

### III - RESOURCE QUALITY CRITERIA

#### A. RESOURCE QUALITY CRITERIA FOR SOIL

##### 1. Soil Erosion

###### (a) Sheet and rill

Sheet and rill erosion caused by overland flow of water as predicted using the Universal Soil Loss Equation (USLE). Revised Universal Soil Loss Equation (RUSLE) will be effective when issued to the field.

Criteria for all land uses: The estimated average annual soil loss does not exceed the soil loss tolerance "T" value.

###### (b) Wind

Soil erosion caused by wind energy as predicted using the Wind Erosion Equation (WEQ).

Criteria for all land uses: The estimated average annual soil loss from a field does not exceed the soil loss tolerance "T" value.

###### (c) Ephemeral gullies / Concentrated flow

Ephemeral gullies. Channels in a field caused by the concentrated flow of water on cropland that are erased by normal tillage operations.

Criteria for cropland: The total estimated soil loss from a field during the cropping sequence averaged over the total acres of the contributing area does not exceed the soil loss tolerance "T" value for the selected soil for planning.

Concentrated Flow. Channels in a non-cropland field or area caused by concentrated flow or water that do not interfere with normal equipment operations.

Criteria for all non-cropland land uses: The total estimated soil loss from a field or area averaged over the total acres of the contributing area does not exceed the soil loss tolerance "T" value for the selected soil for planning.

(d) Classic gullies

Gullies are caused by concentrated flow channels of water too deep for normal tillage operations to erase. They may grow or enlarge from year to year by headcutting and lateral widening.

Criteria for all land uses: Head cutting does not appear to be active, gully side slopes are stabilized and no active erosion in the channel bottom. Where the decisionmaker cannot solve the problem as an individual, the requirements for an RMS will be met when the actions of the individual no longer adversely contribute to the problem in those situations where group action does not occur.

(e) Streambank

Sloughing of banks caused by stream flow, overbank flow, unstable soils, obstructions, unstable channel bottom, or a combination of these.

Criteria for all land uses: Streambanks appear stable and have no visible erosion after bank-full conditions. Where the decisionmaker cannot solve the problem as an individual, the requirements for an RMS will be met when the actions of the individual no longer adversely contribute to the problem in those situations where group action does not occur.

(f) Irrigation induced

Soil erosion in a field caused by furrow, flood, or sprinkler irrigation activities, including tracks from center pivots and travelling guns. Soil losses are predicted using approved methods (such as Runoff Sample Method, California Furrow Irrigation Erosion or FUSED procedures after issued for field use).

Criteria for Irrigated Lands: The estimated annual soil loss from a field does not exceed the soil loss tolerance "T" value for the critical soil map unit for planning. Irrigation induced erosion shall not be readily discernible for sprinkler irrigated lands.

(g) Soil mass movement

Soil slippage, landslide, or slope failure on hillsides, in deep cuts, or through unstable soil on sloping land that creates a large volume of soil movement that exceeds normal geological rates.

Criteria for all land uses: Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of soil material does not exceed naturally occurring rates. Recommended conservation practices will not contribute to the problem.

(h) Roadbanks, construction sites, and scoured areas

Soil erosion caused by overland, concentrated, or out-of-bank flows.

Criteria: Roadbanks show minimal long term visible erosion and banks are stable. Construction sites are stabilized with vegetative or other materials as needed so that no discernible sediments leave the site. Recommended conservation practices will not contribute to scouring. Scoured areas are stabilized with vegetation or other materials as needed so that no discernable sediment leaves the site.

2. Soil Condition

(a) Soil tilth

The combination of minerals, air, water, and organic matter in the soils provide suitable plant-soil-moisture-air relationships, water infiltration rates, water holding capacity, bulk density, microbial activity, and fertility.

Criteria for Cropland: Soil tilth will have a positive trend toward improvement as indicated by a positive soil conditioning rating according to procedures in the National Agronomy Manual and “Soil Conditioning Rating Indices for Major Irrigated and Non-Irrigated Crops grown in the Western United States.”

Criteria for Other Lands: There are no measurable or observable impairments of the growth and vigor of adapted plants due to soil tilth conditions.

(b) Compaction

Increased soil bulk density due to excessive compressing of soil particles and aggregates by machinery, humans, livestock, or natural consolidation that adversely affects the plant-soil-moisture-air relationship.

Criteria for Cropland: Tillage or pressure pans do not reduce percolation of water or air movement to the extent that it impairs the plant-soil-moisture-air relationships. The growth and vigor of the plant species of concern are not impaired by compaction.

Criteria for Forest and Woodland: The soil does not contain a compacted layer that reduces soil porosity by more than 10 percent for more than 15 percent of the area. (Compaction will be measured by evaluating soil porosity in the four to eight inch zone below the soil surface.)

Criteria for Rangeland: The growth and vigor of the plant species of concern are not impaired by compaction.

(c) Contaminants, salinity/heavy metals

Excess chemicals, salinity, selenium, boron, and heavy metals, including the amounts of desirable and undesirable chemical elements that restricts the use of the soil.

Criteria for Cropland: Yields of the adapted crops are within 25 percent of the county average. Salinity, selenium, boron, and heavy metal content will be within federal, state, or local regulations.

Criteria for Other Lands: The growth and vigor of the plant species of concern are not impaired. Salinity, selenium, boron, and heavy metal content will be within federal, state, or local regulations.

(d) Contaminants, organic

Application or excessive animal wastes and other organics restrict the desired use of the soil.

Criteria for all lands: The growth and vigor of the plant species of concern are not impaired.

(e) Contaminants, fertilizer

Excess fertilizer occurs if the application of fertilizer or quantity of nutrients restricts the desired use of the soil.

Criteria for all land uses: Applications are at the rates and times so that no excessive leachate components (above established standards from federal, state or local criteria) occur below the root zone.

(f) Contaminants, pesticides

Residual amounts of pesticides are present in the soil restricting desired use.

Criteria for all land uses: Pesticide carryover levels do not have detrimental effects on desired adapted plant or animal resources.

### 3. Soil Deposition

(a) Onsite damage

Sediment is being deposited causing damage or management problem to the desired land use.

Criteria for all land uses: Minimal observable damage to land or minimal management problem.

(b) Offsite damage

Sediment is being deposited offsite and results in damage or management problems.

Criteria for all land uses: Minimal observable damage to the land or minimal management problem.

(c) Onsite safety

Sediment is being deposited on roads or railroads and causes or could cause accidents, loss of life, or loss of access of emergency vehicles.

Criteria for all land uses: No safety hazards due to soil deposition exist.

(d) Offsite Safety

Sediment on roads or railroads offsite that causes or could cause accidents, loss of life, or loss of access of emergency vehicles.

Criteria for all land uses: No safety hazards due to soil deposition exist.

(e) Other

Soil related problems or concerns that cannot be placed in any of the above categories can be identified under this section.

Criteria for all land uses: To be developed for each case with interdisciplinary input and required reviews.