EXHIBIT B

COMPILATION OF POINTS FOR CONSIDERATION

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Permitting or Licensing Applicant Requirements	VDH DEQ DMME	The Departments should consider developing or enhancing requirements for the following: • Applicants to document their efforts to identify locations of, acquire access to, and survey private wells and septic systems. • Applicants to expend reasonable efforts to collect data on private wells from public data sources, and to perform detailed inventories of local wells and septic systems, including surveys of well locations and construction, hydrogeologic context, use, and associated water quality.	WES, 2012b. Appendix A Specific PFC-1, page A-8 Recommendation Chmura-Section 5.8.4-5 WES, 2012f. Applicant Proposal and Environmental Report.
Permitting or Licensing Applicant Requirements	VDH DEQ DMME	The Departments should assess their requirements for applicants to demonstrate the surface and groundwater resource impacts associated with mining and milling projects including water consumption, aquifer drawdown and radius of influence, and modification of surface water systems.	WES, 2012b. Appendix A Specific PFC-1, page A-8 Recommendation Chmura – Section 6.2.4-1
A Permitting or Licensing Applicant Requirements	VDH DEQ DMME	The Departments should consider requirements for comprehensive sampling and testing of overburden, host rock and ore, including leachate tests to characterize potential mobilization of contaminants and acid producing material.	WES, 2012b. Appendix A Specific PFC-1, page A-23 Recommendation RTI Study – Constituents of Concern WES, 2012d, Section 2.0 Potential for Environmental Problems Resulting from ARD or Other Leachates
Permitting or Licensing:	DEQ DMME VDH	The Departments should consider the temperate climate of Virginia and draft strict guidelines for mines and reclamation design that take into account differences, compared to the western U.S. (for which the NRC regulations were written), including increased rainfall, hurricane events, soil types, garden and farming occurrence and practices, drinking water contamination potential, possibility of higher population density near a facility, potential for complex terrain influencing accident scenarios, inversion potential as it relates to radon daughter in-growth in the open environment.	WES, 2012e, Section 4.2.1.2, page 40 WES, 2012d, BMPs, Section 4.0 Methods and Practices for Minimizing the Risk of Extreme Flooding Events WES, 2012f, Sections 4, 5, 6
Permit/License Amendment and Renewal Process	DEQ DMME	The regulatory process should provide for review and approval of required renewals of, and proposed amendments to, the permit/license.	

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Permitting or Licensing: Applicant Proposal	DMME	Scope should be based on a complete and accurate conceptual site model, based on a detailed mine plan.	WES, 2012a. Section 5.3. Specific PFC-1, page 84 WES, 2012f. EIA components, Section 4, Applicant Proposal and Environmental Report
Applicant Proposal and Environmental Report	DEQ DMME VDH	All scoping should be based on full life-cycle project planning (construction, operations, reclamation, long-term post reclamation), and should consider all reasonable pathways of contaminant transport including biological and physiochemical processes.	WES, 2012a. Section 5.3. Specific PFC-1, page 85 WES, 2012f, as above.
Applicant Proposal and Environmental Report - Characterization	DEQ DMME	Consider developing guidance addressing the following characterization methods for assessment and/or use on samples collected during the exploration phase: i. Whole rock analysis; appropriate bases for compositing samples ii. Mineralogy iii. Drill core descriptions (petrology and mineralogy) iv. Block model or similar model (a computerized estimate of the quantity and characteristics of ore and waste) v. Available literature on the ore deposit vi. Mineral occurrences (e.g., on fracture surfaces, in groundmass, using hand specimens and thin section) with an emphasis on sulfides and carbonates vii. Acid-base accounting viii. Startup of long-term kinetic testing; possible startup of test pads if sufficient material and access to site are available ix. Baseline surface and ground water quality and flows (including springs) x. Potentiometric surface for groundwater xi. Hydraulic properties (e.g., hydraulic conductivity, porosity, permeability) of soil, vadose zone, and groundwater aquifers, especially under proposed locations of mine facilities xii. Examination of characteristics of similar mines in the region/area xiii. Hydro-geochemical models for prediction of water quality.	WES, 2012a. Section 5.3. Specific PFC-1, page 85 WES, 2012b. Surface Water and Groundwater Monitoring Plans and Standards Adequacy Assessment. WES, 2012f. EIA components. Applicant Proposal and Environmental Report.

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Applicant Proposal and Environmental Report - Characterization	VDH DEQ DMME	The baseline description of the environment should include: a. Land Use b. Transportation c. Geology d. Hydrology e. Ecology f. Meteorology & Climatology g. Noise h. Historical and Cultural i. Socioeconomics and Demographics j. Public and Occupational Health	WES, 2012a. Section 5.3. Specific PFC-1, page 86-88. WES, 2012b. Surface and Groundwater Monitoring Plans. WES, 2012f. EIA components, Section 6, Description of Affected Environment, Sections 7-9
Permitting or Licensing: Authority	DMME DEQ VDH	If the moratorium on uranium mining is lifted, revisions to the existing regulatory framework should clearly identify a single lead agency for oversight, coordination, and enforcement of specific licensed/permitted mining activities. A single agency should have lead responsibility for accepting a complete uranium mining application that addresses all media, wastes and effluents, as well as potential impacts. Delegation of secondary authority to a specific agency for specific areas associated with the license application (e.g., air permitting) should be triggered by the expertise of that agency.	WES. 2012a. Initial Report, Revision 1 Section 5.2, General PFC-1, page 82. WES, 2012g. Final Report
Permitting or Licensing: Authority	DMME DEQ VDH	The Commonwealth of Virginia should consider establishing clear defined roles for each agency involved in the uranium mining processes, minimizing overlapping jurisdictions among Commonwealth and federal agencies.	WES, 2012a Section 5.4, International PFC-15, page 104
Permitting or Licensing: Authority	DEQ DMME VDH	Establish interaction between applicant and regulator prior to and during the application process, to clarify regulatory information requirements, process and schedule.	WES, 2012a Specific PFC for the Permitting/Licensing Phase, Page 90

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Permitting or Licensing: Authority	DEQ DMME VDH	The Departments should consider establishing independent Environmental Review Committees for individual projects, as well as an independent Environmental Quality Committee to periodically assess and compare statewide environmental protection performance by the state and industry.	WES, 2012a International PFC-23, page ES11, Surface Lease Agreements, page 48 Specific PFC-17 and 105, page 97 and 105, respectively WES, 2012f. EIA components
Permitting or Licensing: Best Management Practices	DEQ DMME VDH	The Departments should consider establishing appropriate design criteria that take into account the magnitude and likelihood (return interval) of extreme events, taking into account the complete life span of the project facilities, including post-closure.	WES, 2012a Recommendations NAS Chapter 2-2, Appendix A, Page 29 WES, 2012d, BMPs, Section 2.0, Methods for Addressing Risk of Catastrophic Events
Permitting or Licensing: Cost	DMME DEQ VDH	For initial permitting and annual fees, the Commonwealth of Virginia should consider whether it will operate on a cost recovery basis with regards to licensing and inspections.	WES, 2012a International PFC-15, page 105
Permitting or Licensing: Cost	DMME DEQ VDH	In considering its regulatory program cost recovery, the Commonwealth should: • Develop requirements for permitting fees and regulatory oversight cost recovery (e.g., U.S. NRC annual recalculation model, or Colorado's Framework for Colorado Department of Public Health and Environment (CDPHE) • Consider an agency funding for the oversight of uranium mining/milling projects that is independent of the general treasury	WES, 2012a General PFC-5, page 7. International PFC 19, page 105 Appendix A of WES, 2012a Chmura Review and Recommendation p. 39
Permitting or Licensing Design Requirements	DEQ DMME	The Commonwealth Departments should consider: • Making allowances in their regulations for a test mine and bulk sampling. Uranium ores often contain a range of materials that are acid generating and thus potentially more harmful to the environment than uranium. If not managed correctly, related impacts may involve significant damage to the environment. • Establishing facility siting requirements including an analysis of potential flooding. A site should be located above potential high water or provide engineered design-based protection. The requirements should require minimization of runoff and erosion across the facility, particularly in areas	

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		where ore, byproducts or wastes are handled or stockpiled. • Developing rigorous surface water control systems and monitoring requirements for applicants, to ensure appropriate management of surface water and sediments and control of mining and milling related hazards. • Requiring hydro-geologic testing to estimate the potential extent of groundwater lowering necessary to dewater the mine and rate of groundwater recovery. • Requiring regular risk analysis, hazard analysis and operations analysis, and structured change management systems. • Expanding existing or developing new requirements for interim mine and/or mill stabilization requirements.	
Permitting or Licensing: Impact Assessment	DEQ DMME VDH	Virginia should consider requiring impact assessments comparable to the Federal standards for uranium mining/milling. Consider identifying, communicating, predicting and interpreting information to pinpoint potential impacts through the life of a project, followed by determination of measures to manage these impacts.	WES, 2012a International PFC-2, page 99 WES, 2012g Full Components of an Environmental Impact Analysis (EIA)
Permitting or Licensing: Impact Assessment	DEQ DMME VDH	Virginia should consider requiring risk assessments for uranium mining/milling, allowing decision makers to: • Achieve and identify acceptable levels of risk, to determine that benefits from a particular action or decision outweigh any potential detriment; • Avoid unacceptable levels of risk, where the likelihood and magnitude of the potential loss outweigh the expected benefits, or where the magnitude of the potential loss, regardless of likelihood, is such that it cannot be mitigated. Virginia should consider implementing licensing policies requiring "Designing for Closure". The phrase defines a formal process in which the entire facility, from inception to post-closure, is designed at initiation and re-evaluated regularly to minimize impacts.	WES, 2012a, Initial Report Section 4.1.3.3, page 57-59 WES, 2012e, Section 3.0, page 8-22 WES, 2012j, VDH Interim Report #2, Section 4.0 ALARA WES, 2012b, Engineering Design, Section 4.2.4. Closure and Post Closure.

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Permitting or Licensing: Impact Assessment	DEQ DMME VDH	For its process of Environmental Impact Evaluations / Assessments / Statements (EIE/EIA/EA/EIS), the Commonwealth should: a. Consider expanding existing EIA requirements to non-State-run projects, regardless of land ownership b. Consider expanding public participation opportunities for EIA to be more robust (e.g., the federal NEPA model) c. Consider establishing criteria for determining the significance of impacts in the Environmental Impact Assessment process.	WES, 2012a. General PFC-6, page ES-8. WES, 2012f. EIA components
Permitting or Licensing: Impact Assessment	DEQ DMME VDH	Consider guidance for development of more than a single site conceptual model, to encompass a reasonable range of possible site conditions. Weather-related, i.e., drought conditions, hurricane, 500 year flood, etc…or design-related conditions should be considered.	WES, 2012a. Section 5.3. Specific PFC-1, page 85 WES, 2012d. Section 2. Methods for Addressing Risk of Catastrophic Events
Permitting or Licensing: Environmental Monitoring	DEQ DMME VDH	Consider establishing guidance for sample adequacy and representativeness for baseline data.	WES, 2012a. Section 5.3. Specific PFC-1, page 85 WES, 2012h. Initial Uranium Study Report to VDH, Section 6
Permitting or Licensing **Mine Operations Plan**	DEQ DMME	Consider requiring the applicant to address or provide: • Appropriate design events (flood, seismic, etc) for design of critical structures for periods of operation and post-operation. • Assessment of the probability of a mine waste/effluent release under several most-likely scenarios • Siting criteria for mine facilities, including consideration of flooding, erosion and hydrologic systems, particularly where ores and/or wastes are stored or handled. • Best Management Practices (BMPs) for mine design. • Effectiveness of BMPs proposed from other projects. • Appropriate construction QA/QC with designs approved by a Licensed Professional Engineer (P.E.). • As-built drawings for all waste management facilities approved by a licensed P.E. • A description of the nature of the materials to be mined including waste/overburden materials and the estimated annual tonnages of ore and	WES, 2012a Mine/Operations Plan (3.3.1.3), pages 88-90 WES, 2012e Safe Disposal of Mine and Mill Wastes, Section 4.3.2 Waste Rock Handling Plans WES, 2012f. Full components of EIA, Applicant requirements

