

and the spatial and temporal variation in concentration.

(e) *Geologic resources.* (1) Testing and sampling for injury to geologic resources shall be performed using methodologies described in this paragraph.

(2) Testing pH level in soils shall be performed using standard pH measurement techniques, taking into account the nature and type of organic and inorganic constituents that contribute to soil acidity; the soil/solution ratio; salt or electrolytic content; the carbon dioxide content; and errors associated with equipment standardization and liquid junction potentials.

(3) Salinity shall be tested by measuring the electrical conductivity of the saturation extraction of the soil.

(4) Soil microbial respiration shall be tested by measuring uptake of oxygen or release of carbon dioxide by bacterial, fungal, algal, and protozoan cells in the soil. These tests may be made in the laboratory or in situ.

(5) Microbial populations shall be tested using microscopic counting, soil fumigation, glucose response, or adenylate energy charge.

(6) Phytotoxicity shall be tested by conducting tests of seed germination, seedling growth, root elongation, plant uptake, or soil-core microcosms.

(7) Injury to mineral resources shall be determined by describing restrictions on access, development, or use of the resource as a result of the oil or hazardous substance. Any appropriate health and safety considerations that led to the restrictions should be documented.

(f) *Biological resources.* (1) Testing and sampling for injury to biological resources shall be performed using methodologies provided for in this paragraph.

(2)(i) Testing may be performed for biological responses that have satisfied the acceptance criteria of § 11.62(f)(2) of this part.

(ii) Testing methodologies that have been documented and are applicable to the biological response being tested may be used.

(3) Injury to biological resources, as such injury is defined in § 11.62(f)(1)(ii) of this part, may be determined by using methods acceptable to or used by the Food and Drug Administration or

the appropriate State health agency in determining the levels defined in that paragraph.

§ 11.70 Quantification phase—general.

(a) *Requirement.* (1) Upon completing the Injury Determination phase, the authorized official shall quantify for each resource determined to be injured and for which damages will be sought, the effect of the discharge or release in terms of the reduction from the baseline condition in the quantity and quality of services, as the phrase is used in this part, provided by the injured resource using the guidance provided in the Quantification phase of this part.

(2) The Quantification phase consists of § 11.70—general; § 11.71—service reduction quantification; § 11.72—baseline services determination; and § 11.73—resource recoverability analysis, of this part.

(b) *Purpose.* The purpose of the Quantification phase is to quantify the effects of the discharge or release on the injured natural resources for use in determining the appropriate amount of compensation.

(c) *Steps in the Quantification phase.* In the Quantification phase, the extent of the injury shall be measured, the baseline condition of the injured resource shall be estimated, the baseline services shall be identified, the recoverability of the injured resource shall be determined, and the reduction in services that resulted from the discharge or release shall be estimated.

(d) *Completion of Quantification phase.* Upon completing the Quantification phase, the authorized official shall make a determination as to the reduction in services that resulted from the discharge or release. This Quantification Determination shall be used in the Damage Determination phase and shall be maintained as part of the Report of Assessment described in § 11.90 of this part.

§ 11.71 Quantification phase—service reduction quantification.

(a) *Requirements.* (1) The authorized official shall quantify the effects of a discharge of oil or release of a hazardous substance by determining the