data related to the consistent pattern of MCL exceedences in the Water Quality Data Reports for Uranium or Radium 226 between 2008 and 2012. The files made available by DMME include some discussion of gross beta radioactivity standards and guidelines, as no MCL exists for that form of radioactivity, but the significant and continuing exceedences of the Uranium and Ra 226 MCLs do not appear to have raised the interest of DMME or VUI, based on the files available.

No action is described by VUI or reported by DMME related to the Permit requirement to report the treatment and disposal practices used for waters exceeding MCLs.

None of the monitoring data reports for the 2008 – 2012 period include any Chain of Custody forms or lab data indicating Quality Assurance or Quality Control procedures used or sampling procedures at the well of interest.

In conclusion, Quarterly Water Quality Data Reports from 4\textsuperscript{th} Q 2009 through 4\textsuperscript{th} Q 2012 show that Gross Alpha radioactivity, Uranium and Radium content of groundwater extracted from wells RW-1 and MW-1 have remained consistently above the Gross Alpha radioactivity, Uranium and Radium MCLs. Special handling for water exceeding MCLs required in the Permit is not described.

In contrast, the 2009 -2012 data for RW-2 show no rise in Uranium or Radium 226 content. Water from RW-2 sampled in 4\textsuperscript{th} Q 2012 appears to have lower Uranium and Radium 226 the initial data from late 2007.

The increases in Gross Alpha, Uranium and Radium content in well RW-1 and much higher Gross Alpha, Uranium and Radium content of MW-1 are examples of groundwater contamination that has occurred since the most recent Uranium exploration activity under the permit was conducted.

**IV. Uranium exploration conducted since 2007 in Pittsylvania County, VA does not demonstrate compliance with the Pittsylvania County Code provision for Uranium exploration**

**A. Background**

DMME issued Permit 90484EX for Uranium exploration to VUI in November 2007 and has renewed this Permit annually since that time, including a renewal effective October 31, 2012, for one year.

This section of the Report provides an initial and preliminary assessment of whether Permit 90484EX and activities conducted pursuant to the Permit appear to meet the standard set forth in Virginia Code 45.1 -272 – 285, as reflected in the Virginia Code and the Pittsylvania County Code. The conclusions in this Report are based on plain language reading of the Pittsylvania County Code and my experience reviewing exploration and mining records in the context of local, state and federal requirements.

B. Discussion

At least eight examples of failure to meet the very skeletal scope of the Uranium exploration provisions of the Code of Virginia can be identified through a review of DMME records on the single Uranium exploration permit it has issued in more than three decades.

1. VUI’s failure to comply with Permit Section 15 that requires “baseline water data prior to drilling” for all sites listed in Table 1 at p. 7/27. Failure to comply with Permit Part 15 requirement to provide depth to water information for groundwater wells sampled.

The sites for which VUI’s Permit requires “baseline data [to] be established … prior to drilling” include a site called RW-1, identified as “Walter Coles House Well” in the application. No baseline data for RW-1 is provided in the November 7, 2007 data submitted by VUI to DMME. The December 2007 Cover Letter offers data from other sites listed in Table 1 of the Permit p. 7/27 as baseline data but does not include data for RW-1. No RW-1 data is provided until months after exploration began. RW-1 data was first reported in 1st Q 2008 Water Quality Data Report of March 14, 2008, based on DMME files available. A series of drilling activities and inspections preceded sampling and reporting data for RW-1.

The first drilling reported pursuant to the Permit identified as the start of hole #[S-]603 occurred on December 17, 2007, according to DMME Inspection Report 0051292, a report consolidated from original inspection reports for inspection conducted December 14-15 and 17-18, 2007.

No depth to water information as required by the Permit is provided for RW-1, RW-3 and RW-4 in any of the baseline or monitoring data provided at anytime, based on the DMME files available.

Hole 41-021 was reported to have reached 1300 feet on January 3, 2008 and as the “first hole” reported as finished per Inspection Report 0051392 consolidated from original inspection reports of January 3 and 10, 2008.


