

# Major Land Resource Area 058A

## Northern Rolling High Plains, Northern Part

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### Ecological site keys

#### MLRA 58A Determination Key

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##### I. MLRA wide provisional ecological site descriptions

##### II. Legacy 2004 Era RRU ecological site descriptions

- A. Sites in the western half of the MLRA with little bluestem and blue grama the only warm season species present in the area.
- B. Site located in the eastern half of the MLRA with a minor component of additional warm season species present in the area beyond blue grama and little bluestem.

#### MLRA 58A Provisional ESD Key

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##### I. Site Occurs in a 10-14" precipitation zone

##### i. Site Receives additional moisture

##### A. Soil Saline (EC ? 4 ) and/or Sodic (SAR ? 13) within surface 4" (10 cm)

1 Seasonal high water table 24-40" from ground surface; salt tolerant plants dominate site ... R058AY737MT –  
Saline Subirrigated 10-19

2 Seasonal high water table > 40" from ground surface; site regularly receives more than normal soil moisture because of run-in  
or stream overflow; salt tolerant plants dominate site ... R058AY713MT – Saline Overflow 10-14

##### B. Soil neither saline nor sodic [EC ? 4 and SAR ? 13 within surface 4" (10 cm)]

##### ii Seasonal high water table ? 40"

a. Seasonal high water table 24" to 40" (60-102 cm) ... R058AY738MT – Subirrigated 10-19

b. Seasonal high water table < 24" (60 cm) ... R058AY723MT – Wet Meadow 10-19

##### iii. Seasonal high water table > 40 " or sites receiving run-in moisture only

a. Site is located outside of the floodplain; Upland swales, coulees, and ephemeral drainageways ... R058AY720MT  
– Swale 10-14

##### b. Site is located inside the floodplain

1) Site Dominated by woody vegetation, typically lower stream terraces ... R058AY736MT – Riparian  
Woodland 10-19

2) Site dominated by herbaceous vegetation, typically upper stream terraces ... R058AY711MT –

Overflow 10-14

**ii. Site does not receive additional moisture**

**1 Soil saline and/or sodic within surface 20" (50 cm) or soils with natric or relic natric horizons.**

**i. Massive, subangular blocky, or prismatic structure; effective rooting depth > 8" (20 cm)**

a. Clay content ? 35% in surface mineral 4" (10 cm) [able to make a ribbon < 2" long] ... R058AY714MT –  
Saline Upland 10-14

b. Clay content > 35% in surface mineral 4" (10 cm) [able to make a ribbon > 2" long] ... R058AY706MT –  
Dense Clay Sodic 10-14

**ii. Columnar structure, abrupt root or water restrictive clay layer present within 8" (20 cm) of soil surface**

**a. Less than 4" (10cm) of surface over clay layer (evidenced by columnar structure)**

1) 1" (2.5 cm) or less of surface over clay layer (evidenced by columnar structure) ... R058AY712MT –  
Panspot 10-14

2) Greater than 1" (2.5 cm) of surface over clay layer (evidenced by columnar structure) ... R058AY721MT –  
Thin Claypan 10-14

b. Soil has 4 to 8" (10-20cm) of surface over clay layer (evidenced by columnar structure) ... R058AY703MT –  
Claypan 10-14

**2 Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 20" (50 cm)]**

**i. Coarse granular clay (typically acid shales), site contains sandy vegetation (e.g. Prairie sandreed) ... R058AY704MT –**  
Coarse Clay 10-14

**ii. Site not as above**

**a. Soils shallow to very shallow [< 20" (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

1) Soil very shallow [< 10" (25cm) deep to bedrock, lithic, or paralithic root restrictive layer] ... R058AY722MT  
– Very Shallow 10-14

**2) Soil shallow [10"-20" (25-50cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

a) Clay content ? 32% in surface mineral 4" (10 cm) [ribbon < 2" long] ... R058AY717MT – Shallow  
10-14

b) Clay content > 32% in surface mineral 4" (ribbon length > 2" long) ... R058AY718MT – Shallow  
Clay 10-14

**b. Soils moderately deep, deep, or very deep [≥ 20" (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**1) Soil skeletal within 20" (50 cm) of the surface [averages ? 35% rock fragments in the 10"-20" layer]**

**a) Soil sandy-skeletal**

(1) Soil sandy-skeletal within 10 inches of the surface ... R058AY707MT – Gravelly 10-14

(2) Soil sandy-skeletal within 10-20 inches of the surface ... R058AY719MT – Shallow to  
Gravel 10-14

**b) Soil loamy-skeletal ... R058AY709MT – Loamy Gravel 10-14**

2) Soil not skeletal in surface 20" (50 cm) [averages < 35% rock fragments in the 10"-20" layer]

a) Slope < 15%

(1) Fine sandy loam or coarser texture within surface mineral 4" ... R058AY715MT – Sandy 10-14

(2) Very fine sandy loam or finer texture within surface mineral 4"

(a) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long)

(1) Soil > 32% to 45% clay within surface mineral 4" ... R058AY701MT – Clayey 10-14

(2) Soil > 45% clay within surface mineral 2" ... R058AY705MT – Dense Clay Non-Sodic 10-14

(b) Clay content is ? 32% in surface mineral 4" ... R058AY708MT – Loamy 10-14

b) Slope ? 15%

(1) Fine sandy loam or coarser texture within surface mineral 4" ... R058AY716MT – Sandy Steep 10-14

(2) Very fine sandy loam or finer texture within surface mineral 4"

(a) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long) ...