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		waste materials to be mined (see geology and soils, above). • A description of the type of operations to be conducted, including the mining/processing methods. • • An estimation of disturbance in acres for annual/sequential reclamation. • An assessment of hydrologic and water quality impacts from drawdown and mine dewatering. • Pre-operational data collected per the environmental baseline, above, including descriptive narratives and conclusions. • Information on the proposed location and size of ore and waste stockpiles and water storage/treatment ponds. • An Environmental Monitoring Plan that includes requirements for robust environmental monitoring for all appropriate media, and plans for monitoring waste management system performance for environmental protection. Consider ensuring that the Operations Plan includes: • Plans for waste management and environmental protection • Waste Rock Management Plan using demonstrated BMPs regarding mine waste handling, surface water control and monitoring systems • Requirements for applications to use modern mine waste characterization techniques, in conjunction with geochemical and physical modeling, to predict the quality of drainage that will be generated by mine wastes over time. • Engineering-design risk model to establish performance standards Consider requirements for the applicant to address mitigation by: • Identify and document effective mitigations from review of similar mining projects when proposing mitigation actions in applications. • Assessing the likelihood and consequences of mitigation failures. • Proposing multiple mitigation measures for areas having high likelihood and/or high consequences of failure. • Considering plans for interim stabilization for standby or extended periods of shut down	WES, 2012a Mine/Operations Plan (3.3.1.3), pages 88-90

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Public Participation	DEQ DMME	Coordinate public comment opportunities on specific uranium mining and milling projects among the agencies responsible for primary and ancillary permits (Mine Permit, Air Permit, Storm Water Permit, VPDES Permit, Construction Permit, Water Supply Permits, Well Permits, Sewer/Leach field Permits, etc.). Expand web-based information sharing, comment opportunities, notifications, public outreach and education (i.e., expand/improve use of the "Virginia Regulatory Town Hall" web site). Expand the stakeholders to include those beyond adjacent land holders for uranium mining and milling projects.	WES, 2012a Section 5.2, General PFC-7 (d-f), page 83
Public Participation	VDH DEQ DMME	Expand public participation opportunities in permitting and operation oversight via: • public involvement in permit review EIA scoping, • open access to submitted public documents and data, • providing comment opportunities on draft decision documents and draft permits, • comment and appeals processes for final documents Consider development of Environmental Review Committees for uranium mining and milling projects involving qualified stakeholders, including members of the public. Consider public process that encourages applicants to engage the public directly and early in the planning process.	WES, 2012a Section 5.2, General PFC-7 (g), page 83 WES, 2012f. EIA components
Public Participation	VDH DEQ DMME	Consider mechanisms for providing consistent public access to licensee/permittee reports with overviews of results to ensure public understanding of the operator's actions and performance.	WES, 2012a Section 5.3, General PFC-7 (No. 2), page 94
Public Participation	VDH DEQ DMME	Virginia should consider mandating public/stakeholder involvement. Identifying stakeholders and then successfully engaging them in a participatory manner is a fundamental building block in the development of a successful project.	WES, 2012a Section 5.4, International PFC-2 (No. 1), page 99
Public Participation	VDH DEQ DMME	The Department and the Industry should consider creating public outreach programs and solicit public input to engage and educate the public. Community members, not just adjacent landowners, should be contacted early in the planning process and should be closely involved/advised in the public comment process.	WES, 2012a Section 5.4, Specific PFC-28 (No. 1 and 2), page 99

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Public Participation	VDH DEQ DMME	Uranium mining and/or milling project "Stakeholders" should be engaged early in the planning process and should be closely involved/advised in the public comment process.	WES, 2012a Recommendation Chmura Section 7.4-1, Appendix A, page A-16
Public Participation	DEQ DMME	The process should provide for the public to be involved in monitoring activities and allow the public to file a complaint and mandate a compliance inspection. The public should have ready access to reported environmental data. Consider establishment of project-specific independent environmental review committees and an independent State-wide Environmental Quality Committee with broad and well-qualified stakeholder representation.	WES, 2012a Section 5.3, 15.b.x, page 92 WES, 2012f. EIA components
Public Participation	DEQ DMME	The Departments should consider enhancing the public notice and public open meeting requirements in their statutes for permitting, and ongoing administration of mining and milling permits and licenses. To address the issue of fragmented public comment opportunities, the Departments should consider coordinating public comment opportunities between agencies whenever possible.	WES, 2012a Recommendation NAS Ch 8-5, Appendix A, page A-45
Public Participation	DEQ DMME	To address the issue of limited meaningful public involvement, the Departments should consider holding additional informational public meetings to more fully describe projects and the decision-making process, and to increase opportunities to take comments. Similarly, the Departments should assess other mechanisms for ongoing public comment opportunities (i.e., assessing their web sites for automated public comment opportunities for specific projects).	WES, 2012a Recommendation NAS Ch 7-6, Appendix A, page A-41
Public Participation	DEQ DMME	The Departments should consider enhancing and more frequent use of the "Virginia Regulatory Town Hall" as an integrated tool for public information and comment.	WES, 2012a Recommendation NAS Ch 7-7, Appendix A, page A-42
Public Participation	DEQ DMME	The Departments should consider enhancing public participation opportunities to a broader group of individuals with standing related to permitting mining projects. The Departments should consider establishing a basis for the seeking of pre-licensing/pre-permitting public input.	WES, 2012a Recommendation NAS Ch 7-8, Appendix A, page A-42

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Public Participation	DEQ DMME	The Departments should consider mechanisms for providing consistent public access to licensee/permittee reports containing overviews of results, to ensure public understanding of the operator's actions and performance.	WES, 2012a Recommendation Chmura Section 5.8.4-4, Appendix A, page A-7
Environmental Monitoring	DEQ DMME	Consider drafting guidance for baseline data to be provided by the Applicant: • A watershed description • Characterization of the geology • Characterization of the geochemistry • Provide a pre-mining and milling radiological assessment • Characterize streams, springs, ponds, impoundments, wetland, tidal flats, bays and drainages within and immediately adjacent to the proposed mine or processing area. • Characterize all types and means of surface water use in the area. Such uses may include irrigation and domestic water as well as ecological usages of the water including fresh and, as applicable, saltwater fisheries, shellfish and ecological demands by other species including threatened and endangered species.	WES, 2012b NRC Considerations, pages 35-36
Environmental Monitoring	DMME DEQ VDH	In developing its environmental standards, the Commonwealth should: a. Specifically address radionuclides in the conceptual regulatory framework. b. Consider establishing water classes of use (i.e., Class I Domestic drinking water, Class II agricultural/recreational, Class II Livestock, Class IV Industrial, etc.) c. Consider developing guidance on adequate sampling and analytical methods for radionuclides, their isotopes, and QA/QC standards, addressing: i. All media ii. Acceptable methods (i.e., EPA, Standard Methods or stricter) iii. Lower limits of detection, practical quantitation limits, method detection limits d. Consider in QA/QC Standards: Relative percent difference (RPD), relative error ratios (RER for radionuclides), percent recovery, and blanks. e. Consider employing a professional staff already knowledgeable in	WES, 2012a General PFC-4, page 82 WES, 2012h. Initial Uranium Study Report to VDH, Section 6.3.1 Uranium Study: Interim Report #1 (WES, 2012i), Section 4.5, page 43. WES, 2012j. VDH Uranium Study – Task B-2, VDH Section 6.1; Page 44

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		uranium mining/milling to draft the necessary statutes, regulations and guidelines; then employ Methods of Design to Virginia's standards.	
Environmental Monitoring	DEQ DMME	Require comprehensive monitoring of all relevant media to assure contaminants are not migrating. The Departments should consider drafting acceptable risk values for contaminants that have the possibility to migrate through any potentially impacted media.	WES, 2012a Section 5.3, b.vi.1., page 91
Environmental Monitoring	DEQ DMME	The Departments should consider developing regulations and/or guidance for periodic application of site compliance monitoring data via models used in permitting, to verify or modify the original modeling assumptions and conclusions.	WES, 2012a Recommendation NAS Ch 6-5, Appendix A, page A-39
Environmental Monitoring	DEQ DMME	The Department should consider establishing requirements for operators to monitor or assess long-term housing value trends in the project area during the project life cycle.	WES, 2012a Recommendation Chmura 5.6.2-5, Appendix A, page A-6
Environmental Monitoring	DEQ DMME	The Department should consider establishing requirements for operators to monitor or assess long-term agricultural produce value trends in the project area during the project life cycle.	WES, 2012a Recommendation Chmura Section 5.8.4-1, Appendix A, page A-7
Environmental Monitoring	DEQ DMME	The Departments should establish a requirement for robust monitoring of all effluent and waste management systems for uranium mining and milling projects.	WES, 2012a Recommendations NAS Ch 2-2, Appendix A, page A-30
Environmental Monitoring	DEQ DMME	The Departments should consider making monitoring plans for baseline, operations, reclamation and post-closure portions of the project life cycle available to the public. The Departments should consider establishing independent advisory review panels of qualified individuals. These panels could be empowered to periodically review mine and mill monitoring plans. The Departments should assess their existing environmental, occupational health and public health monitoring requirements and ensure specific requirements for monitoring during all appropriate phases of project life cycles.	WES, 2012a Recommendation NAS Ch 8-9, Appendix A, page A-46

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Environmental Monitoring: Surface Water and Groundwater	DEQ DMME	Consider establishment of monitoring criteria and protocols that could include: • Acceptable sampling methods • Sampling QA/QC procedures • Sample preservation and packaging • Chain-of-Custody • Sample transport to laboratory • Laboratory QA/QC • Data validation • Data Management Plan	WES, 2012b ISR Considerations, page 21
Environmental Monitoring: Surface Water and Groundwater	DEQ DMME	• Consider the manner and timing of reporting of monitoring data to the regulatory agency to include potentially include real-time, quarterly, semi-annual and/or annual reporting. • Public interest may dictate a shorter and more public presentation of monitoring data and reports. • Consider the requirement that an operator should maintain proper record-keeping of baseline conditions, licenses, accidents, spills, and releases, permits, contacts, correspondence and meetings. Consider including record -keeping requirements within the permit and annual reporting documents.	WES, 2012b ISR Other regulated discharges and activities, page 21 Note: these issues should also be considered for the applicants proposal and environment report
Environmental Monitoring and Baseline Surveys	DEQ DMME	See Environmental baseline PFC 9(viii). The Departments should consider developing statutes regarding historical and cultural surveys for non-State projects on private lands.	WES, 2012a Recommendation NAS Ch 2-1, Appendix A, page A-29
Environmental Impact Assessment	VDH DEQ DMME	Consider assessment of cumulative impacts from all area projects on the environment (NEPA process as example)	WES, 2012a. Section 5.3. Specific PFC-1, page 88 WES, 2012f. Section 8, Cumulative Impacts

