

| National and State Resource Concerns and Quality Criteria | | | | | |
|---|---|---|---------------------------|--|---|
| Natural Resource Concern | Description of Concern | National Quality Criteria | Oklahoma Quality Criteria | Measurement Units | Assessment Tools for Quality Criteria Evaluation |
| SOIL | | | | | |
| <i>Soil Erosion</i> Sheet and Rill | Detachment and transport of soil particles caused by rainfall splash and runoff degrade soil quality. | Sheet and rill erosion does not exceed the Soil Loss Tolerance "T". | Same as National | Tons/Acre/Year – average annual tons of erosion reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> RUSLE2 computer model |
| <i>Soil Erosion</i> Wind | Detachment and transport of soil particles caused by wind degrade soil quality and/or damage plants. | Wind erosion does not exceed the Soil Loss Tolerance "T" or, for plant damage, does not exceed Crop Damage Tolerances. | Same as National | Tons/Acre/Year – average annual tons of erosion reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> Wind Erosion Equation (WEQ) (Management Period) computer model |
| <i>Soil Erosion</i> Ephemeral Gully | Small channels caused by surface water runoff degrade soil quality and tend to increase in size. On cropland, they can be obscured by heavy tillage. | Surface water runoff is controlled sufficiently to stabilize the small channels and prevent reoccurrence of new channels. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> Oklahoma Ephemeral Gully Worksheet calculator |
| <i>Soil Erosion</i> Classic Gully | Deep, permanent channels caused by the convergence of surface runoff degrade soil quality. They enlarge progressively by head cutting and lateral widening. | Surface water runoff is controlled sufficiently to stop progression of head cutting and widening. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> Oklahoma Classic Gully Worksheet calculator Aerial photo trend analysis |
| <i>Soil Erosion</i> Streambank | Accelerated loss of streambank soils restricts land and water use and management. | Accelerated streambank soil loss does not exceed a level commensurate with upstream land use and normal geomorphologic processes on site. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> Visual assessment, e.g., Stream Visual Assessment Protocol, Proper Functioning Condition (PFC) Aerial photo trend analysis Engineering Field Handbook, Chapter 16 Volume calculation Stream Corridor Restoration (NEH) part 653 |

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| <i>Soil Erosion</i> Shoreline | Soil is eroded along shorelines by wind and wave action, causing physical damage to vegetation, limiting land use, or creating a safety hazard. | Shoreline erosion is stabilized to a level that does not restrict the use or management of adjacent land, water or structures. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Visual assessment • Aerial photo trend analysis • Volume calculation • Erosion transects/pins |
| <i>Soil Erosion</i> Irrigation-induced | Improper irrigation water application and equipment operation are causing soil erosion that degrades soil quality. | Irrigation-induced erosion does not exceed the Soil Loss Tolerance “T”. | Same as National | Tons/Acre/Year – average annual tons of erosion reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • SRFR (Surface Irrigation Model) • CPED (Center Pivot Evaluation and Design) • NRCS National and State Irrigation Guides • RUSLE2 computer model |
| <i>Soil Erosion</i> Mass Movement | Soil slippage, landslides, or slope failure, normally on hillsides, result in large volumes of soil movement. | Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of soil material does not exceed naturally occurring rates. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Visual assessment • Aerial photo trend analysis • Volume calculation |
| <i>Soil Erosion</i> Road, Road-sides and Construction Sites | Soil loss occurs on areas left unprotected during or after road building and/or construction activities. | Sites are adequately protected from soil loss during and after road building and construction activities. | Same as National | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Visual assessment • Volume Calculation • Water and wind erosion prediction tools (RUSLE2 and WEQ) |
| <i>Soil Condition</i> Organic Matter Depletion | Soil organic matter has or will diminish to a level that degrades soil quality. | Soil Conditioning Index is positive. | Same as National | Soil Conditioning Index improvement – positive improvement in index for the field or planning area/unit | <ul style="list-style-type: none"> • Soil Conditioning Index in RUSLE2 • Soil Quality Kit • Soil testing |

