

U.S. Nuclear Regulatory Commission Environmental Reviews Related to Molybdenum-99 Production

Michelle Rome Moser

U.S. Nuclear Regulatory Commission

Environmental Regulations

- National Environmental Policy Act
 - Informs Federal decision making
 - Public disclosure of environmental impacts and other considerations
- NRC's Environmental Regulations
 - Title 10 Code of Federal Regulations Part 51,
“Environmental Protection Regulations for Domestic
Licensing and Related Regulatory Functions”

Unique Considerations

- Licensing and Regulatory Framework
- Environmental Review Methodology
- Communication with First Time Applicants

Licensing and Regulatory Framework

- Interim Staff Guidance (ISG) augmenting NUREG-1537, “Guidelines for Preparing and Reviewing Applications for the Licensing of Non-Power Reactors”
 - ISG covers a range of potential technologies
 - Information in the Environmental Report should be commensurate with potential environmental impacts

Environmental Review Methodology

➤ Categorical Exclusion

- Category of actions which does not individually or cumulatively have a significant effect on the human environment

➤ Environmental Assessment

- Analysis to determine whether a “finding of no significant impact” can be made or whether an Environmental Impact Statement is required

➤ Environmental Impact Statement

- Detailed statement of the environmental impacts of the proposed action and alternatives to the proposed action

Communication with First-Time Applicants

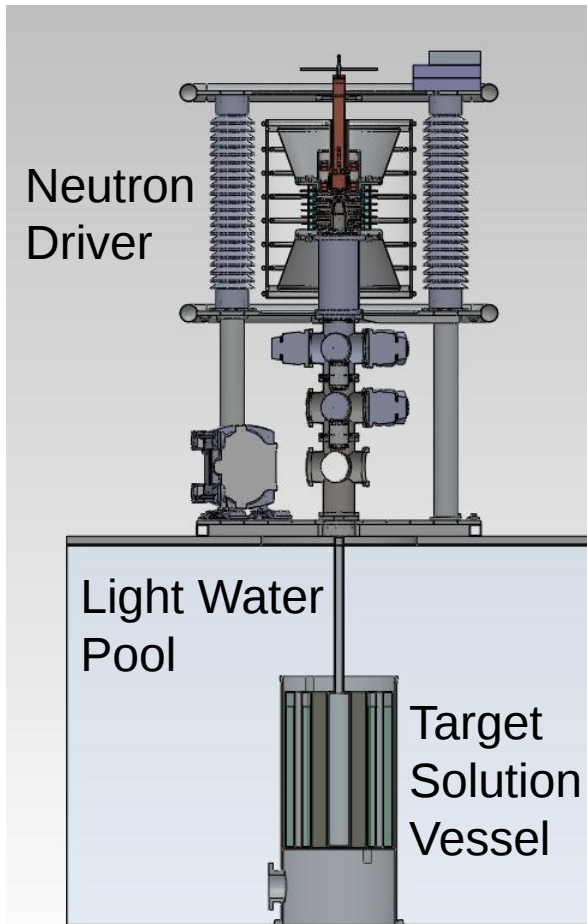
➤ Pre-Application Meetings

- Meetings to discuss the information needed to support an efficient and effective environmental review
- Allows for NRC internal resource planning
- May occur at the NRC or at the proposed site

