Ecological site R034BY019UT
Semiwet Streambank (Narrowleaf cottonwood)

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Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rill occurrance is highly variable. This site is subject to frequent disturbance caused by seasonal flooding with its' associated soil scouring and deposition activities. Where rills are present they should be less than 1 inch deep, somewhat widely spaced (10 to 15 feet), and may be connected. They will often run the length of the streambank to a point of depositional interruption. An increase in rill development may be observed following large storm events or spring runoff periods. Rill development may also increase where the site is adjacent to other sites that produce large amounts of runoff (i.e. steeper sites, slickrock, etc.)

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2. **Presence of water flow patterns:** Water flow patterns are common. They may be stright and/or sinuous and wind around perennial plant bases. They may be long (15 to 25 feet), 1 to 3 feet wide, and spaced from 5 to 20 feet apart. They should become somewhat stable between flooding events. This site will often act as a soil filter and trap large amounts of sediment. These become ideal locations for the establishment of new riparian vegetation.

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3. **Number and height of erosional pedestals or terracettes:** Plants are expected to show some pedestalling where they are adjacent to water flow patterns. Exposed roots may be present where scouring has occurred. Terracettes are also typically present following flooding events. They often develop behind debris such as twigs and tree branches that act as dams within water flow patterns.

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is variable on this site, but should range from 25 to 40%. Bare ground openings should be

approximately 1 to 3 feet in size and may be connected as flow channels. Adapted rhizomatous riparian vegetation will often re-populate these opening between flood events.

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5. **Number of gullies and erosion associated with gullies:** None at site level. Widely scattered landscape level gully channels, however, are a normal component of desert environments. Where landscape gullies are present, they should be stable, partially vegetated on their sides and bottoms, with little evidence of head-cutting. Some slight increase in disturbance may be evident following significant weather events or when gullies convey considerable runoff from higher elevation rocky or naturally eroding areas.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** No evidence of wind generated soil movement. Wind caused blowouts and depositional areas are not present.

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter accumulates in place at the base of plant canopies between flood events. Following significant flood events, litter is expected to be transported downstream by water. Considerable accumulation is observed behind obstructions such as rocks and woody debris.

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** This sites soil stability rating is highly variable. A rating of 3 to 5 should occur on areas with stable soils, with a rating of 1 to 4 on depositional materials. The average should be in the 2 to 4 range. Surface textures will typically vary from sands and gravels in depositional areas to sandy loams, loams and clay loams on stable soils.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** (Ashley) Soil surface is typically 0 to 7 inches deep. Surface texture is a loam and structure is weak fine granular. The A-horizon color is pinkish gray (7.5YR 6/2). Soils have an Ochric epipedon that extends 30 inches into the soil profile. The A horizon is normally deeper and better developed on the more stable portions of the streambank. Use the specific information for the soil you are assessing found in the published soil survey to supplement this description.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Perennial vegetation helps anchor streambanks, reducing soil scouring and increasing deposition. Good spatial distribution of plants also slows runoff by obstructing surface flows, allowing time for increased infiltration. With the physiographic location of this site being in low lying areas, it often acts as a terminal accumulation site for runoff.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None. This site will normally have textural variation within its' soil profile. These should not be mistaken for compaction layers.

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant: Trees (Narrowleaf cottonwood) > Sprouting Shrubs (Coyote willow, skunkbush sumac) >> Perennial Grasses (slender wheatgrass, redtop) > Perennial grasslikes (arctic rush, scouring rush) > Perennial Forbs (goldenrod, spreading

dogbane).

Sub-dominant: Non-sprouting Shrubs (basin big sagebrush) > Rhizomatous Grasses (saltgrass, western wheatgrass) >> Perennial Forbs (hairy false goldenaster).

Other: Functional/structural groups may appropriately contain non-native species if their ecological function is the same as the native species in the reference state. Biological soil crust is variable in its' expression where present on this site and is measured as a component of ground cover. Perennial and annual forbs can be expected to vary widely in their expression in the plant community based upon departures from average growing conditions.

Additional: Disturbance regimes include seasonal flooding, insects, and infrequent fire. Temporal variability can be caused by fires, droughts, insects, etc. Spatial variability can be caused by periodic flooding, soil pH, and topography. Narrowleaf cottonwood appears to be more resistant to fire than Fremont cottonwood, and with repeated fire, may replace that species in the community where both occur. Following a recent disturbance such as drought, or flooding damage that removes woody vegetation, forbs and perennial grasses and grasslikes may dominate the community. If a disturbance has not occurred for an extended period of time, woody species may continue to increase on the site, reducing herbaceous species. Yearly variations in flow and large floods that scour vegetation and deposit sediment on floodplains are ideal microsites for willow and cottonwood seedlings. These conditions may reflect community phases within the reference state.

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** There should be no mortality or decadence in either trees, shrubs or grasses during years with average to above average precipitation. During severe (multi-year) droughts that affect groundwater levels, up to 15% of the trees and shrubs may die. Minor mortality of perennial grasses and grasslikes may also occur during these drought periods. There may be partial mortality of individual grasses, grasslikes and shrubs during less severe droughts.

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14. **Average percent litter cover (%) and depth (in):** Litter cover is highly variable on this site and ranges from 15 to 25%. Depth should be 1/2 inch thickness in the interspaces and up to 2.5 inches under perennial plant canopies.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Annual production in air-dry herbage should be approximately 600 to 800 pounds per acre on an average year. Production could vary from 300 to 1100 pounds per acre during drought or above-average years.

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** Tamarisk, knapweed species, Russian thistle, mustard species, filarie, other non-native annual forbs and grasses.

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17. **Perennial plant reproductive capability:** All perennial plants should have the ability to reproduce sexually or asexually in most years, except in drought years. Rhizomatous plants including rushes and sedges are often the first to re-establish following flooding, coyote willow and Fremont cottonwood seedlings and saplings should also be present.