

National Environmental Policy Act Support for Environmental Impact Statements and Environmental Assessments in Nuclear Waste Disposal

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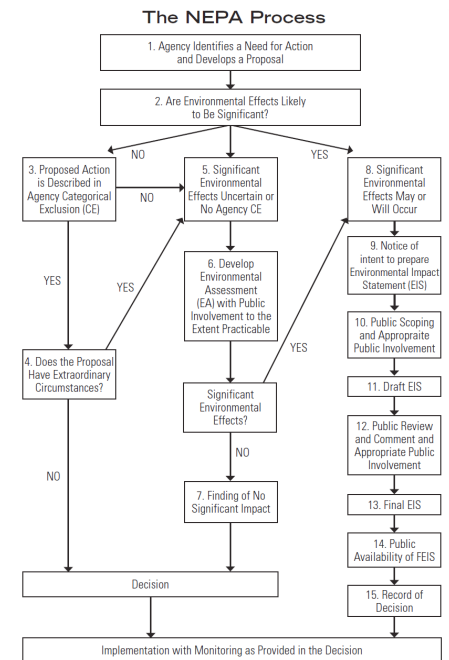
Introduction

In 1970, the National Environmental Policy Act was passed by Congress to define environmental policy for the United States. The intent of the law was to require Federal agencies to assess the potential environmental effects of their proposed actions prior to making decisions. The result of the law was a process that included environmental concerns and public input in the decision making process prior to implementing the actions. Depending on the actions, the NEPA process can be simple for small projects such as installing power lines to quite technical for actions involve large government projects such as nuclear waste disposal. Specialized technical analyses are necessary to determine the potential environmental impacts for many Federal actions to satisfy NEPA requirements.



The Waste Isolation Pilot Plant, an Operational Transuranic Nuclear Waste Disposal Facility in Southeastern New Mexico

For example, Sandia has supported Federal NEPA activities for the Waste Isolation Pilot Plant, the Yucca Mountain high-level waste disposal project, Greater-than-Class C waste disposal and other near-surface land disposal activities.

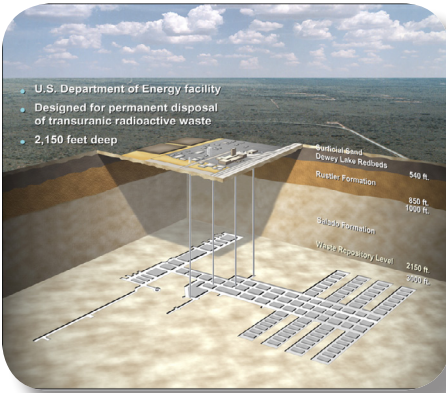


Vast Expertise

Sandia National Laboratories has vast expertise in environmental sciences and analysis, risk assessments, geologic characterization, waste management, transportation and nuclear waste disposal that has been used to support many Federal NEPA actions relating to nuclear waste management and disposal. Not only has Sandia been involved in its own NEPA actions such as Site Wide Environmental Impact Statements for its continuing operations and mission but has supported many other governmental actions relating to nuclear waste management and disposal.

“A Citizen’s Guide to the NEPA,” Council on Environmental Quality, Executive Office of the President, Washington DC, December 2007

The NEPA process is complex and follows a specific programmatic progression as shown in the above Figure. The goal of the process is to identify and quantify environmental risks and impacts that could arise from a planned Federal agency action. These actions may have different approaches or alternatives that could be



Cutaway View of the Waste Isolation Pilot Plant

used to achieve the same goal. Reliable risk assessment and environmental effects information is necessary for decision makers to determine which alternative is most appropriate. The Environmental Assessment (EA) or Environmental Impact Statement (EIS) documents these environmental impacts for the proposed action. Sandia's technical experience in site characterization, risk assessment and performance assessment modeling has been used to generate radioactive waste disposal EISs.

Other public involvement activities in the NEPA process, shown in the previous Figure, require technical experience. Scientific support for NEPA actions is critical for public acceptance and project credibility. Sandia provides unbiased technical evaluations of alternatives and can help communicate these evaluation's results to stakeholders during public meetings and can assist the generation of public comment responses. These activities communicate to the public analysis results that are used to support an EIS which helps to build trust in the process.

Examples of Sandia's environmental analyses areas of expertise and capabilities that support NEPA requirements include:

- Nuclear waste generation, processing, characterization, packaging and transportation,
- Air Quality - Air dispersion modeling
- Groundwater Quality - groundwater characterization, groundwater chemistry, flow and waste transport modeling,
- Radiological and non-radiological hazard analyses,
- Human Exposure - toxicity, exposure and risk characterization (pathway),
- Site Accident Assessments - impact (projectile and missile), chemical, radiological and natural (e.g., seismic, floods),
- Transportation radiological and non-radiological accident and incident free assessments, and
- Repository Sciences - characterization, experimentation and performance assessment modeling.



Yucca Mountain exploratory tunnel, a proposed site for High-Level Nuclear Waste Disposal

References

Council on Environmental Quality 2007. "A Citizen's Guide to the NEPA," Council on Environmental Quality, Executive Office of the President, Washington DC

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