

Major Land Resource Area 069x Upper Arkansas Valley Rolling Plains

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Ecological site keys

MLRA 69 Key

I. Site receives additional run-on moisture

A. Site influenced by salts (salt tolerant indicator species)

1 Water table (redoximorphic features) and salts ... R069XY030CO – Salt Meadow

2 Site located in a closed depression

ii. Calcium carbonate only ... R069XY011CO – Closed Depression

iii. Calcium carbonate and other salts ... R069XY012CO – Saline Closed Depression

3 Site not in a closed depression

i. Loamy sand surface texture ... R069XY032CO – Sandy Salt Flat

ii. Sodium (usually slick spots and a pH \geq 8.5) and calcium carbonate ... R069XY033CO – Salt Flat

iii. Other salts ... R069XY037CO – Saline Overflow

B. Site not influenced by salts

1 On floodplains and floodplain steps ... R069XY031CO – Sandy Bottomland

II. Upland site that does not receive additional moisture (run-off landscape positions)

A. Slopes 10-45%

1 Soil very shallow, shallow, or moderately deep; depth less than 40 inches

i. Bedrock is sandstone ... R069XY053CO – Sandstone Breaks

ii. Bedrock is limestone ... R069XY058CO – Limestone Breaks

iii. Bedrock is shale ... R069XY048CO – Shale Breaks

iv. Bedrock is gypsum ... R069XY080CO – Gypsum Breaks

2 Soil very deep, depth is 60 inches or greater

i. Greater than 15% rock fragments on the surface and/or in the subsoil ... R069XY064CO – Gravel Breaks

ii. This site has blowouts ... R069XY021CO – Choppy Sands

iii. This site is on stabilized dunes ... R069XY019CO – Deep Sand

B. Slopes less than 10%

1 The soil depth is less than 20 inches to shale bedrock ... R069XY046CO – Shaly Plains

2 This site has calcium carbonate and other salts (indicator species: alkali sacaton) ... R069XY047CO – Alkaline Plains

3 This site has only calcium carbonate, no other salts

i. Sandy loam or loamy sand surface texture ... R069XY026CO – Sandy Plains

ii. Loam, silt loam, clay loam, or sandy clay loam surface texture with 18-35% clay in the particle size control section ... R069XY006CO – Loamy Plains

iii. Silty clay, clay loam, or sandy clay loam surface texture with greater than 35% clay in the particle control section ... R069XY042CO – Clayey Plains

Mesic. • A soil temperature regime where the mean annual soil temperature is 8°C (46°F) or higher but lower than 15°C (59°F) at 50 cm (20 inches) depth below the soil surface.

Sodium. • A type of salt – NaCl • Distinguishable by measuring soil pH. Soils high in sodium tend to be strongly alkaline with a pH of 8.6 or higher.

Soil Depth/Soil Depth Class. • Refers to the depth of the soil from the soil surface to the shallowest depth of a root-limiting layer. Usually bedrock.

Blowouts. • Saucer-, cup-, or trough-shaped depressions formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand, loose soil, or where protective vegetation is disturbed or destroyed; the adjoining accumulation of sand derived from the depression, where recognizable, is commonly included.

Calcium Carbonate . • A type of salt – CaCO₃ • Usually shows up as white spots in the soil profile. • Identifiable by adding drops of 10% Hydrochloric Acid (HCl) to the soil and observing for a fizzing reaction. The occurrence of a reaction (and the severity of the reaction) indicates the presence and relative amounts of calcium carbonate in the soil profile.

Other salts . • Not calcium carbonate, sodium, or gypsum. • Not normally visible in the soil profile, but will sometimes precipitate out on the soil surface and look like a white powder. • Can be detected by measuring soil electrical conductivity (EC).

Particle Size Control Section. • The aggregated soil horizons that represent the soil properties needed to determine the functional capacity of a soil. • There are many rules for defining or determining the particle size control section based on the soil properties, but it can generally be defined as the subsurface (B horizons) and the soil properties between 25 and 100 cm (10-40 inches).

Redoximorphic Features. • Features formed by the processes of reduction, translocation, and/or oxidation of Iron (Fe) and Manganese (Mn) oxides in soils. • Marked by black or rust-color patterns (redox concentrations) and/or gray or low-chroma color patterns (redox depletions) on soil peds/faces. • Formerly called mottles.

Rock Fragments. • Rock material in the soil that is > 2 mm in diameter. • Examples include gravels, cobbles, flags, channers, stones, and boulders. • Definition is meant to separate “soil” from “rock” material in a profile.

Salts. • The presence of soluble minerals in the soil that are high in base cations, such as Ca, K, and Na. • Visible salts are identified by crystals or soft masses (usually white, like table salt) on soil peds/soil surfaces. • Salts that are not visible can be detected by measuring soil electrical conductivity (EC). Soils with salts will have a high EC (> 4). • Three general “categories” as it relates to this ESD site key: 1) Calcium carbonate (CaCO₃) 2) Sodium (NaCl) 3) Other salts • Most of the soils in MLRA 69 have CaCO₃. Soils can have CaCO₃, sodium, gypsum, and/or other salts in the same soil profile. The definitions for the different salts are in this glossary.

Seasonally High-Water Table. • The depth of the water table during the wettest season in a year. • Generally determined by the depth where there is a dominance (>50%) of gray, low-chroma colors (redox depletions) in a soil profile.

Slickspots. • Areas having very smooth, puddled or (sodium and other salts) crusted, nearly impervious surfaces. The underlying material is dense and massive or columnar in structure. The pH is high (>8.5).

Soil Moisture Regime. • Range of soil moisture defined in terms of groundwater and the seasonal presence or absence of water to classify the ability of a soil to supply water to plants without irrigation. • Generally, has two parts: a moisture class, and a moisture subclass. • MLRA 69 has an Ustic Aridic soil moisture regime (10-14 inches MAP).

Soil Surface. • The upper limit of the soil. Generally, the soil surface is the top of the mineral soil. • The boundary between soil and either air, shallow water, live plants, or plant materials that have not begun to decompose (litter that is not decomposed).

Soil Temperature Regime. • Based on the mean annual soil temperature at a depth of 50 cm (20 inches) below the soil surface or to a root-limiting layer, whichever is shallower. • MLRA 69 has a Mesic soil temperature regime (48-54°F MAAT).

Stabilized Dunes. • Low mounds, ridges, banks or hills of loose, windblown, subaerially deposited granular material, either barren or covered and stabilized with vegetation, but retaining its characteristic shape. • Generally characterized by sand or loamy sand textures in the entire soil profile.

Ustic Aridic. • A soil moisture regime with an Aridic moisture class and an Ustic moisture subclass. o An aridic class = a moisture balance of arid climates and soils, the annual precipitation is less than the potential evaporation and transpiration, soil moisture status is normally less than field capacity, and irrigation is required for crop production. o An ustic class = more moisture is present in the soil than an aridic class, but still limited, at times suitable for plant growth. As a subclass, the ustic means that the aridic moisture class is somewhat wetter than a typical aridic moisture class.

Water table. • The occurrence/depth where the soil is saturated with water. Where “free water” occurs in the soil profile. • The soil may be saturated to the point of leaving water on your hands after squeezing a small hand sample.