

## **Geotechnical Guidance for Niowave**

The primary Nuclear Regulatory Commission regulations governing the geotechnical and stability reviews of subsurface materials are:

- 10 CFR 70.62 Safety program and integrated safety analysis
- 10 CFR 70.64(a)(2) Natural phenomena hazards
- 10 CFR 70.64(a)(4) Environmental and dynamic effects
- 10 CFR 70.64(b) Facility and system design and facility layout must be based on defense-in-depth practice
- 10 CFR 70.65(b)(1) A generation description of the site with emphasis on those factors that could affect the safety (i.e., meteorology, seismology)

Standard Review Plan: NUREG–1520 Rev 2: “Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility,” 2015.

In Title 10 of the *Code of Federal Regulations* (10 CFR), Section 70.62, the review is concerned with the potential failure of subsurface materials (e.g., bearing capacity failure or excessive settlement, especially differential settlement, liquefaction, etc.) and any slope instability at the site leading to an initiating event. In Section 70.64 of 10 CFR, the review considers the Baseline Design Criteria and how they are applied to the site slope and subsurface stability. In 10 CFR 70.65, the review addresses those factors that affect the stability of slope and subsurface materials and, in turn, affecting the stability of the facility structure(s) (e.g., formation of karst or dissolution features, effects of seismicity).

The license application and integrated safety analysis should consider the stability of subsurface materials and potential to cause an initiating event. This assessment should consider the subsurface characteristics in sufficient detail and analyze the potential impact on facility safety. The assessment should identify all underlying assumptions, design bases, and methods used for stability of the facility structure(s) and equipment credited with prevention and/or mitigation of the consequences. The assessment should indicate which events are considered not credible and the basis for that determination.