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Environmental Impact Assessment and Modeling	VDH DEQ DMME	Specify appropriate modeling systems to characterize environmental impacts associated with primary and secondary transport media, for both radiological and non-radiological hazards. This includes specification of atmospheric transport and surface/groundwater pathway analysis models best utilizing local, detailed environmental data, modeling technology and best practices.	WES, 2012a. Section 5.4. Specific PFC-1, page 95 WES, 2012b. WES, 2012d. Section 9. Criteria to Develop and Effective Hydrogeological Model
Surface Water	DEQ	Consider whether surface water regulations for beryllium, fluoride, mercury and silver may be beneficial to develop for regulating uranium mining and milling.	WES, 2012b Section 11.19 Gaps in Water Quality Standards WES, 2012j. Appendix A, Chemical and Radiological Properties of Mine/Mill Waste
Surface Water	DEQ	Consider whether surface water standards for radium-226 should be developed or whether the current combined radium-226 and radium-228 standard is appropriate.	WES, 2012b Section 11.19 Gaps in Water Quality Standards WES, 2012j. Appendix A, Chemical and Radiological Properties of Mine/Mill Waste
Environmental Impact Assessment: Surface Water	DEQ DMME	Regarding impacts to surface water: The Departments should further define water-related risks and delineate the likelihood of risks associated with potential water contamination from uranium mining and milling. The Departments should consider requirements for permit/license applicants to perform surface water flow modeling of proposed disturbed areas to predict sediment transport and deposition. Based on the results, the Commonwealth would have the ability to request more detailed fate and transport analysis of contaminants of concern, as warranted.	WES, 2012b. Appendix A Specific PFC-1, page A-24 WES, 2012b.
Groundwater	DEQ	In order to address NRC regulations (10 CFR 40), consider developing a maximum standard of 0.05 mg/L for silver in ground water.	WES, 2012b Section 11.19 Gaps in Water Quality Standards

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Groundwater	DEQ	Consider classifying groundwater by use, or alternatively, developing a risk based approach for determining protective concentrations of constituents of concern that do not have numeric standards, especially for uranium mining operations.	WES, 2012b Section 11.19 Gaps in Water Quality Standards WES, 2012j. Appendix A, Chemical and Radiological Properties of Mine/Mill Waste
Groundwater	DEQ	Consider statutes and regulations for well construction, testing and abandonment, including testing of in-situ recovery wells.	WES, 2012b Section 11.19 Gaps in Water Quality Standards
Groundwater	DEQ DMME	Consider developing guidance documents that direct the applicant to provide the following baseline information as it directly pertains to groundwater: • Regional and local hydrogeological setting • Characterization of groundwater quantity and quality for all potentially affected aquifers. • Present groundwater use • Present laboratory and field information on the related geochemistry and mineralogy of the disturbed subsurface environment. • Present a pre-mining/milling radiological assessment for uranium and associated radionuclides • Consider including a groundwater model to establish baseline subsurface hydrologic conditions. • An abandoned drill hole list within a given radius of the mining and/or milling operations.	WES, 2012b NRC Considerations, pages 63-64 WES, 2012d, Section 3, Segregation and Safe Disposal of Sub-Ore Grade Waste Rock. WES, 2012h-j, Interim Reports B1 and B2 for VDH – Technical Assistance for radiological issues
Water and Groundwater	DEQ DMME VDH	Consider developing detailed guidelines, which establish minimum requirements and/or decision paths (i.e., logic trees) to determine adequate scoping and development of site water quality parameters, geochemical and hydro-geologic characteristics.	WES, 2012a. Section 5.3. Specific PFC-1, page 85 WES, 2012f. EIA components, Section 4, Applicant Proposal and Environmental Report

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Environmental Impact Assessment: Groundwater	DEQ DMME	Regarding impacts to groundwater: The Departments should consider requirements for identification of aquifers that may be impacted, the degree of the impact (both physical and chemical), and duration. The Departments should consider requirements for modeling groundwater systems to determine potential impacts.	WES, 2012b. Appendix A Specific PFC-1, page A-21 WES, 2012d.
Surface Water and Groundwater	DEQ	Consider developing standards for uranium and fluoride.	WES, 2012b Section 11.19 Gaps in Water Quality Standards WES, 2012j. Appendix A, Chemical and Radiological Properties of Mine/Mill Waste
Surface Water and Groundwater Monitoring	DEQ DMME	Consider regulations establishing siting criteria for uranium mine facilities that consider the standards promulgated for such uranium milling facilities under 10 CFR Part 40 Appendix A.	WES, 2012b Appropriate Hydrologic Siting Criteria for Mining and Milling: Regulatory Considerations; page 28
Surface Water and Groundwater Monitoring	DEQ DMME	The Departments should consider regulations or guidance for the siting of the mining, milling, and processing facilities that could include provisions for: • Locating facilities in a location where the upstream watershed area is minimized. • Diverting runoff efficiently • Dewatering effects on surrounding uses • Reclaiming the mine and its impact on groundwater quantity and quality • The burial of acid forming and toxic materials below the water table. • Considering depth to groundwater. • Considering the stability of adjacent streams in the case of surface water and the intervening stratigraphy between the surface and the nearest aquifer. • Considering the geomorphology of the area and in particular the mine site's proximity to an unstable stream bank or bed • Considering the siting of the mill facility away from the immediate vicinity of a perennial or intermittent stream such as certain engineering setbacks like the 100-year or 500-year floodplain	WES, 2012b Surrounding Aquatic Environment: Watershed Area and Depth to Groundwater Table; page 28 Surrounding Geology and Geomorphology (vii-ix), page 29

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Surface Water and Groundwater	DEQ DMME	The Departments should consider regulations or guidance for the siting of the mining, milling, and processing facilities that consider: • The applicant's portrayal of the Probable Hydrologic Consequences (PHC) of the proposed mining/milling operation on the hydrologic balance. These impacts should be compared to pre-mining, mining, and post-mining conditions of the surrounding waters and should consider both water quantity and water quality. • he cumulative hydrologic impact (CHI) to the hydrologic balance of the proposed mine operation in addition to any existing and reasonably foreseeable development within the area. These impacts should be compared to pre-mining, mining, and post-mining conditions of associated water bodies and consider both water quantity and water quality.	WES, 2012b Probable Hydrologic Consequences (xix), page 30 Cumulative Hydrologic Impact (xx), page 30
Surface Water and Groundwater Monitoring	DEQ DMME	1) Consider guidance for the permit/license including: • A detailed water handling plan, which addresses storm water, process water, and as applicable intercepted water, present engineered designs that ensure that there is no offsite discharge that might contaminate the waters of the Commonwealth. • A water resource and environmental protection plan, which includes the following elements: o Definition of water quantity, including ▪ Source control and mitigation ▪ Water requirements for mining and milling o Provide sufficient detail that the Applicant can clearly establish a means to protect the water quantity and water uses of the surrounding streams and channels. • Definition of water quality developed in sufficient detail that the Applicant can clearly establish a means to protect water quality and uses of the surrounding streams and channels. • Evaluation the development of acidic rock conditions, and a means to mitigate this condition should it develop. • Evaluation of sources of sediment and a means to mitigate this condition should it potentially impact surface streams. Such a sediment treatment may include revegetation and interim stabilization of stockpiles, routing flows away from sources of sediment and water treatment in the event that storm water becomes contaminated.	WES, 2012b NRC - Considerations; pages 46-48 WES, 2012d, Section 4, Minimizing the Ecological Risks from the Release of Radionuclides and Contaminants from Mining and Milling

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References

		• Evaluation of sources of chemical contamination including metals, salts or radionuclides with a credible plan that mitigates this condition.
		• A definition and a plan to protect area water uses (adjacent area and downstream) including irrigation, domestic, industrial, recreational and ecological uses of the surface waters of the state.
		• A surface water management plan that clearly defines the probability of exceedance such that the following is addressed:
		  ○ Storm events (magnitude, duration and return interval)
		  ○ Hydrologic protection of the mine and/or mill site
		  ○ Prevention of offsite discharge of mine or process materials
		  ○ Sediment and erosion control
		  ○ Outlying areas of unconcentrated flow are contained and/or treated
		  ○ This plan should clearly present all hydraulic parameters for engineered designs of diversions, outfalls, spillway design, and riprap as erosion protection, impoundments, and sedimentation or treatment ponds
		• Spill Prevention, Control and Countermeasure (SPCC) plans and procedures, including hazardous waste storage and disposal procedures and procedures for responding to accidents or releases of production or waste fluids and solids.
		• A Storm Water Pollution Prevention Plan (SWPPP) that addresses alternative sediment control measures, dry wells, ponds and treatment, diversions, ground stabilization of disturbed areas including contemporaneous reclamation and biotechnical slope protection.
		• A plan for all engineering designs and design assumptions to ensure no untreated release of liquids or solids from a milling operation. The plan should include diversions, runoff and run on control, liners and leak detection systems.	

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Surface Water and Groundwater Monitoring	DEQ DMME	1) Consider requiring ground water and surface water monitoring plans that include the basic elements detailed below: • Documentation of precipitation events and stream flows that occur during the monitoring period. For example, for every surface water quality measurement made, the operator or applicant shall collect data on actual stream flow and precipitation that have occurred during the monitoring period • Establish a complete list of constituent (parameters) for monitoring, based on applicant's robust characterization of process materials and wastes • Establish sampling locations and frequency of sampling for baseline, operational, and final post-closure conditions; Continuity between baseline, operational and post-closure monitoring locations is preferable • Definition of waterbody characteristics related to water quantity and flow; in the case of groundwater, pressure (head) and extent • Definition of baseline water quality: constituent, location, and frequency based on waterbody characteristics and constituent • Operational monitoring during mining or milling operations, with the objective of prompt detection of impacts to water quality and/or quantity • Continuous real-time monitoring to include real-time warning system in the event of a release and reclamation monitoring to address post-mining and post closure. With respect to ISR reclamation monitoring, include restoration and stability monitoring • Compliance monitoring to address excursions, leak detection and all related permit/license requirements including UIC, NPDES among others. • Reporting of monitoring data and record keeping to include baseline conditions, accidents, spills and releases.	WES, 2012b ISR – Considerations, page 20 WES, 2012j, Interim Report B-2, Appendix I, Chemical and Radiological Properties of Mine and Mill Waste

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Surface Water and Groundwater Monitoring	DEQ DMME	1) Consider groundwater monitoring requirements that include: • A detailed plan noting how the operator or applicant will protect the groundwater of the state during mining or milling operations including waste characterization and a means to selectively handle backfill and isolate unsuitable, acid-forming or toxic materials from the water table. • A detailed mine dewatering plan to ensure that natural groundwater doesn't commingle with the mining operation and come into contact with operating equipment including oil and grease. This plan should include dewatering methods, anticipated water quality and quantity of dewatering, impacts of groundwater discharge to surface streams, impacts of dewatering to adjacent uses (groundwater modeling) and where applicable the need to construct a recharge trench to mitigate the impacts of mine dewatering. • Although addressed in the baseline discussion, the applicant shall generally describe the impacts of the hydrogeology on the operational planning of the mine or mill. This description should clearly address: distance to the groundwater table; hydrogeologic properties including that of intervening stratigraphy. • Present a subsidence analysis and mining efforts to minimize subsidence and impact to overlying springs and aquifers. • Groundwater modeling to address impacts to area aquifers in water quantity and in the case of ISR mining, the ability to control excursions in the event that water quality exceedances (flare) should migrate past the monitor well ring. Any groundwater model should be calibrated to real time data, with sensitivity analyses performed; the Applicant should validate the model during operations. • A plan to protect water quality to include: mine discharge water quality (impacts to groundwater if recharged) and an effort to isolate acid forming or toxic materials. • A plan to protect groundwater at mill sites including a double liner leak detection system and point of compliance monitoring. • A description of the operator's proposed monitor well networks for all potentially affected aquifers, including efforts to monitor nearby wetlands and springs. • A description of proposed procedures for responding to accidents or releases of production or waste fluids and solids that may impact the local	WES, 2012b NRC – Considerations, pages 74-75 WES, 2012d, Engineering Design – BMPs.