The first data reported for well RW-1 in the DMME records is found in VUI 1st Q Water Quality Data Report dated March 14, 2008 that states that the four residential wells were sampled on January 15, 16, or 31, 2008.
The data summaries provided for all sample data included no reference to Chain of Custody forms, lab reports other Quality Assurance/Quality Control records to verify accuracy of data provided. No information regarding pumping water three times volume of well – “well purging” to insure sampling of aquifer water rather than standing water. No information on sample collection or preservation methods, sample depth, water level depth or well depth on RW-1 or any other sampling points for any water samples were provided in DMME records.

Baseline data is the fundamental source of information for comparing water quality in aquifers and surface water sources in the area of Uranium exploration. Failure to obtain baseline data for one of four residential wells identified in the Permit prior to drilling is a clear failure of the requirement to establish water quality data baseline before the commencement of operations, to track impacts of Uranium exploration on water resources.

The quality of baseline data accepted by DMME is very poor; certainly not a database that can be considered gathered using anything resembling “best practices.” No information is provided on how the wells were prepared for the sampling, as purging of wells to insure sampling of aquifer water is a primary concern to address in sampling. No information on the depth to water or construction of the residential wells is requested or provided; no information on the depth of water sampled is provided. The single sample approach accepted by DMME provides a significantly less rigorous baseline assessment than a series of samples, to establish a multi-year baseline database.

2. VUI’s failure to comply with Permit Section 16, p. 9/27, requiring that “[t]he driller … be responsible for keeping a daily log of estimated water usage from surface streams to ensure that it does not exceed 10,000 gallons per day as averaged over a 30-day period.”

DMME failed to require VUI to comply with this Permit provision to compile a daily log of water use, estimated or measured, from surface streams. No comparisons of VUI water use to a 10,000 gallon per day average is provided.

No driller’s logs are provided for any wells drilled. No daily log of the volume of water used from streams identified in records or inspection reports to verify whether estimates of anticipated flows and water uses provided in the Permit Application are accurate. Usage of water from streams was mentioned but not measured or estimated in several of consolidated summaries of Inspection Reports through March 20, 2008.

No information is available on volume of water flowing onto the drill sites from stormwater or other sources, as well as water flowing off the drill sites in run-off of drilling fluid overflows.

3. VUI’s failure to operate drilling sites under supervision of persons responsible for operating decisions identified in Permit Section 14.

No inspection reports through March 20, 2008 identify “persons with responsibility for operating decision” from VUI contractors on site and all list “Patrick Wales (non-certified)” as “Foreman”.

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Rather than listing any of the contractor personnel identified as “persons responsibility for operating decisions” listed by name in Permit Provision 14 (Boart Longyear, WT Moore, Century Geophysical Marshall Miller, or Larry Roach), DMME identifies, on all inspections through March 20, 2008, “Patrick Wales (non-certified)” as “Foreman”. No contractor employees or representatives are identified as present on site during any of the inspections through March 30, 2008. Patrick Wales is not identified in the Permit for any role in exploration activity or as a responsible VUI official and no VUI officer or staff is identified as “person with responsibility for operating decisions” at the drilling sites. No explanation of “non-certified” designation in Inspection records is available.

4. VUI’s failure to provide certification required by Virginia Code Section 45.1-285 that all documents for which the permittee seeks confidentiality are “of a proprietary nature relating to his competitive rights,” and DMME’s grant of confidentiality treatment despite the lack of required certification

No permittee certification required by Virginia Code Section 45.1-285 for DMME to allow documents to be treated as confidential is found in the DMME records made available. Determination of confidentiality is not allowed under Virginia Code Section 45.1-285 without such a certification being provided.

The Permit Application and Permit do not mention confidentiality considerations. The only document related to confidentiality in the DMME files made available are an April 7, 2011 request from VUI for confidentiality treatment of all documents to be extended. The request refers to Virginia Code Section 45.1-285 but does not meet the plain language requirement of a certification described in the statute. No DMME finding on VUI’s request for confidential treatment is available in records DMME has provided to date.

As a result, the confidentiality treatment provided by DMME for VUI Uranium exploration permit-related documents does not appear to be in compliance with the plain language of the applicable statute and should be rescinded. DMME should post all documents associated with the VUI exploration permit online and maintain copies of all records as open files in its office.

