

| Table 1 National and State of Nebraska Resource Concerns and Quality Criteria | | | | | |
|--|---|---|---|--|--|
| Natural Resource Concern | Description of Concern | National Quality Criteria | State Quality Criteria | Measurement Units | Assessment Tools for Quality Criteria Evaluation |
| SOIL | | | | | |
| Soil Erosion - 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"> • Current sheet and rill erosion prediction tool in Section I of FOTG |
| Soil Erosion - 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"> • Current wind erosion prediction tool in Section I of FOTG |
| Soil Erosion - 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. | Concentrated flow area is stable using ephemeral gully prediction tool or upon visual inspection. | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Volume calculation (by hand or with NE-Gully Erosion (Excel) Worksheet found in eFOTG Section IV tools), or percent of sheet and rill erosion calculation by RUSLE as shown in Section I of the FOTG • Ephemeral Gully Erosion Prediction Worksheet (found in eFOTG Section IV tools) |
| Soil Erosion - 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. | Area is stable upon visual inspection | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> • Volume calculation (by hand or with NE-Gully Erosion (Excel) Worksheet) • Aerial photo trend analysis |

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| Soil Erosion - 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 geomorphological processes on site. | Assessment tool shows condition of stream is properly functioning or if off-site conditions cause streambank erosion the landowner is not contributing to the problem. | Tons/Year – average annual tons of erosion reduced for the field or planning area/unit | <ul style="list-style-type: none"> Stream assessment tool, i.e., Stream Visual Assessment Protocol (SVAP), Proper Functioning Condition (PFC) Volume calculation |
| Soil Erosion - 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"> Volume calculation |
| Soil Erosion – 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”. | Irrigation erosion is not excessive using the listed assessment tools. | 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) FUSED (Furrow Irrigation) Imhoff Cones CPNozzle (Sprinkler) National Irrigation Guide (Gravity) |
| Soil Erosion - Mass Movement | Soil slippage, landslides, or slope failure, normally on hillsides, result in large volumes of soil and rock movement. | Shallow slumps, slides, or slips are prevented or minimized so that the mass movement of earth 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"> Volume calculation |

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| Soil Erosion – Road, Roadsides, 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"> • Volume calculation |
| Soil Condition - Organic Matter Depletion | Soil organic matter has or will diminish to a level that degrades soil quality. | Soil Conditioning Index is positive. | The Index or test value of the assessment tool reflects a positive soil condition. | Soil Conditioning Index improvement – positive improvement in index for the field or planning area/unit | <ul style="list-style-type: none"> • Soil Conditioning Index • Aggregate Stability Test for Soil Quality Test Kit • Nebraska Soil Quality Card http://soils.usda.gov/sqi/files/ne.pdf • Surface soil test for organic matter trend |
| Soil Condition – 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"> • Soil Stability Test Kit for indicator #8 • Line-Point Intercept method for measuring bare ground for indicator #4 • Bulk density test-Soil Quality Kit for measuring compaction layer for indicator #11 • Range Health Index |

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| Soil Condition - 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"> Bulk density test-Soil Quality Kit or other verification that restrictive layer has been removed by hand probes or with power equipment. |
| Soil Condition - 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. | NA | Inches/Acre/Year – average annual inches of subsidence reduced per acre for the field or planning area/unit | NA |
| Soil Condition – 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. | Refer to Ag Waste Management Field Handbook, table 5-3 for limitations on various soils in relation to land application of ag waste, and figures 6-2, 6-3 and 6-4 for EC of various field forage and vegetable crops. | Electroconductivity (EC) – average reduction in EC for the field or planning area/unit | <ul style="list-style-type: none"> Soil test Soil Quality Kit- EC meter |
| Soil Condition – 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. | Nitrogen management is based on 590 standard. | 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 test Application records Yield records/history UNL nitrogen recommendations |

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| Soil Condition – 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. | Phosphorus management is based on 590 standard. | 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 test • P Index (phosphorus) • Application records • Yield records/history |
| Soil Condition – 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 Test • Application records • Yield records/history |
| Soil Condition – Contaminants: Commercial Fertilizer - N | Over application of nitrogen 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. | Nitrogen management is based on 590 standard. | 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 Test • Application records • Yield records/history • UNL nitrogen recommendations |
| Soil Condition – 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. | Phosphorous management is based on 590 standard. | 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 Test • P Index (phosphorus) • Application records • Yield records/history |

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| SOIL | | | | | |
| Soil Condition – Contaminants: Commercial Fertilizer - K | Over application of potassium 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 Test • Application records • Yield records/history |
| Soil Condition – 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"> • Windows Pesticide Assessment Tool (WIN-PST) • Visual assessment (carry-over evidence) • Product label restrictions (residual impacts on nontarget animals and plants) • Soil test • National Agricultural Pesticide Risk Analysis (NAPRA) • Pesticide application records |
| Soil Condition - 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 NA | NA |