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		or regional groundwater system. • A description of proposed mitigation plans, which may include geologic and hydrologic siting criteria for mill and tailings disposal area and incorporation of best management practices for construction and operation. • Mill control parameters to minimize spills that could impact groundwater. • A plan that describes corrective actions. Actions might include replacement of water wells (water rights), artificial recharge or other groundwater remediation.	
Surface Water and Groundwater Monitoring	DEQ DMME	The departments should consider requiring a final site Hydrologic Restoration Plan that addresses the following: • Protection of water quantity • Protection of water quality including acid rock generation, sediment and chemical contamination to surface streams and wetlands (metals, salts and radionuclides) • Protection of water uses, both onsite and offsite • Plans and details related to stream channel and drainage system reconstruction. • Surface water infiltration and runoff on the reclaimed land surface; geomorphic and vegetative stability; restoration to an equal or higher land use. • For a mill, the final hydrologic restoration plan should include: long term stabilization (rock cover, minimum slopes, geomorphic isolation); permanent, maintenance-free diversion (PMF Design); protection of the surface waters of the state during decontamination; decommissioning of the mill site.	WES, 2012b NRC - Considerations, pages 55-56

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Surface and Groundwater Monitoring	DEQ DMME	Compliance monitoring is established by the regulatory agency; consideration should be given to: • Storm water discharge • Wastewater treatment facility discharge • Up gradient and down gradient groundwater monitoring • Upstream and downstream surface water monitoring (may include chemical, biological, fish tissue and sediment sampling) • Other regulated discharges and activities	WES, 2012b Data Management Plan, page 20
Surface and Groundwater Monitoring Plan	DEQ DMME	The basic elements for consideration with regard to surface and groundwater monitoring plans include: • Documentation of precipitation events and stream flows that occur during the monitoring period. For example, for every surface water quality measurement made, the operator or applicant shall collect data on actual stream flow and precipitation that occurred during the monitoring period • Establishment of a complete list of constituent (parameters) for monitoring, based on applicant's robust characterization of process materials and wastes • Establishment of sampling locations and frequency of sampling for baseline, operational and post-closure conditions; continuity between baseline, operational and post-closure monitoring locations is preferable • Definition of waterbody characteristics related to water quantity and flow; in the case of groundwater, pressure (head) and extent • Definition of baseline water quality: constituent, location and frequency based on waterbody characteristics • Operational monitoring during mining or milling operations, with the objective of prompt detection of impacts to water quality and/or quantity • Continuous real-time monitoring to include real-time warning systems in the event of a release, and reclamation monitoring to address post-mining and post closure. With respect to ISR reclamation monitoring, include restoration and stability monitoring • Compliance monitoring to address excursions, leak detection and all related permit/license requirements including UIC and NPDES • Reporting of monitoring data and record keeping to include baseline conditions, accidents, spills and releases.	WES, 2012b ISR Considerations, pages 20-21

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Surface and Groundwater Monitoring	DEQ DMME	1) Criteria for hydrologic restoration 2) Criteria for geomorphic restoration 3) Long-term protection of water quality and quantity 4) Protection of a designated post mining land use 5) Long-term monitoring plan 6) Procedures for responding to accidents or releases of production or waste fluids and solids. A plan for final surface clean-up and removal of contaminated soils. 7) Criteria for abandonment of wells	WES, 2012b Closure/Reclamation Planning (Mining and Milling) for Surface Water, page 49
Best Management Practices	DEQ DMME	The Departments should consider regulations or guidance for the siting of the mining, milling, and processing facilities. These could include provisions for: • Mill tailings facility design with no release of tailings under any storm event, including the Probable Maximum Flood. • Mining criteria for unstable slopes • Slope stability and settlement on the integrity of liners and mill site stability • Mine dewatering impacts in terms of quantity and quality of receiving surface water and natural groundwater. • Local surface and groundwater use and its demand. • Potential impacts to the aquatic ecosystem from either discharges to or withdrawals from either groundwater or surface water. • The presence of aquitards between the surface and the nearest aquifer should be considered during siting. • The presence of exploratory boreholes or improperly abandoned drill holes. • The potential for geochemical changes to stockpiled ore and waste rock due to oxidation and contact with precipitation.	WES, 2012b Surrounding Geology and Geomorphology (x-xii), page 29 Mine Dewatering Impacts and Protection (xiii), page 29 Water Quality, Use, and Demands in the Area of the Mine (xiv-xv), page 29 Surrounding Geology and Geomorphology (xvi), page 29 Impacts of Exploratory Boreholes (xvii), pages 29-30 Predictive Geochemical Studies (xviii), page 30 WES, 2012e, Section 3.0 Segregation and Safe Disposal of Sub-Ore Grade Waste Rock

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Best Management Practices (BMPs) Mine Operations	VDH DEQ DMME	Consider best management practices in conducting mine sequence to prevent or minimize impact to the public and environment; critical items should require construction and maintenance under the supervision of a Licensed Professional Engineer. Require mine planning including rock stability for surface and underground facilities. Consider requirements for regular risk analyses, hazard analyses, and operations analyses and for structured change management systems.	WES, 2012a Section 5.3, Specific PFC-8, page 94
BMPs	VDH DEQ DMME	The Departments should assess the engineering planning requirements for surface and subsurface mining, to ensure that they adequately address mine planning, including pit and rock stability considerations.	WES, 2012a Recommendation NAS Ch 4-1, Appendix A, page A-30
Waste Management	VDH DMME (mine waste) DEQ (incidental hazardous wastes)	The Departments should consider requirements for applicants to demonstrate long-term isolation of mine waste effluents and mill wastes from the environment. The Departments should consider requirements for applicants to develop and implement robust management plans for monitoring and maintenance of the mine waste and/or mill tailings until the facilities are fully reclaimed and/or transferred to either the Commonwealth or the federal government.	WES, 2012a Recommendation RTI Study–Tailings Mgmt-1, Appendix A, page A-22
Waste Management	DMME (mine waste) DEQ (incidental hazardous wastes)	The Departments should consider requirements for development of waste rock and ore handling management plans. These plans should contain methods for materials characterization that would be used to segregate materials based on their radiological and mineralogical characteristics, such that they can be appropriately managed or used for future waste isolation.	WES, 2012a Recommendation RTI Study–Testing for Acid Mine Drainage-1, Appendix A, page A-22
Worker Health And Safety Plan	DEQ DMME VDH	The Departments should consider requiring a plan that addresses existing MSHA, OSHA and other State mine safety and emergency response requirements, and assesses need for additional worker health and safety requirements specific to uranium mining and milling such as radon/gamma protection and monitoring.	WES, 2012a Specific PFC-5: Mine Worker Health and Safety Plan (3.3.1.5), page 93 WES, 2012e On-Site Workers H&S Related to Mine and Mill Waste

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Worker Health And Safety Plan	DEQ DMME VDH	The Departments should consider requiring plans for monitoring to ensure worker and public health and safety, assessing the following: • NRC, EPA, and MSHA standards for uranium decay chain isotopes to ensure adequate standards and protection measures are required. • EPA and MSHA standards for public and occupational radon exposure, review scientific literature to assess if more stringent requirements are warranted in Virginia. • OSHA and MSHA noise protection standards	WES, 2012a Specific PFC-3: Mine Operations Plan (3.3.1.3), No. 15, pages 91-92
Worker Health And Safety Plan	DEQ DMME VDH	The Departments should consider following the ICRP and NRC ongoing regulatory and guidance revision processes closely, since the regulatory basis may be changing significantly in the near future. The ICRP recommendations for radon exposure are in the process of revision at this time. The draft recommendations include use of real-time monitors and personal dosimeters in situations with high and variable radon concentrations. Periodic monitoring would be sufficient where radon concentrations are low and stable. Note that the USNRC is also currently finalizing its own guidance on radon and decay product monitoring in the outdoor environment, for protection of the public.	WES, 2012a Section 5.4 – International PFC-1, page 99
Worker Health And Safety Plan	DEQ DMME VDH	a. The Departments should consider specifying in regulation: b. Sufficient forced ventilation systems in underground mines c. Efficient dust control d. Limiting radiation exposure per ALARA e. Using optimal radiation detection equipment f. Strict hygiene standards for handling U oxide concentrate. g. Assessment of air quality, meteorological and radiological baseline characterization requirements currently employed by the various international regulatory authorities. h. Reassessment of current technology, ongoing potential changes in the regulatory structure developed by international regulatory authorities, and the need to re-establish a detailed understanding of current air quality, including radaon gas and radioactive particulates.	WES, 2012a Section 5.4 – International PFC-4, pages 100-101 WES, 2012d, Section 4.3.8, Dust Minimization and Control, page 18

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Worker Health And Safety Plan	DEQ DMME VDH	The Departments should assess federal noise standards for occupation health protection and determine if more stringent requirements are appropriate. Assessment of Occupational Safety and Health Administration (OSHA) and MSHA regulations regarding safety equipment requirements for miners should be considered.	WES, 2012a Recommendation Chmura Section 7.3.1-1, Appendix A, page A-15
Worker Health And Safety Plan	DEQ DMME VDH	The Departments should consider the epidemiological and scientific literature on occupational radon exposure, dose and incidence of adverse health effects, and determine whether setting occupational radon dose limits more stringent than the Federal limits is appropriate.	WES, 2012a Recommendation NAS Ch 5-1, Appendix A, page A-33
Public and Occupational Health and Safety	DEQ DMME	Virginia should consider carefully defining how an operator develops and implements a comprehensive radiological protection program. Such a program addresses all facility-related sources of occupational and public radiation exposure, including radioactive wastes. The protection of the public, from the beginning of operations to post closure, should be evaluated beginning with initiation of facility design.	2012a Section 5.4, International Consideration-3, page 94
Public and Occupational Health and Safety	DEQ DMME	The Department should assess the MSHA requirements for mine safety and emergency response, considering whether other requirements are necessary and appropriate.	2012a Recommendation Chmura 6.4-1, Appendix A, page A-9
Public and Occupational Health and Safety	DEQ DMME	The Departments should consider requirements for permit/license applicants to perform site/project specific risk assessments for public and occupational exposures, considering project-specific facility configurations and technology.	2012a Recommendation SENSE-2, Appendix A, page A-53
Dose Modeling	DEQ DMME	The Departments should consider establishing requirements for uranium mine permit applicants to perform public and occupational dose modeling (including MILDOS evaluations) for uranium mine applications, including proposed monitoring plans for air, water and other media, similar to those required by NRC	2012a Section 5.3 (j. Public and Occupational Health, i.1), page 87
Training	DEQ DMME	Consider requirements for developing a comprehensive training plan for all operation, inspection, monitoring and reporting activities. Consider requirements for training to be required via the security plan.	WES, 2012d, Section 2.4, page 7
Inspection and Enforcement	DEQ DMME	Ensure both regular and unscheduled inspection, compliance and enforcement. Develop strong enforcement and penalty authority.	WES, 2012a Pa Section 5.3 (15.b.vii), page 91ge 91-92