DMME, without explanation or basis, failed to provide public access for the benefit of neighboring land owners, local administration, and the public at large to inspection reports, water quality data and other information identified without grounds by DMME as “proprietary relating to competitive rights.” This total censorship approach left the community and county officials completely unaware of water quality data exceeding MCLs in two wells – RW-1 and MW-1.

5. VUI’s failure to file prior to drilling an accurate map showing proposed drill locations, as required by Virginia Code Section 45.1-275.

The Map attached to the Permit fails to include many of the holes drilled by VUI contractors. Reconstructed and consolidated Inspection Report 0051479 dated January 30, 2008 identifies drilling activity at Exploratory Wells 41-183, N-309, N-310, 41-138, #[S]-602 and 41-019.
Of these holes, Exploratory Wells N-309, N-310, 41-183 and 41-019 do not appear on the map attached to the Permit and are not listed among the drill holes proposed on p. 19 and 20 of the Permit Application.

The locations of Exploratory Wells N-309, N-310, 41-183 and 41-019 are marked on a revised borehole map that appears to be from 2010. These holes are identified in a file received from DMME titled “Revised Borehole Map 2010 10 4 10 .. Dewberry.pdf”

Exploratory Well 41-019 had been converted to a “monitoring well” (designated as MW-1) by VUI with DMME’s permission prior to the availability of a map showing its location in the DMME records. As discussed in Part III of this Report, Exploratory Well MW-1 has had the highest levels of Uranium and Radium 226 in groundwater among all quarterly samples submitted by VUI since its completion as a monitoring well in 2008.

6. VUI’s violations of the terms of the Permit and DMME’s failure to seek penalties pursuant to Virginia Code Section 45.1–282A.

Virginia Code Section 45.1-282A provides for a penalty of up to $10,000 per violation of the terms of the Permit, with each day of violation constituting a separate offense. This section addresses two of many potential violations of the Virginia Code by VUI, which DMME may have failed to investigate or seek remedies and/or fines. Other potential violations of the Permit by VUI are identified in Part II of this Report.

Possible Violation 1 - Required baseline water quality data for RW-1 was not provided by VUI until four months after drilling began. Drilling began on December 17, 2008 – first drilling reported by DMME inspectors – and VUI failed to provide DMME baseline data for RW-1 of any kind until March 14, 2008 when the 1st Q 2008 water quality data was reported to DMME.

This period of 89 days of non-compliance can reasonably be considered a refusal or failure to comply. 89 days of this violation could result in a penalty of $890,000.

VUI has failed to provide depth to water information for any samples of water from RW-1, RW-3 and RW-4 through year 2009, as required by the Permit for any samples at any time since the permit was issued.

None of the quarterly water quality data for RW-1 provided by VUI includes any Chain of Custody documentation, lab reports, or other verifying Quality Assurance/Quality Control documents. Such information was also not provided for the first baseline samples of RW-2, RW-3, and RW-4. Every water quality data submission by VUI lacked one or more of the following documents necessary to verify water quality data: Chain of Custody forms, Quality Assurance and Quality Control documents, lab results and sampling procedure records.

The RW-1 data show elevated Uranium and Radium 226 content as compared to other residential wells sampled from its first sample in 2008 through the most recent samples available from 4th Q 2012. Failure to obtain a properly collected and analyzed sample from RW-1 prior to the start of drilling is a significant failure in VUI’s performance and DMME’s oversight.
Possible Violation 2 - Failure to provide water usage data required by permit appears to have begun on the first day of drilling, December 17, 2007 when “the drillers pumped water up to the site to start drilling,” as noted in Consolidated Inspection Report 0051292, but failed to provide any estimation of water use of water and continued until the present, as the Permit has been renewal annually and the required data on water usage is yet to be reported. Daily fines of up to $10,000 per day of violation may be considered to have accumulated from December 17, 2007 to the present.

7. Failure of DMME pursuant to Virginia Code Section 45.1-282B to “restrain violations of this chapter.”

DMME has failed to verify that all VUI activities are conducted in compliance with the Permit as issued. DMME has failed to identify instances where the Permit is not being complied with and failed to require VUI to either modify activities to achieve compliance or cease operations. DMME has failed to require VUI to provide as-built drawing, drill logs or photos of any drill site activity to verify whether the Permit requirements are being met.