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| <i>Soil Condition</i> Rangeland Site Stability | The capacity to limit redistribution and loss of soil resources (including nutrients and organic matter) by wind and water. | Indicators of Rangeland Health Attribute rating for Soil/Site Stability show Slight to Moderate or less departure from Ecological Reference Sheet (ESD). | Same as National | Departure from Ecological Reference Sheet (ESD) categories – amount of departure, by numeric value, from Ecological Reference Sheet for the field or planning area/unit. 1=None to Slight, 2=Slight to Moderate, 3=Moderate, 4=Moderate to Extreme, or 5=Extreme. | <ul style="list-style-type: none"> Ecological Site Descriptions (ESD) |
| <i>Soil Condition</i> Compaction | Compressed soil particles and aggregates caused by mechanical compaction adversely affect plant-soil-moisture relationships. | Mechanically compacted soils are renovated sufficiently to restore plant root growth and/or water movement. | Same as National | Non Measurable | <ul style="list-style-type: none"> Assessment of plant root systems Bulk density test-Soil Quality Kit Dial penetrometer |
| <i>Soil Condition</i> Subsidence | Loss of volume and depth of organic soils due to oxidation caused by above-normal microbial activity resulting from excessive drainage or extended drought. | The timing and regime of soil moisture is managed to attain acceptable subsidence rates. | N/A in Oklahoma | Inches/Acre/Year – average annual inches of subsidence reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> Visual assessment Inventory of volume and depth Soil probes and witness poles |
| <i>Soil Condition</i> Contaminants: Salts and Other Chemicals | Inorganic chemical elements and compounds such as salts, selenium, boron, and heavy metals restrict the desired use of the soil or exceed the soil buffering capacity. | Salinity levels cause less than a 10% decrease in plant yield. Other contaminants do not exceed plant tolerances or are below toxic levels for plants or animals. | Same as National | Electroconductivity (EC) – average reduction in EC for the field or planning area/unit | <ul style="list-style-type: none"> Soil testing Soil Quality Kit- EC meter Farm*A*Syst assessment |

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| <i>Soil Condition</i> Contaminants: Animal Waste and Other Organics - N | Nitrogen nutrient levels from applied animal waste and other organics restrict desired use of the land. | Nitrogen nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results. | Same as National | Pounds/Acre/Year – average annual pounds of nitrogen (N) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |
| <i>Soil Condition</i> Contaminants: Animal Waste and Other Organics - P | Phosphorus nutrient levels from applied animal waste and other organics restrict desired use of the land. | Phosphorus nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results. | Same as National | Pounds/Acre/Year – average annual pounds of phosphorus (P) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Oklahoma Phosphorus Assessment Worksheet • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |
| <i>Soil Condition</i> Contaminants: Animal Waste and Other Organics - K | Potassium nutrient levels from applied animal waste and other organics restrict desired use of the land. | Potassium nutrient application levels do not exceed soil storage/plant uptake capacities based on soil test recommendations and risk analysis results. | Same as National | Pounds/Acre/Year – average annual pounds of potassium (K) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Assessment Worksheet • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |
| <i>Soil Condition</i> Contaminants: Commercial Fertilizer - N | Over application of nitrogen nutrients degrades plant health and vigor, or exceeds the soil capacity to retain nutrients. | Soil nutrient levels of nitrogen do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained. | Same as National | Pounds/Acre/Year – average annual pounds of nitrogen (N) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Soil Quality Kit-pH meter • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |

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| <i>Soil Condition</i> Contaminants: Commercial Fertilizer - P | Over application of phosphorus degrades plant health and vigor, or exceeds the soil capacity to retain nutrients. | Soil nutrient levels of phosphorus do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained. | Same as National | Pounds/Acre/Year – average annual pounds of phosphorus (P) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Soil Quality Kit-pH meter • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |
| <i>Soil Condition</i> Contaminants: Commercial Fertilizer - K | Over application of potassium nutrients degrades plant health and vigor, or exceeds the soil capacity to retain nutrients. | Soil nutrient levels of potassium do not exceed crop needs based on realistic yield goals and appropriate pH levels are maintained. | Same as National | Pounds/Acre/Year – average annual pounds of potassium (K) reduced per acre for the field or planning area/unit | <ul style="list-style-type: none"> • Soil testing • Soil Quality Kit-pH meter • Oklahoma Nutrient Budget and Summary Worksheet • Plant tissue test • Application records • Yield records/history |
| <i>Soil Condition</i> Contaminants: Residual Pesticides | Residual pesticides in the soil have an adverse effect on non-target plants and animals. | Pesticides are applied, stored, handled, and disposed of so that residues in the soil do not adversely affect non-target plants and animals. | Same as National | Non Measurable | <ul style="list-style-type: none"> • Visual assessment • Soil testing • Plant and animal tissue test |
| <i>Soil Condition</i> Damage from Sediment Deposition | Sediment deposition damages or restricts land use/management or adversely affects ecological processes. | Sediment deposition is sufficiently reduced to maintain desired land use/management and ecological processes. | Same as National | Acres/Year – average annual acres of sediment deposition reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Visual assessment • Volume calculation • Current water and wind erosion prediction tools (RUSLE2 and WEQ) coupled with sediment delivery ratios |