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Inspection and Enforcement	DEQ DMME	The Departments should consider requirements for robust inspection and enforcement requirements to be integral components of any statutory changes addressing uranium mining and milling.	WES, 2012a Recommendation NAS Ch 8-13, Appendix A, page A-47
Inspection and Enforcement	DEQ DMME	The Departments should assess their enforcement and penalty authority to ensure that adequate opportunity exists for appropriate penalties to be levied on mining and milling operators who adversely affect public health, safety or the environment through compliance violations or negligence.	WES, 2012a Recommendation Chmura Section 6.7.1-1, Appendix A, page A-11
Inspection and Enforcement	DEQ DMME	Consider establishing requirements for ongoing inspection of all mine and mill facilities including pit slopes, embankments, liner systems, and piping. Consider requirements for a site-specific security plan including uranium accounting.	WES, 2012a Section 3.3.2.7 WES, 2012d Section 8
Inspection and Enforcement	DEQ DMME	Consider compliance and enforcement statutes and rules and regulations that contain provisions for the following: • Site access for compliance inspection; • Notice provisions; • Penalties; and • Enforcement and corrective actions. Consider rules and regulations that give the regulatory agency right of entry for all compliance inspections and the ability to levy fines and enforce environmental protection standards. Consider rules and regulations that allow the Commonwealth to revisit the permit conditions in the event of a natural event (catastrophic flood or earthquake) that may have an unintended consequence or could potentially threaten the success of the proposed mine or mill operation.	WES, 2012b Hydrology Considerations, page 27 WES, 2012d Probability of Occurrence, Section 5.3, page 54 WES, 2012d Methods for Addressing Risk of Catastrophic Events Section 2, page 3
Financial Assurance	DEQ DMME VDH	Consider use of third parties for regular (annual/significant permit amendments) financial surety reviews: • Assess if additional mechanisms are needed for developing contingency funds for unforeseen and unfunded remediation and reclamation obligations (Prepayment, Surety/Insurance/Parent Company Guarantee/External Sinking Fund + Surety). Consider assessment of or requirement for additional insurance of environmental impacts or bond shortfalls. • Consider accepting only sureties from bonding companies acceptable to	WES, 2012a Specific PFC-6, pages 93-94

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		the Federal Government. • Establish requirements for surety transfer with ownership transfer. • Consider robust project life-cycle bonding requirements • Consider mining disaster remediation in establishing sureties.	
Financial Assurance	DEQ DMME	The regulating authority should consider application of available methods to secure funding for decommissioning and reclamation, such as prepayment, surety, insurance or parent company guarantee, or an external sinking fund combined with a surety method.	WES, 2012a Recommendation Chmura Section 6.7.3-1, Appendix A, page A-12
Financial Assurance	DEQ DMME	The Departments should consider establishing annual surety reviews for mining/milling permits/licenses, to ensure that adequate financial resources are available for a third party to remediate existing impacts and reclaim the site should a permittee/licensee default on its obligations.	WES, 2012a Recommendation Chmura Section 5.9-1, Appendix A, page A-8
Financial Assurance	VDH DEQ DMME Financial Assurance Mechanisms	Consideration should be given to developing standards specific to uranium mine reclamation and mill decommissioning. Consider developing a process for partial release of financial assurance associated with partial completions of license requirements. This should include clear and specific reclamation standards, an adequate time period to monitor and assess the success of reclamation, and a process that allows public notice and comment concerning the release of financial assurances. Consider developing standardized formats, developed by Commonwealth legal staff, to be used by all operators when creating financial assurance instruments. Consider allowing only financial assurance instruments that are considered liquid, as described by the appropriate World Bank report. Also consider requiring that a percentage of the financial assurance must be cash on deposit, allowing funds to be immediately available to the Commonwealth when responding to hazardous site conditions or security concerns in the event of forfeiture. Consider developing a program to address long-term or perpetual mitigation of unexpected impacts resulting from mining/milling. The program could include a trust. Consider developing a program that includes covenants and land use restrictions to protect encapsulated or other engineered barriers to prevent accidental release of materials. The covenants should require that certain monitoring and maintenance activities will be conducted monitor for and	WES, 2012c Section 4.0, pages 29-31

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		mitigate long-term offsite impacts. Consider developing a program to transfer uranium mill tailings responsibility to the Commonwealth or the U.S. Department of Energy for long-term stewardship. This program should include a defined financial assurance instrument to be transferred with the property. Consider developing a program separate from the financial assurance mechanism, providing for reclamation to address impacts from low-probability, catastrophic events. Consider reviewing existing corporate liability insurance requirements for related coverage. Consider developing a Commonwealth-managed fund such as a sinking fund or other special account, funded by fees on uranium mining, to cover impacts not addressed via other means.	WES, 2012e, Section 5m Mitigation of Mine and Mill Contaminants from Existing Sources to both Groudwater and Surface Water
Criteria for Reclamation	DEQ DMME	Establish criteria for uranium mine reclamation standards. a. Period of performance b. Stability requirements c. Discharge requirements All media (water, soil, air) Metals, radionuclides, radon, gamma radiation	WES, 2012a Section 5.3, 15.c.i, page 92
Criteria for Reclamation	DEQ DMME	Consider requirements for prompt remediation of impacts to any and all media that could lead to off-site exposure.	WES, 2012a Section 5.3, 15.c.v.1, page 92
Criteria for Reclamation	DEQ DMME	Consideration should be given to developing criteria for long-term reclamation design, including criteria for slope stability, seismic design, decommissioning of liners, etc. Consider requirements for construction criteria, including QA criteria for all construction activities such as liner design and testing.	WES, 2012a WES, 2012d, Section 3.5
Reclamation -End State Use of Land	DEQ DMME	Consider requirements for reclamation planning to explicitly address proposed end-state land use, and any potential restrictions on land use.	
Reclamation -BMPs for Reclamation Design	DEQ DMME	Consider requirements for using demonstrated BMPs for mine reclamation design.	WES, 2012a Section 5.3, 6.iii.4, page 89

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Reclamation -BMPs for Reclamation Design	DEQ DMME	Assess well-abandonment records, and requirements for maintaining and submitting well-abandonment data. Require demonstration of design effectiveness related to long-term isolation of mine wastes.	WES, 2012a Section 5.3, 15.b.c.iii, page 92
Reclamation -BMPs for Reclamation Design	DEQ DMME	The Departments should consider assessment of existing well and borehole abandonment methods and requirements for adequacy, by comparing those methods to other state, federal and international best practice.	WES, 2012a Recommendation Moran-5, Appendix A, page A-28
Reclamation - Neutralization or Encapsulation of Waste	DMME	Consider requirements for performance-based reclamation conditions. Consider requirements for phased or concurrent reclamation during operations.	WES, 2012a Section 5.3, 15.b.c.iv, page 92
Reclamation - Neutralization or Encapsulation of Waste	DMME	Consider final cover design that may include: • Erosion protection • Frost protection • Drainage/bio-intrusion layer • Radon Barrier Consider slope stability analyses, using seismic design parameters to ensure long term stability of the impoundment	WES, 2012a WES, 2012e, Section 4.4.7.3
Reclamation -Shaft, Audit, and High-wall Elimination	DMME	Consider guidance for long term stabilization. Consider potential long term uses of the mined pit, and the potential for pit lake formation. Consider requiring the reduction of a portion of the high walls for wildlife access, and for escape after trespass. Consider habitat for wildlife (e.g. fish or bat-accessible closures)	WES, 2012a WES, 2012d, Section 3.4.8 WES, 2012e. Section 4.4.7.3
Reclamation - Re-contouring	DMME	Consideration should be given for development of standards for stable slopes for the design life of the cover. Consideration should be given for use of best available technology for land grading.	WES, 2012a WES, 2012e, Section 4.4.7.3
Reclamation - Topsoil Replacement	DMME	Consideration should be given for the placement of local top soil to facilitate plant growth.	WES, 2012a WES, 2012e, Section 4.3.1, page 14

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
Reclamation - Re-vegetation	DMME	Consideration should be given to the development of re-vegetation requirements commensurate with pre-mining conditions and long-term land use.	WES, 2012a WES, 2012e , Section 4.2.1.3, page 40
Closure Plan	DEQ DMME	Ensure that a reclamation/closure plan is provided with a license application.	WES, 2012a Section 3.3.1.4, page 16
Closure	DEQ DMME	Well prior to closure, regulations should require submittal and approval of an up-to-date reclamation plan	WES, 2012a Section 5.3, 15.c, page 92
Closure	DEQ DMME	Contemporaneous reclamation should be a requirement whenever possible. The Departments should consider requiring phased or concurrent reclamation and decommissioning of mining and milling activities as appropriate to minimize potential waste and effluent emissions.	WES, 2012a Recommendation Chmura 5.4-1, Appendix A, page A-5
Closure and Mitigation	DEQ DMME	Consider requirements that the include the following: • A post-mining and milling aquifer monitoring plan. The monitoring plan for conventional mining should be designed and operated to ensure post-mining geologic and hydrologic stability and no impacts to neighboring wells, wetlands or ecosystems. • Mitigation of releases or impacts to water wells or water rights. • A plan to ensure Hydrologic restoration of the groundwater resource. In the case of open pit mining the plan should include a detailed backfill and selective handling (isolation) of acid-forming and toxic materials. Recovery of the water table and predictions of post-mining water quality shall be part of the final plan. The applicant shall present information on aquifer recharge and/or continued discharge into pit or underground mine and predictions of the final potentiometric surface. • A discussion of post mining water quMineralogical information to ensure that there will not be acid rock generation in pit walls or within the underground mine workings. Guidance documents may address means and methods to allow quantitative and qualitative prediction of post-mining water quality including column leach studies, laboratory bench scale studies, weathering cells and geochemical models. Potential for long-term impacts to springs or groundwater quantity or quality needs to be addressed. • A plan to ensure the protection of water uses down gradient of the reclaimed mine/mill complex.	WES, 2012b NRC Considerations, page 82

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration (Extracted from DEQ/DMME Initial Report and specific reports)	WES Report Cross References
		• A plan to ensure that underground mining will not result in subsidence or negative impacts to overlying aquifers. With respect to decontamination and decommissioning, a plan to dewater tailings, capping and final closure (milling) including a plan for solid and liquid waste disposal, including regulated licensed materials (evaporation pond liners, contaminated clay and soils, buildings and structures, etc.) that may impact groundwater quality.	
Closure - Environmental Monitoring	DEQ DMME	Require a specified period of monitoring to determine that the site is stable and no contaminants are moving to unauthorized areas. Consider a bond release process that has site-specific standards and allows public involvement.	WES, 2012a Section 5.3, 15.b.c.ix, page 93
Closure **Public Notification**	DMME	Establish a closure process that includes active public outreach, education and comment. a. Consider broad stakeholder group for public comment, not just adjacent land owners b. Develop a process that provides for the public to be involved in monitoring activities and allows the public to provide input to the Commonwealth as unanticipated conditions arise	WES, 2012a Section 5.3, 15.b.c.x, page 93

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WES, 2012f. Wright Environmental Services. Uranium Study: Full Components of Environmental Impact Analyses, prepared for the Commonwealth of Virginia, Department of Health, Department of Environmental Quality (DEQ) and Department of Mines, Minerals and Energy, (DMME). October, 2012. Fort Collins, Colorado.

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WES, 2012h. Wright Environmental Services. Uranium Study: Initial Report, prepared for the Commonwealth of Virginia, Department of Health. July, 2012. Fort Collins, Colorado.

WES, 2012i. Wright Environmental Services. Uranium Study: Interim Report #1, prepared for the Commonwealth of Virginia, Department of Health. August, 2012. Fort Collins, Colorado.

WES, 2012j. Wright Environmental Services. Uranium Study: Interim Report #2 , October 2012, prepared for the Commonwealth of Virginia, Department of Health. August, 2012. Fort Collins, Colorado

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WES, 2012l. Wright Environmental Services. Uranium Study: Final Report, October 2012, prepared for the Commonwealth of Virginia, Department of Health. August, 2012. Fort Collins, Colorado.