No DMME staff comments can be identified in the records made available regarding: the Permit Application approved eleven days after receipt; any water quality records where accompanied by original Chain of Custody documents; recreated Chain of Custody documents and missing originals; missing Quality Assurance/Quality Control documents; missing water usage estimates; and VUI’s failure to have “persons with responsibility for operating decisions” available on site.

8. DMME has failed to implement Virginia Code Section 45.1-279 requiring “[t]he Director … [to] promulgate such rules and regulations as may be necessary and proper to carry out the provisions of this chapter.”

DMME has permitted Uranium exploration to occur prior to taking action to “promulgate such rules and regulations as may be necessary and proper.” The Statute does not appear to allow permitting of Uranium exploration without such rules and regulations being in place. If that is the case, DMME issuance of VUI’s Permit was contrary to law and the Permit should be revoked.
V. Have DMME and VUI used best practices related to Uranium exploration during permitting and operations of the DMME Permit 90484EX? – A Preliminary Discussion

Southside Virginians find themselves in the seventh year of a Uranium exploration experiment, testing whether DMME’s Uranium exploration program and VUI follow best practices, whether DMME’s program is protective of human health and the environment, and whether it provides for transparent decision making?

The questions can be understood as including a range of concerns. These might include:

Are VUI’s practices and DMME’s program protective of human health and the environment? – No, exceedences of MCLs for Gross Alpha, Uranium and Radium 226 in two of three monitoring wells sampled between 2008 and 2012 were consistently reported but never acknowledged or addressed by either DMME or VUI.

Do VUI and DMME use best practices? – No, not in many cases, including failure to require use of tanks rather than pits for storing drilling fluids and cuttings. Defects in mud pit construction resulting in actual or potential releases are identified in DMME inspection reports, which prompted DMME to eventually require VUI to convert to tanks from pits, according to DMME documents released.

Does DMME’s program provide for involvement of the directly affected public, local officials and concerned citizens? – No, DMME chose not to enforce the Permit requirement to notify neighbors and local administration officials about the application or permit-related documents or activities, as provided on DMME’s Application Forms. DMME chose to keep all documentation confidential, though the applicable law appears to allow confidentiality for only “proprietary material of a competitive nature” as demonstrated by certification from the Permittee, which was never provided to DMME.

Does VUI cover the costs of the program or does DMME subsidize their program from other funds? – As DMME conducted several dozen inspections over five years but only received $250/year as a permit fee from VUI, an extensive number of State staff hours were expended beyond the value of the superficial fee amount received. The fee amount is unlikely to have covered gas costs for inspections, much professional time and administrative assistance and other indirect costs.

Does DMME document how the Agency spends its staff time and other resources on the permit related activities? – No, as no records of staff time for inspections, meetings with VUI and their consultants, or any other activities related to the Permit have been made available. No information is provided on how many times VUI might have met with the DMME staff, as no records of meeting, emails, phones or other contacted of any kind have been made available by DMME.

Does DMME’s program require thorough documentation of drilling activities conducted, including drill site construction and drill holes? – No, as the DMME records do not even include completed “Uranium Exploratory Drill Hole Completion Reports” – DMME Form 7 - for any of the drilling work associated with the Permit or accurate maps of drill sites as actually constructed and operated.

Does DMME’s program ensure that baseline data are collected before permitting? – No, the baseline data submitted was provided several weeks after the permit was issued, did not include all sites
identified in the Permit and was composed of poorly documented one-time only data, rather than a well documented long-term, such as eight quarterly samples over a two year period, baseline database.

Does DMME’s program require production of all baseline data agreed to before operations? – No, VUI failed to provide any baseline data for well RW-1 until months after drilling began. That data and all subsequent quarterly monitoring data for RW-1, RW-3 and RW-4 has never been accompanied by depth to water data, as required in the Permit, or other sampling methods and analysis documentation.

