

(6) Engineered barrier system degradation, flow, and transport characteristics, which include:

(i) Colloid formation and stability—for example, the formation of colloidal particles and the ability of radionuclides to adhere to these particles as they may migrate through the remaining barriers; and

(ii) Engineered barrier transport—for example, the movement of radionuclides dissolved in water or adhering to colloidal particles to be transported through the remaining engineered barriers and in the underlying unsaturated zone.

(7) Unsaturated zone flow and transport characteristics, which include:

(i) Unsaturated zone transport—for example, the movement of water with dissolved radionuclides or colloidal particles through the unsaturated zone underlying the repository, including retardation mechanisms such as sorption on rock or mineral surfaces;

(ii) Thermal hydrology—for example, effects of heat from the waste on water flow through the site.

(8) Saturated zone flow and transport characteristics, which include:

(i) Saturated zone transport—for example, the movement of water with dissolved radionuclides or colloidal particles through the saturated zone underlying and beyond the repository, including retardation mechanisms such as sorption on rock or mineral surfaces; and

(ii) Dilution—for example, diffusion of radionuclides into pore spaces, dis-

persion of radionuclides along flow paths, and mixing with non-contaminated ground water.

(9) Biosphere characteristics, which include:

(i) Reference biosphere and reasonably maximally exposed individual—for example, biosphere water pathways, location and behavior of reasonably maximally exposed individual; and

(ii) Biosphere transport and uptake—for example, the consumption of ground or surface waters through direct extraction or agriculture, including mixing with non-contaminated waters and exposure to contaminated agricultural products.

(b) DOE will evaluate the postclosure suitability of the Yucca Mountain disposal system using criteria that consider disruptive processes and events important to the total system performance of the geologic repository. The applicable criteria related to disruptive processes and events include:

(1) Volcanism—for example, the probability and potential consequences of a volcanic eruption intersecting the repository;

(2) Seismic events—for example, the probability and potential consequences of an earthquake on the underground facilities or hydrologic system; and

(3) Nuclear criticality—for example, the probability and potential consequences of a self-sustaining nuclear reaction as a result of chemical or physical processes affecting the waste either in or after release from breached waste packages.

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