➤ Interpretations to Clarify NRC Regulations

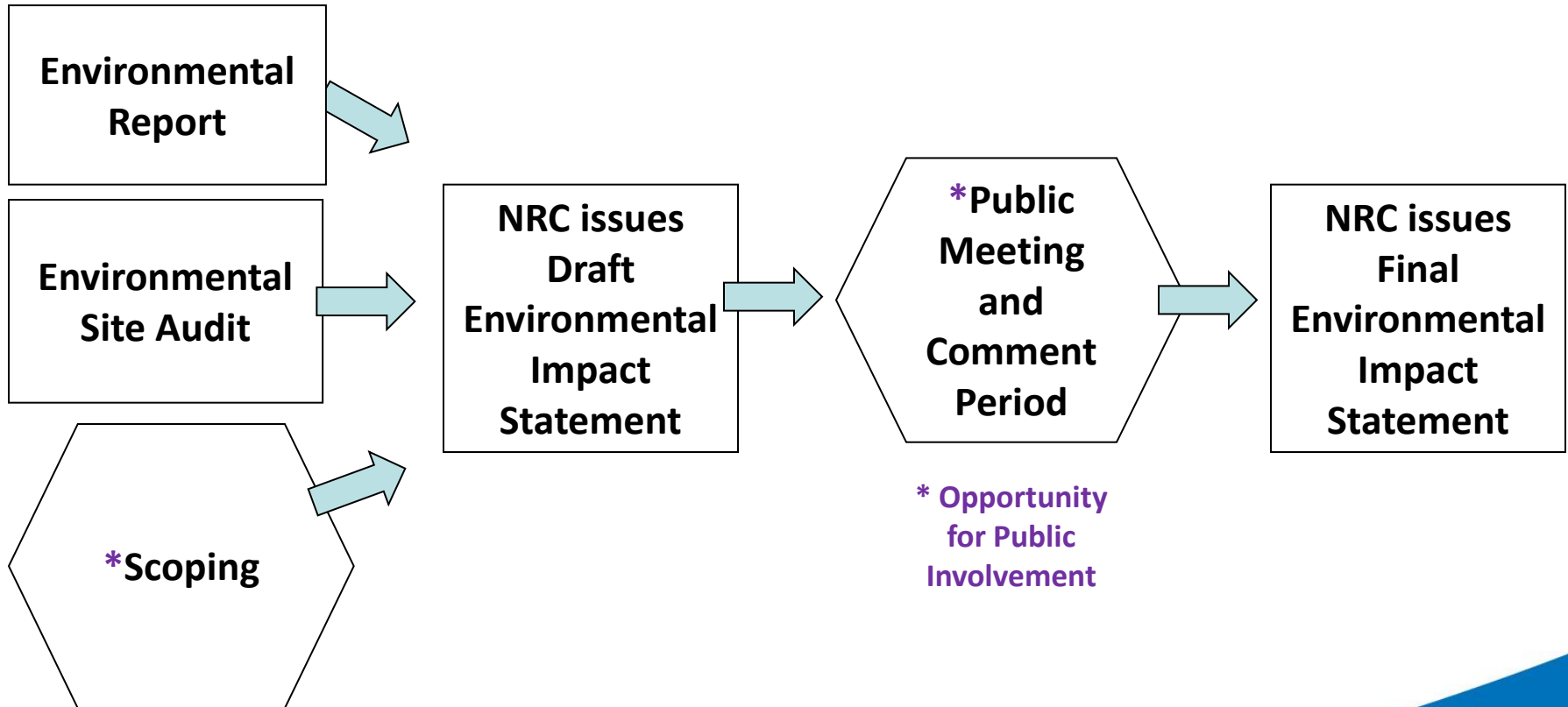
- Must be submitted in writing to the NRC staff
- Questions may include the licensing process, classifications of wastes, and procedural requirements

SHINE Application



- First application NRC received
- Purpose to produce Mo-99 from uranium fission
 - Irradiation Facility
 - Radioisotope Production Facility
- Proposed site in Janesville, WI
 - 91 acres (37 hectares)
 - Agricultural fields