Does DMME’s program require records of water use during drilling? – No, no information is available on amount of surface water while drilling, though a daily log was required in the Permit. No information is available on the depth or volume of water available where exploration drilling reached underground water, ground water use for neighboring properties, and no information is provided on the depth of water or flow rates in area aquifers near the drilling sites.

Does DMME’s program require reclamation demonstrated before bond release? – No, DMME released 90% of the bond after a radiological scan, grading and planting, before any demonstration that the vegetation required was reestablished or whether the reclaimed land surface could withstand erosion and stormwater events.

Does DMME’s program insure that visual records of on-site activities and inspections are collected and kept? – No, not a single photograph of any VUI exploration activity is found in the DMME records.

Does DMME’s program require Chain of Custody documentation, lab analytic records, and other Quality Assurance and Quality Control records accompany all water quality data? – No, only the proposed baseline data submitted on December 10, 2007 was accompanied by any such documents, and a significant portion of those Chain of Custody forms were “recreated” after the samples were analyzed. None of the five years of quarterly water quality data accepted by DMME is supported by any documentation of well preparation, sample preparation, custody or analysis.

Does DMME’s program require documentation of the erosion control and storm water management methods used at all drill sites? – No, no documents are available that identify the actual dimensions and construction methods for mud pits, erosion control or stormwater management structures, and other features that were constructed at the drill sites; all that the Permit Application provided was a generalized drill site plan. No information is provided on where and how liners were installed at the drill sites or how liner tears mentioned in inspection reports were caused or repaired.

Does DMME’s program require weather data and monitoring of weather conditions, including rainfall and run-off conditions, during drilling? – No, no information is provided regarding peak weather conditions used to plan actual drill site construction, how storm water was managed during rainfall events at the drill sites or weather conditions during drilling-related activities.
APPENDIX

Uranium Exploration Regulation and Statute Reference List

Prepared on Behalf of
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I. Law Journal Articles:


II. Statutes and Regulations:

A. Colorado

   In this law “exploration” activities are covered by the definition of “prospecting” which at 34-32-103-13
"Prospecting" means the act of searching for or investigating a mineral deposit. "Prospecting" includes, but is not limited to, sinking shafts, tunneling, drilling core and boreholes and digging pits or cuts and other works for the purpose of extracting samples prior to commencement of development or extraction operations, and the building of roads, access ways, and other facilities related to such work. The term does not include those activities which cause no or very little surface disturbance, such as airborne surveys and photographs, use of instruments or devices which are hand carried or otherwise transported over the surface to make magnetic, radioactive, or other tests and measurements, boundary or claim surveying, location work, or other work which causes no greater land disturbance than is caused by ordinary lawful use of the land by persons not prospecting. The term also does not include any single activity which results in the disturbance of a single block of land totaling one thousand six hundred square feet or less of the land's surface, not to exceed two such disturbances per acre; except that the cumulative total of such disturbances will not exceed five acres statewide in any prospecting operation extending over twenty-four consecutive months.”


B. New Mexico

http://www.emnrd.state.nm.us/mmd/MARP/documents/MiningAct.PDF
“Exploration Permit” Section at 69-36-13

Available at http://www.nmcpr.state.nm.us/nmac/_title19/T19C010.htm
“Exploration” Section at NMAC 19.10.4

C. Virginia

1. Statute - Code of Virginia 45.1-272 – 285.1 – Available at

Covers, at 45.1-273, “exploration activity [which] means and shall be limited to the drilling of test holes or stratigraphic or core holes of a depth in excess of fifty feet for the purpose of determining the location, quantity, or quality of Uranium ore.”

2. Regulations - The Virginia Department of Mines, Minerals and Energy (DMME) Division of Mineral Mining (DMM) appears to regulate Uranium exploration but does not identify or post the applicable regulations.

The Virginia Uranium Working Group report – available at -
At p. 19 - references the Virginia Code sections applicable to Uranium exploration but does not cite a
regulations implementing the Virginia Code sections cited.

DMME DMM’s website posts Uranium exploration permitting forms at

DMME DMM’s website provides a link for Mineral Mine Reclamation Regulations are available at:
Virginia Administrative Code Title 4 – Agency 25 – Section 31

Neither the UWG Report nor DMME DMM identify or cite regulations applicable to Uranium exploration.