WES, 2012m. Wright Environmental Services. Uranium Study - Full Components of Environmental Impact Analyses, October 2012, prepared for the Commonwealth of Virginia, Department of Health, Department of Environmental Quality and the Department of Mines, Minerals and Energy. October, 2012. Fort Collins, Colorado

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
Licensing and Agreement State Issues for both Mining and Milling	VDH	VDH should consider adding language in the general licenses portion of its regulations for uranium mining: "A general license is issued to mine, transport, and transfer ores containing source material without regard to quantity. In addition to the provisions of this section, persons who mine, transport, and transfer ores containing source material in accordance with this section shall comply with the provisions of (the basic radiation protection sections, specify which sections)." This would apply the basic radiation protection standards for mine worker radiation exposures, limit radioactive materials concentrations to air and water, and set radioactive cleanup standards/requirements.	Initial Uranium Study Report to VDH, Section 6.1, Page 115
Licensing and Agreement State Issues for both Mining and Milling	VDH	The VDH may want some of the Criteria listed in Table 13 to be more stringent by removing certain permitted practices and providing more prescriptive requirements in other cases.	Initial Uranium Study Report to VDH, Section 6., Page 115
Licensing and Agreement State Issues for both Mining and Milling	VDH	VDH may want to evaluate its potential role in the regulation of uranium mining. This role could include evaluating and controlling radioactive emissions from a mine and associated waste rock and over-burden piles and setting standards for the radiological cleanup of mine sites.	Initial Uranium Study Report to VDH, Section 6.1, Page 115
Licensing and Agreement State Issues for both Mining and Milling	VDH	For VDH to effectively regulate uranium milling would require staff with knowledge of and experience in uranium processing and potential impacts. It is recommended that that VDH develop or contract for specialized training in uranium radiation safety operations for some of their staff.	Initial Uranium Study Report to VDH, Section 6.1, Page 115

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
Licensing and Agreement State Issues for both Mining and Milling	VDH	VDH should work with other state agencies to clearly delineate lines of regulatory authority. This would be especially important should a uranium mine and uranium mill become co-located.	Initial Uranium Study Report to VDH, Section 6.1, Page 115
Licensing and Agreement State Issues for both Mining and Milling	VDH	It is recommended that VDH explore the NRC Uranium Agreement State process in detail. This would entail meeting with NRC staff and reading guidance documents from NRC that describe the initial process as well as the periodic assessment process.	Initial Uranium Study Report to VDH, Section 6.1, Page 116
Licensing and Agreement State Issues for both Mining and Milling	VDH	It is recommended that VDH develop and conduct a survey or directly interview radiation protection program staff of the four uranium agreement states, to assess the manpower that each has devoted to licensing and monitoring specific to uranium production facilities in that state.	Initial Uranium Study Report to VDH, Section 6.1, Page 116
Licensing and Agreement State Issues for both Mining and Milling	VDH	Further, VDH should contact existing agreement states to discuss their licensing process for specific types of uranium extraction processes. Any future studies regarding impacts on water should compare the South Texas uranium area and the practices and incidents that have occurred there for a more realistic comparison of what one might expect in the Virginia environment.	Initial Uranium Study Report to VDH, Section 6.1, Page 116
Licensing and Agreement State Issues for both Mining and Milling	VDH	VDH should conduct a cost-benefit analysis associated with the process of becoming an agreement state and the practice of serving as an Agreement State. It would be beneficial to survey costs in existing Agreement states, adjusting for the size of the uranium extraction industry and the type of recovery utilized in each state (noting that some costs are fixed and may be independent of the size of the extraction industry in the Commonwealth.).	Initial Uranium Study Report to VDH, Section 6.1, Page 116

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
Licensing and Agreement State Issues for both Mining and Milling	VDH	VDH should consult with staff of Colorado Public Health and Environment Radiation Management Unit for their perspective on the impacts to a State health department associated with uranium-related legislation. Several acts have been passed by the Colorado General Assembly in the past few years that have been geared toward regulating a specific facility. These have placed the state in a position of potential incompatibility with NRC regulations.	Initial Uranium Study Report to VDH, Section 6.1, Page 116
Human Health - Workers	VDH	In order to give VDH the authority to regulate radiation doses to mine workers, regulate releases of radioactive materials from the proposed mine and other mines that may be developed, and to set standards for radioactive materials remediation near mines, VDH may wish to consider changing its equivalent of 10 CFR Part 40.13(b) to state that uranium mining itself is not exempt. This could be accomplished by adding the sentence, "This exemption does not apply to the mining of ore containing source material." Removal of the exemption has been approved by the NRC in another state with an Amended Agreement.	Initial Uranium Study Report to VDH, Section 6.2.1, Page 116
Human Health - Workers	VDH	Dust inhalation may impact human health, potentially a greater degree than radionuclides. Explore including a license condition requiring PM-10 and PM-2.5 air particulate monitoring to be co-located with environmental radon monitoring.. This is not required by NRC regulation or, to the best of our knowledge, by any State's radiation protection regulations.	Initial Uranium Study Report to VDH, Section 6.2.1, Page 116
Human Health - Workers	VDH	Consider implementing a program of medical monitoring for mine and mill workers and their families. The rationale for this recommendation is that if there are any non-radiological short-term impacts to be seen in workers and members of the public (e.g., kidney damage), a medical monitoring program for the individuals potentially most highly exposed could be of value. Long term effects such as increased risk of lung cancer would not be seen for at least	Initial Uranium Study Report to VDH, Section 6.2.1, Page 116

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
		fifteen years.	
Human Health - Workers	VDH	Because the Commonwealth of Virginia regulations must be compatible with NRC requirements, the occupational dose limit in state regulations cannot be lower than the 50 mSv (5 rem) per year 10 CFR 20 dose limit. Given the fact that radiation doses for uranium recovery operations rarely exceed 10 mSv (1 rem) per year, an ALARA constraint could be included as a license condition to reflect the ICRP occupational dose limit of 20 mSv (2 rem) per year and the ICRP recommendations with regard to constraint limits.	Initial Uranium Study Report to VDH, Section 6.2.1, Page 117
Human Health-General Public	VDH	VDH may consider baseline health studies of the population in the vicinity of any proposed uranium recovery facility. Such studies may continue should such a facility become operational. However, no other uranium mining state performs such analyses and the value of population-based monitoring has not been demonstrated by existing epidemiological data.	Initial Uranium Study Report to VDH, Section 6.2.2, Page 117
Environmental-Drinking Water – Including Private Water Wells	VDH	It is recommended that VDH consider creating a system for sampling of private water wells. Each well owner could be assigned a password or code to identify their results, which would be posted on the web. General well location Information might be included. For example, toxicant concentration data might be shown by county.	Initial Uranium Study Report to VDH, Section 6.3.1, Page 117

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
Environmental- Drinking Water – Including Private Water Wells	VDH	An inventory of all private water wells within 2 miles of the Coles Hill site should be conducted. These wells should be sampled for at least one year prior to any uranium mining at the Coles Hill site. The standard suite of analyses, as specified in 10CFR40 Appendix A should be performed on these ground waters. Collected data should also include depth to water, total well depth, well yield and *in situ* water temperature. VDH should work with other agencies to conduct a similar inventory and analysis for all wells in the potentially affected area that are used as sources for public water supplies, and for other wells with potable water that are not but could be used as drinking water sources.	Initial Uranium Study Report to VDH, Section 6.3.1, Page 117
Environmental- Drinking Water – Including Private Water Wells	VDH	To create transparency in the process of licensing and regulating a potential uranium mill, should the moratorium be lifted, VDH should consider creating and maintaining a web-based system to tabulate results of waterworks sampling results by milling licensees, VDH and other entities. The results should be continuously available to the public. (See related item, above.)	Initial Uranium Study Report to VDH, Section 6.3.1, Page 118
Environmental- Drinking Water – Including Private Water Wells	VDH	VDH should consider requirements for characterization of baseline water conditions prior to any mine permits being issued. These baseline studies should include but not necessarily be limited to natural occurring constituents and radionuclides identified in State drinking water standards and NRC regulations identified in 10 CFR Part 40, Appendix A, Criterion 5. This is important to enable an understanding of potential future environmental concentrations and potential impacts. It will also help to distinguish measured contaminant levels in the future from natural levels. (See related items, above.)	Initial Uranium Study Report to VDH, Section 6.3.1, Page 118

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
Environmental-Drinking Water – Including Private Water Wells	VDH	Consideration should be given to performing sampling in keeping with recommendations for preoperational sampling found in the current version of NRC Regulatory Guide 4.14. Although Regulatory Guide 4.14 is reportedly under revision into three sections, one each for conventional milling, *in situ* leaching and heap leach recovery, the current guide recommends preoperational water sampling by a potential licensee of any type of site as follows: • Groundwater samples that may be used for drinking water by humans or livestock or for crop irrigation should also be analyzed for suspended natural uranium (U-nat), Th-230, Ra-226, Po-210 and Pb-210.Surface water samples from ponds or other impoundments should be analyzed quarterly for U-nat, Th-230 and Ra-226 and semiannually for Pb-210 and Po-210. Samples should be analyzed separately for dissolved and suspended radionuclides. • Surface water samples from streams should be analyzed monthly for U-nat, Th-230 and Ra-226 and semiannually for Pb-210 and Po-210. Samples should be analyzed separately for dissolved and suspended radionuclides. (See related items, above.)	Initial Uranium Study Report to VDH, Section 6.3.1, Page 118
Environmental Recreational Water	VDH	VDH should consider sampling of any recreational water bodies that might be impacted by uranium mining or milling. Those results should be publicly available and compared to applicable standards.	Initial Uranium Study Report to VDH, Section 6.3.2, Page 118
Environmental-Gamma Exposure Rate	VDH	VDH should consider making a series of gamma exposure measurements of the vicinity of Coles Hill prior to any action being taken that might increase background levels. NRC Regulatory Guide 4.14 provides guidance for this baseline study. (See related items concerning performance of more detailed gamma exposure rate	Initial Uranium Study Report to VDH, Section 6.3.3, Page 119

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Initial Report Final			
		studies, below.)	
Environmental-Animal Health and Food Production	VDH VDACS ?	VDH, or another agency, perhaps VDACS, may be called upon to monitor foods to ensure that they are safe. If such a program is proposed, baseline study should be conducted prior to any uranium mining in the area, per Regulatory Guide 4.14 but expanded as discussed in related items, below. Once a specific site is chosen VDACS will most likely be able to identify what crops are being grown for human and animal consumption near a planned facility. Plants, including pasture land grasses, would need to be monitored for uptake from the soil and from deposition of radioactive airborne contaminates. Milk from cows, goats, and sheep used for drinking and cheese should be included in the sampling and analysis plan. Constituents of the sampling should include uranium chain nuclides as specified in Regulatory Guide 4.14.	Initial Uranium Study Report to VDH, Section 6.3.4, Page 119
Environmental-Environmental Impact Analysis	VDH	An Environmental Impact Assessment (EIA) would be initiated by the NRC during facility licensing, unless the Commonwealth becomes an agreement state (see Sect. 6.1). That being the case, VDH, if an agreement state for uranium extraction and in conjunction with other COV departments, should initiate an Environmental Impact Analysis (EIA), using the NRC's NEPA process as a guideline.	(WES, 2012h) Initial Uranium Study Report to VDH, Section 6.3.5, Page 119 Wright Environmental Services (WES, 2012m) Uranium Study - Full Components of Environmental Impact Analyses

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #1			
Licensing and Agreement State Issues for both Mining and Milling	VDH (Agreement and Non Agreement State)	It is recommended that VDH add language to its regulations as 12 VAC5-481-390.B to clarify ambiguity on licensure status of undisturbed uranium and or thorium ore bodies. The persons owning/possessing these ore bodies should be exempted from regulation.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.2, page 34, 3rd paragraph.
Regulations: Worker Safety	VDH (Agreement and Non Agreement State)	It is recommended that personnel dosimetry be required via VDH regulations for workers in uranium mines. VDH needs the authority to regulate the releases of radioactive materials to air and water from ores and mining wastes.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.2, page 34, last two paragraphs.
Regulations: General Licensed Activity	VDH (Agreement and Non-Agreement State)	It is suggested that VDH add wording to 12 VAC5-481-420 regarding a general license to mine, transport and transfer ores.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.2, page 34, first 3 paragraphs.
Uranium Milling Regulations: Generally applicable to Uranium Mining	VDH (Non Agreement State)	VDH should consider adding a separate part to its regulations to address uranium milling, as it has done for other types of licenses such as industrial radiograph, low-level radioactive waste, etc. Also, additional criteria should be considered such as definition or determination of licensed area, environmental laboratory qualifications, environmental monitoring of water sources by applicant/licensee, environmental monitoring of commercial food sources by applicant/licensee, and meteorological station specs.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.3, page 35 – 37, Points 1-10, with changes to Criteria and Additional Criteria located on pages 37-40.