Environmental Review Process



Public Involvement

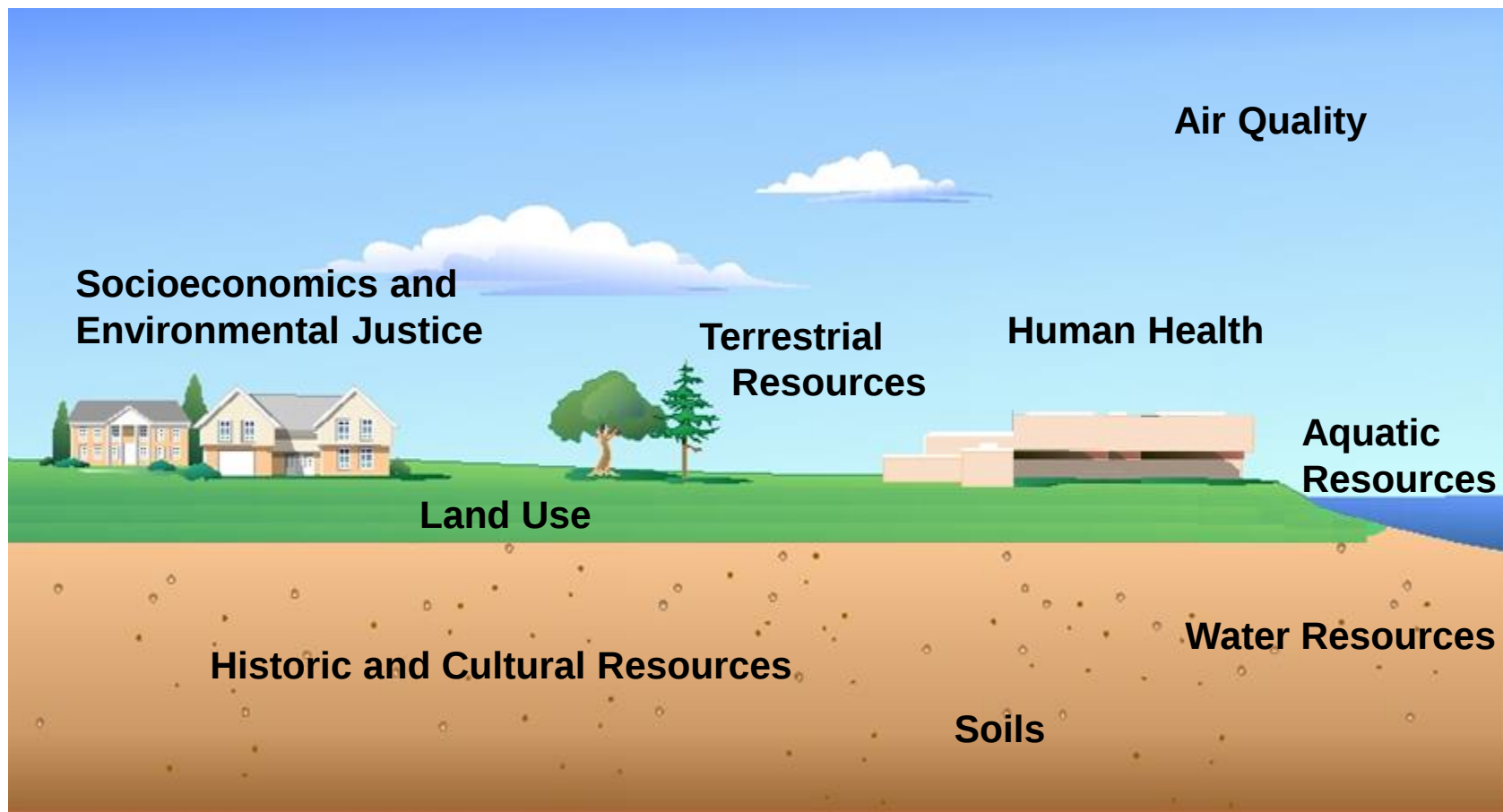
- **Scoping Period and Comment Period on the Draft Environmental Impact Statement**
 - Gathered input from the public on the scope of the environmental review and findings in the draft environmental impact statement
 - Hosted public meetings and open houses in Janesville, Wisconsin to record oral comments and answer questions from the public
 - Received letters from the public and other Federal, State, and local agencies and Tribes
- **SHINE's Public Meetings**
 - Share information with and respond to questions from the Janesville community

Department of Energy



- American Medical Isotopes Production Act
 - Ensure, to the maximum extent practicable, that environmental reviews for facilities to produce medical radioisotopes are complementary and not duplicative
- National Environmental Policy Act
 - Nuclear Regulatory Commission: Lead Agency
 - Department of Energy: Cooperating Agency

Environmental Review Areas



NRC-Defined Impact Levels

➤ SMALL

- Effects are not detectable or are so minor that they will neither destabilize nor noticeably alter an important attribute of the resource

➤ MODERATE

- Effects are sufficient to alter noticeably, but not to destabilize, important attributes of the resource

➤ LARGE

- Effects are clearly noticeable and are sufficient to destabilize important attributes of the resource

Environmental Impacts

Resource Area	Impact
Land Use and Visual Resources	SMALL
Air Quality and Noise	SMALL
Geologic Environment	SMALL
Water Resources	SMALL
Ecological Resources	SMALL
Historic and Cultural Resources	SMALL
Socioeconomics	SMALL
Human Health	SMALL
Waste Management	SMALL
Transportation	SMALL to MODERATE

NRC Staff's Preliminary Recommendation

After weighing the environmental, economic, technical, and other benefits against environmental and other costs, and considering reasonable alternatives, the NRC staff recommends the issuance of the construction permit, unless safety issues mandate otherwise.

Conclusions

- NRC prepared for Mo-99 environmental reviews by assessing current regulatory frameworks and providing guidance
- The SHINE environmental review relied upon many of the pre-application activities to help ensure an efficient and effective review
- Future reviews will incorporate lessons learned from the development and publication of ongoing environmental reviews