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #1			
Water Works Regulations	VDH	VDH may want to evaluate sampling and analysis intervals for public waterworks. VDH could also require waterworks to be sampled and analyzed for radiological quality more frequently when a specific mining/milling activity is proposed, or in the case of accidental releases. It is suggested sample analysis be conducted at intervals not to exceed three months. This sampling and analysis could be coordinated with the environmental monitoring program of the applicant/licensee of the uranium facility.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.5, page 43.
Private Water Well Regulations	VDH	In order for VDH to regulate water quality in private water wells including chemical and radiological concentrations, it would be necessary for VDH to adopt regulations to impose such standards. VDH might consider changes in the Commonwealth laws pertaining to water quality (including chemical and radiological concentrations). It is suggested that the regulations from the State of North Carolina be considered as an example. (See also related items, above.)	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.7 page 44-46.
Recreation Use of Water Regulations	VDH	There are no Virginia regulations regarding the radiological quality of waters for recreational use. VDH might consider new regulations for campgrounds and other recreational facilities subject to regulation by VDH..	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.8, pages 46-47.
Epidemiological	VDH	If broad, large population epidemiological studies of potential uranium recovery-related health outcomes were planned then a new set of report investigation worksheets might be needed. However, given that no mining or milling is on-going, no such study is likely, currently. Any data collection/survey forms that would be needed for a population-based epidemiological study of communities impacted by uranium operations should be developed in conjunction with the study design. Please note that this statement implies the need for studies beyond the surveillance that is recommended in the report.	Uranium Study: Interim Report #1 (WES, 2012i), Section 6.2.3, pages 58.

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #1			
Water Works Regulations	VDH	VDH may want to evaluate sampling and analysis intervals for public waterworks. VDH could also require waterworks to be sampled and analyzed for radiological quality more frequently when a specific mining/milling activity is proposed, or in the case of accidental releases. It is suggested sample analysis be conducted at intervals not to exceed three months. This sampling and analysis could be coordinated with the environmental monitoring program of the applicant/licensee of the uranium facility.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.5, page 43.
		The worksheets that are already in place for other Department of Health surveillance programs are adequate.	
Regulatory Framework	VDH	Consider modifying Virginia's regulatory framework to provide long-term tracking of adverse health effects from occupational exposures.	Uranium Study: Interim Report #1 (WES, 2012i), Section 7.4, page 58.
Monitoring Work Spaces	VDH	The VDH should consider instituting the following requirements for uranium mines or mills to augment current regulations: 1) safety training, 2) routine particulate measurements (silica and diesel), 3) worker dose limits, 4) frequency and schedules for air monitoring, 4) initial measurements before mining/milling occurs in appropriate monitoring frequencies and schedules for airborne constituents, 5) regulations pertaining to the most recent ACGIH TLVs for non-radionuclides, and 10 CFR 20, Appendix B, Derived Air Concentrations for radionuclides. Specify that the regulations be reviewed at least every five years and that the most recent ACGIH TLVs be incorporated by reference.	Uranium Study: Interim Report #1 (WES, 2012i), Section 8.6, page 76-78.
Monitoring of Long-Term		These recommendations are incorporated into Interim Report #2 and presented below.	

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #1			
Water Works Regulations	VDH	VDH may want to evaluate sampling and analysis intervals for public waterworks. VDH could also require waterworks to be sampled and analyzed for radiological quality more frequently when a specific mining/milling activity is proposed, or in the case of accidental releases. It is suggested sample analysis be conducted at intervals not to exceed three months. This sampling and analysis could be coordinated with the environmental monitoring program of the applicant/licensee of the uranium facility.	Uranium Study: Interim Report #1 (WES, 2012i), Section 4.5, page 43.
Health Effects			

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Recommendations – Dose Constraints	VDH	Incorporate enforceable radiation dose constraints for workers in site-specific licenses but not in general radiation protection regulations that would be applicable to all licensees. Typical radiation doses in the uranium recovery industry are in the range of 200 to 500 mrem per year. License conditions could set constraints in that range. For some uranium facilities, the doses can exceed those levels, particularly where high-grade ore is processed. Such situations can be addressed if the emphasis is on constraints in licenses or permits. Exceeding the	VDH Uranium Study – Interim Report #2 VDH Section 4.5.1; Page 34

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
		constraint would require a formal plan on the part of the licensee to reduce doses and prevent future occurrences.	
NRC Considerations in Implementing ALARA	VDH	The NRC staff recommends that the system of constraints, as described in Publication 103, not be adopted into regulations. Stakeholders expressed concern that constraints could become de facto limits noting "ALARA cannot be a one-size-fits-all requirement." The NRC staff concluded that adopting the ICRP recommendations for ALARA planning would result in a prescriptive set of requirements that would be difficult to implement and would not guarantee that doses would be reduced, and that it would be difficult to establish a system across the NRC and agreement states in a "consistent and transparent manner." The staff concluded that the NRC could develop additional guidance for implementing ALARA based on industry experience (NRC, 2012a).	VDH Uranium Study – Interim Report #2 VDH Section 4.1.3; Page 32
Recommendations – Radon Decay Product Exposure Limit	VDH	The principle source of radiation dose to underground miners is inhalation of radon decay products. A reasonable constraint on the radon decay product exposures to miners would be the National Institutes of Occupational Safety and Health (NIOSH) Recommended Exposure Level (REL) of 1 working level month per year (WLM/y) (NIOSH, 1987). The NIOSH Report indicates that an exposure limit of 1 WLM/y is feasible under modern mining conditions.	VDH Uranium Study – Interim Report #2 VDH Section 4.5.2; Page 34

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Recommendations – Existing Radiation Dose Limits for Members of the Public	VDH	No change is necessary for radiation dose limits to members of the public. The NESHAPS, 10 CFR20, and 40CFR190 dose limits provide adequate protection.	VDH Uranium Study – Interim Report #2 VDH Section 4.5.3; Pages 34-35
Recommendations – ALARA for Chemical Exposures	VDH	It is not practical to specify ALARA constraints for chemical exposures. Such constraints must be set based not only on the specific chemicals used but also the types of exposures expected at a particular facility. However, the requirement in 10 CFR 20 that the licensee develop and implement an ALARA program for radiation exposures should be expanded in the mill license or mine permit to include chemical exposures.	VDH Uranium Study – Interim Report #2 VDH Section 4.5.4; Page 35

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Air Particulate and Radon Monitoring	VDH	Adequate radon concentration sensitivity is achieved using Landauer's most sensitive detector option, and maximum sensitivity is best supported using same-detector-batch background controls, available via discussion with Landauer technical staff when a RadTrak quarterly shipment schedule is first set up. Most environmental monitoring programs to date have not taken advantage of this option, which is recommended. The NRC and State agencies have accepted the results of the RadTrak unit for purposes of licensing; the instrument's sensitivity is adequate to understand the risks associated with long-term exposure to radon. The detector is not suitable for shorter-term measurements, unless at very high radon concentrations that should never be encountered in the public environment. Radon detectors are placed at the same locations as the air particulate monitors.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 39
Air Particulate and Radon Monitoring	VDH	Environmental air particulate sampling should take advantage of recent, energy-efficient computer-controlled air pumps and solar power systems. An example of such a system is shown in Interim Report #2. Such devices can run indefinitely and reliably with no external power source, allowing placement in locations that were previously very difficult to monitor continuously.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 39
Air Particulate and Radon Monitoring	VDH	The number and locations of continuous air and radon sampling stations should be determined based on factors in addition to those noted in Regulatory 4.14, including topography. Topography may channel effluents, causing unexpected concentrations in locations not predictable using simple modeling systems.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 40

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Air Particulate and Radon Monitoring	VDH	Air filters can be exchanged on a monthly rather than the weekly basis currently noted in the Regulatory 4.14, after site-specific demonstration of system reliability. Reducing the effort associated with weekly filter exchanges encourages the placement of additional monitoring stations, and is thus recommended. This will reduce the possibility that "hot spots" in the environment may be missed by air particulate monitoring, only to be discovered later during soil, food crop or water source monitoring.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 40
Air Particulate and Radon Monitoring	VDH	Sampling for PM-10 and PM-2.5 (air particulate dust particle sampling) should be performed during licensing to establish background levels, and during operations, facility closure and post-closure. Dust from mining, transport, milling and wind-driven suspension and resuspension of contaminants may create an offsite hazard.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 40
Air Particulate and Radon Monitoring	VDH	Stack monitoring should (instead) be continuous at key locations during the entire period of facility operations. Key locations include those stacks, vents, doorways or other potential emission points from which particulates may be released during accidental events.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 43
Air Particulate and Radon Monitoring – Post Operation	VDH	A complete Virginia program must include during-closure and long-term environmental monitoring for air particulates, radon, gamma radiation, soil and water systems, some continuing for many decades after closure. Monitoring should be performed in accordance with Regulatory 4.14 specifications, enhanced per recommendations noted here, modified to reflect new data acquired during the facility lifetime, and the mine, mill and tailings impoundment final sizes and conditions.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 44

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Air Particulate and Radon Monitoring – Post Operation	VDH	An adequately funded and properly staffed citizens committee could extend its monitoring expertise into the period following facility shutdown and final closure, given sufficient experience during facility construction and operation. With adequate supervision by the regulatory authority, such a committee could carry out many of the environmental monitoring functions for the post-closure period, greatly reducing Virginia staff travel requirements.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 44
Air Particulate and Radon Monitoring – Post Operation	VDH	The same level of environmental monitoring effort, focused on the same radionuclides, should be expended in the monitoring of releases from uranium mines as is required for milling facilities.. There is no technical reason to consider, for example, radon released from a mine to be different in terms of risk than radon from a mill or tailings impoundment. Environmental monitoring specifications for a uranium mill should be applied to a nearby mine, underground or open pit. Samplers specific to the mine should be placed and operated using the same guidance as those used to monitor the mill, or covering releases from both.	VDH Uranium Study – Interim Report #2 VDH Section 6.1; Page 44

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Ground and Surface Water	VDH	Given the potential for extreme precipitation events in Virginia, the distance at which influence of mine/mill/tailings releases on water supplies is likely greater than in the central-western U.S. Consideration should be given to routine monitoring of all water supplies out to a greater distance from a co-located uranium extraction facility. A suggested approach to determining this site-specific distance is provided in Interim Report #2. This expanded region of background monitoring would allow for quick analysis of drinking water supplies within the area of an accident's potential influence, allowing rapid response by regulatory authorities if interdiction, including replacement of water sources, were to be required after an accidental release. In addition, monthly or weekly sampling of wells and other water sources most likely to have been influenced by an accidental release should be substituted for quarterly sampling, until data and modeling indicate that the potential for delayed increases in radionuclide concentrations has passed.	VDH Uranium Study – Interim Report #2 VDH Section 6.2; Page 45
Ground and Surface Water	VDH	A co-located uranium extraction facility also presents new potential hazards in terms of hazardous chemicals used in significant quantities during production. While required safety features including bermed storage and proximity limits for incompatible chemicals decrease the likelihood of accidental releases, 1000-year or hurricane events add a level of unpredictability to the issue of safe storage of chemicals. The Virginia regulatory structure should include pre-license identification of all hazardous materials to be used at the site, and an ongoing inventory and safe-storage audit system regularly reviewed by regulatory staff. Please see Appendix II for a discussion of potential hazards associated with disease precursors.	VDH Uranium Study – Interim Report #2 VDH Section 6.2; Page 45

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Ground and Surface Water	VDH	The pre-operational and operational quarterly water sampling program specified in Regulatory Guide 4.14 should include analysis for diesel fuel and combustion products and other hazardous materials to be used in large quantities at the facility. "Background" concentrations of some commonly used materials may be significant in air or water, associated with existing sources, and responses to uranium facility releases should be based on increases in concentrations of potential toxicants, rather than absolute results. Please see Appendix II for a discussion of hazards.	VDH Uranium Study – Interim Report #2 VDH Section 6.2; Page 45

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Vegetation, Food and Fish Samples	VDH	Pre-operational sampling is recommended in NRC Regulatiry Guide 4.14 for all of the precursors and foods identified, operational sampling only where a significant pathway to man has been identified. Differing from the water sampling guidance, the Regulatory does not "scale" sample collection recommendations for foods based on the number of growing locations within a certain distance (3 kilometers in this case) from the facility. Given the factors of greatly increased likely population, food crop and irrigation system density in the Virginia environment vs. the central-western states, consideration should be given to increasing the number of food samples taken pre-operationally and operationally. A method to determine the site-specific number of sampling locations is presented in Interim Report #2. An accident resulting in release of radioactive or non-radioactive toxicants could be both short-lived and significant, with real-time air particulate or water monitoring and meteorological data allowing identification of the recommended food crop receptor regions to be sampled following a release, given specific wind and precipitation data. A pre-existing set of toxicant background measurements for these same food crop areas could be essential in determining whether increases have occurred linked to a facility accident. The current Regulatory sampling recommendations do not necessarily provide such data. Given knowledge of pre- and post-accident food concentrations, the regulatory authority could more easily make decisions regarding appropriate responses including potential food interdictions. Fish sampling as specified in the Regulatory is "scaled", in that an increased number of water bodies within 3 km leads to increased numbers of background samples being routinely taken.	VDH Uranium Study – Interim Report #2 VDH Section 6.3; Pages 46-47

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Soil and Sediment Sampling	VDH	Guidance for pre-operational soil sampling should specify a soil sampling depth of 15 cm, to be consistent with likely remedial action cleanup standards.	VDH Uranium Study – Interim Report #2 VDH Section 6.4; Page 47
Direct Radiation	VDH	Because: • The potential for channeling of contaminants released to air or surface water is increased in a topographically complex environment that may be found in the Virginia region, • Technology enhancements now allow for much more complete documentation of existing surface contamination conditions than was possible when the Regulatory was written, and • A region with uranium (or thorium) ore originally present at or near the ground surface, may appear to be contaminated after an accidental release, unless definitive data to the contrary were collected earlier. A much more thorough evaluation of surface soil radionuclide concentrations should be performed during pre-operational evaluations than the Regulatory Guide specifies.	VDH Uranium Study – Interim Report #2 VDH Section 6.5; Page 48

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Direct Radiation	VDH	Methods are now available to characterize the gamma radiation exposure rate over the entire area of a proposed facility, rather than at a few points as specified in current guidance. Most recent license applications for uranium extraction facilities have included the results of such GPS-based gamma radiation surveys, even though such surveys are not yet required. These applications include site maps showing the radiation exposure rates over the entire area to be licensed, and soil sample/exposure rate correlation data that allow estimation of surface Ra-226 concentrations over the entire area (an example Figure is included in Interim Report #2). The original data comprising the Figures, roughly one million GPS-located one-second gamma exposure rate readings, were Kriged (algorithm-manipulated to develop an area depiction) to produce a plot of the entire site's characteristic exposure rates	VDH Uranium Study – Interim Report #2 VDH Section 6.5; Page 49

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Meteorological Data Collection		Modeling systems are used to estimate air concentrations associated with releases from a uranium extraction facility, The capabilities and thus specifications associated with current meteorological stations, which provide key elements of the modeling data set, have changed drastically in recent years. Solar-powered systems are now the norm, as are instruments capable of providing far better low-wind-speed and dispersion data. Rather than revisit the earlier systems, we provide in Interim Report #2 a recommended set of met station specifications. The specifications parallel those of recently-installed systems at several new or pre-license, proposed facilities in the western U.S. Interim Report #2 Section 6.6 contains the specific set of recommendations concerning met station placement, equipment and data requirements, too lengthy to be noted in this summary.	VDH Uranium Study – Interim Report #2 VDH Section 6.6; Page 50
Meteorological Data Collection		Note that, we recommend, given the details provided in Interim Report #2 and our own experience, that a met station location be selected considering: • Site operations • Local topography • Prevailing wind direction • Proposed building(s) • Naturally occurring obstructions (trees, embankments) • Any additional factors, such as safe access The station location should reflect met conditions representative of the proposed operations, and should meet the following objectives:	VDH Uranium Study – Interim Report #2 VDH Section 6.6; Page 50

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
		• Base of station should be at same elevation as the facility operation (whenever possible). • Station should be located in open area free from obstructions, upwind of nearby obstructions. • Wind parameter measurements should be made at a distance at least 10 times the height differential of any obstructions (e.g., the station needs to be at least 300 feet away from a 30 foot building). Rough measurements should be made to verify that the tower will be a sufficient distance from obstructions and can be safely accessed for installation and servicing. • If meteorological conditions vary over the site, more than one station may be required. • Wind parameters should be measured at 10 m height with the sensor oriented into prevailing wind. Additionally, the sensor needs to be two times the tower width away from tower.	

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross References
VDH Interim Report #2			
Meteorological Data Collection		NRC Regulatory Guide 3.63 specifies the following maintenance, servicing, and data requirements: • Station should be able to withstand severe weather including blowing sand, lightning, and icing. • Station should be inspected a minimum of once every 15 days. • Station should be serviced at a frequency that ensures 90% annual data recovery and 75% annual joint data recovery of wind speed, wind direction, and atmospheric stability. • The system should be calibrated at least once every 6 months (dusty environment should be calibrated more frequently i.e. quarterly). • Extensive recordkeeping maintained for the duration of the uranium recovery operation. Recordkeeping should include the following information: • Operating logs and results of reviews, • Inspections, maintenance, calibrations, audits; a description of the types of observations • Taken with the results and their acceptability; and actions taken regarding deficiencies noted. Recordkeeping should identify who is responsible for data acquisition and data archiving.	VDH Uranium Study – Interim Report #2 VDH Section 6.6; Page 50

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross Reference
Future EIA			
Future EIA Process	VDH VDEQ VDMME	The VDH, VDEQ and VDMME (Departments) should consider a tiered process for environmental reviews allowing the state to have different levels of review for different proposed actions (for uranium mill and mine activities). A tiered process from CATEX to EIS would identify certain actions that would be categorically excluded from the EIA(EIS) process, or automatically trigger an EIS, if they met appropriate criteria. The EA tier could be used to assess the potential for significant environmental impact and thus the need to conduct an EIA(EIS). (See also earlier and later discussion of the EIA/EIS process.)	Wright Environmental Services (Uranium Study - Full Components of Environmental Impact Analyses (in progress) prepared for the Commonwealth of Virginia, Department of Health, Department of Environmental Quality and the Department of Mines, Minerals and Energy. October, 2012. Fort Collins, Colorado (WES, 2012m). Section 11 – Recommendations and Points for Consideration, pages 33-34.
Future EIA Process	VDH VDEQ VDMME	The Departments should consider the creation of a Citizens Advisory Board, which would allow Virginia to have centralized authority for oversight, review, and public comment. A CEQ could provide comprehensive review and oversight of EIAs and ensure that public input is adequately included in the process. A centralized authority for EIAs would minimize confusion for the public by allowing the public to access the public scoping and comment process through one governmental authority.	Same as above

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross Reference
Future EIA			
Future EIA Process	VDH VDEQ VDMME	The Departments should consider incorporation of public involvement in the scoping process and in the environmental reviews to ensure an open and transparent process. Multiple opportunities for public comment in easily accessible locations can serve to improve the environmental review process. Public scoping meetings could be held in various locations to allow ready access for the public. Additionally, accepting public comment on proposed actions through an online portal or through e-mail would ensure that the public can easily comment.	Same as above
Future EIA Process	VDH VDEQ VDMME	The Departments should consider means to systematically catalog and document public input, comment review and development of comment responses. These comments and responses can be compiled in a database. Database reports can be generated and included in an appendix to the final EIA. Since some comments may fall along similar lines, the Departments should consider specifically allowing grouping of such comments and associated responses. Grouping of these comments would require only one response which would allow the public to have a response to the comment without unnecessarily increasing the bulk of the final document.	Same as above
Future EIA Process	VDH VDEQ VDMME	The Departments should consider establishing a structured administrative appeals process. This would afford the public an additional chance to challenge the approval of a proposed action.	Same as above

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross Reference
Future EIA			
Future EIA Process	VDH VDEQ VDMME	The Departments should consider requirements to make publically available, in electronic and hard copy format, all draft and final EIAs through a central authority. The availability of documents in a centralized location would ensure that the public can adequately review, comment, and locate documents generated as part of the environmental review process. If a CEQ is created, this authority could be tasked to ensure the creation of a publically accessible database and repository of all documents generated during the environmental review process. This would mitigate the concern that the public does not have ready access to EIAs.	Same as above
Future EIA Process	VDH VDEQ VDMME	The Departments should consider adopting specific allowances in the environmental review process for adoption of all or parts of other Commonwealth agency environmental review determinations and/or federal NEPA determinations, as long as the process meets the Commonwealth's minimum requirements. This would allow the Commonwealth to avoid duplication of environmental review processes already addressed by other agencies.	Same as above

Mining and Milling Regulatory Areas	Agency Jurisdiction	Points for Consideration	Wright Reports Cross Reference
Future EIA			
Future EIA Process	VDH VDEQ VDMME	The Departments should consider establishing a mechanism for cost recovery for the EIA process from applicants. The costs associated not only with the environmental review of a proposed action but also for potential Commonwealth split analyses of selected baseline study samples, public scoping processes and document preparation are not insignificant. Frequently, governmental agencies do not have adequate staffing to collect data, conduct public scoping, respond to comments and prepare draft and final environmental review documents. These tasks can be contracted by the agencies to a third-party with such experience at costs lower than those to maintain comparable internal staffing. It is suggested that an MOU between the third party contractor and the agencies be put in place before the initiation of the EIA.	Same as above
Future EIA Process	VDH VDEQ VDMME	The Departments should consider adopting NEPA guidance from the NRC or another agency. This would allow for a known and accepted template to be used from the initiation of the EIA.	Same as above
Future EIA Process	VDH VDEQ VDMME	The Department should consider an interdisciplinary team from all departments including the VA DGIF, and VDOT to coordinate the EIS	Same as above
Future EIA Process	VDH VDEQ VDMME	The Departments should consider and initiate the conduct of applicable baseline studies in order to monitor the proposed action if it were approved.	Same as above Note: Baseline studies are suggested throughout all the Wright Environmental documents.

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