R058AY702MT – Clayey Steep 10-14

(b) Clay content is ? 32% in surface mineral 4" ... R058AY710MT – Loamy Steep 10-14

II. Site Occurs in a 15-19" precipitation zone

A. Site Receives additional moisture

1 Soil Saline (EC > 4 ) and/or Sodic (SAR > 13) within surface 4" (10 cm)

i. Seasonal high water table 24-40" from ground surface; salt tolerant plants dominate site ... R058AY737MT – Saline Subirrigated 10-19

2 Soil neither saline nor sodic [EC < 4 and SAR < 13 within surface 4" (10 cm)]

i. Seasonal high water table ? 40 "

a. Seasonal high water table 24" to 40" (60-102 cm) ... R058AY738MT – Subirrigated 10-19

b. Seasonal high water table < 24" (60 cm) ... R058AY723MT – Wet Meadow 10-19

ii. Seasonal high water table > 40 " or sites receiving run-in moisture only

a. Site is located outside of the floodplain; Upland swales, coulees, and ephemeral drainageways ... R058AY726MT – Woody Draw 15-19

b. Site is located inside the floodplain

1) Site Dominated by woody vegetation, typically lower stream terraces ... R058AY736MT – Riparian Woodland 10-19

2) Site dominated by herbaceous vegetation, typically upper stream terraces ... R058AY729MT – Overflow 15-19

B. Site does not receive additional effective moisture

**1 Trees or evidence of tree cover (i.e. burned stumps, charcoal in soil profile) common. Typically, shallow to moderately deep soils formed from interbedded sedimentary rock. ... R058AY730MT – Ponderosa Pine 15-19**

**2 Grassland or shrubland; typically trees (or evidence of tree cover) rare or absent**

**i. Soils shallow to very shallow [ $< 20''$  (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**a. Soil very shallow [ $< 10''$  (25cm) deep to bedrock, lithic, or paralithic root restrictive layer] ... R058AY735MT – Very Shallow 15-19**

**b. Soil shallow [ $10''$ - $20''$  (25-50cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**1) Clay content  $\leq 32\%$  in surface mineral  $4''$  (10 cm) [ribbon  $< 2''$  long] ... R058AY733MT – Shallow 15-19**

**2) Clay content  $> 32\%$  in surface mineral  $4''$  (ribbon length  $> 2''$  long) ... R058AY734MT – Shallow Clay 15-19**

**ii. Soils moderately deep, deep, or very deep [ $\geq 20''$  (50 cm) deep to bedrock, lithic, or paralithic root restrictive layer]**

**a. Slope  $< 15\%$**

**1) Fine sandy loam or coarser texture within surface mineral  $4''$  ... R058AY731MT – Sandy 15-19**

**2) Very fine sandy loam or finer texture within surface mineral  $4''$**

**a) Clay content is  $> 32\%$  in surface mineral  $4''$  of mineral soil (ribbon  $> 2''$  long) ... R058AY724MT – Clayey 15-19**

**b) Clay content is  $\leq 32\%$  in surface mineral  $4''$  ... R058AY727MT – Loamy 15-19**

**b. Slope  $\geq 15\%$**

**1) Fine sandy loam or coarser texture within surface mineral  $4''$  ... R058AY732MT – Sandy Steep 15-19**

**2) Very fine sandy loam or finer texture within surface mineral  $4''$**

**a) Clay content is  $> 32\%$  in surface mineral  $4''$  of mineral soil (ribbon  $> 2''$  long) ... R058AY725MT – Clayey Steep 15-19**

**b) Clay content is  $\leq 32\%$  in surface mineral  $4''$  ... R058AY728MT – Loamy Steep 15-19**

## Montana Legacy RRU Central ESD Key

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### I. Site receives additional effective moisture

#### A. Soil saline (EC $> 4$ within surface $4''$ ) and water table $> 24''$

**1 Seasonal high water table  $24$ - $40''$  from ground surface; salt tolerant plants dominate site – Saline Subirrigated (SSb) ... R058AC619MT – Saline Subirrigated (SSb) RRU 58A-C 11-14" p.z.**

**2 Seasonal high water table  $\geq 40''$  from ground surface; salt tolerant plants dominate site; site regularly receives more than normal soil moisture because of run-in or stream overflow – Saline Overflow (SOv) ... R058AC618MT – Saline Overflow (SOv) RRU 58A-C 11-14" p.z.**

**B. Site not as above**

**1 Seasonal high water table ? 40" from ground surface; site regularly receives more than normal soil moisture because of run-in or stream overflow – Overflow (Ov) ... R058AC045MT – Overflow (Ov) RRU 58A-C 11-14" p.z.**

**2 Seasonal high water table < 40" from ground surface**

**i. Site located in the flood plain ... R058AC617MT – Riparian Subirrigated (RSb) RRU 58A-C 11-14" p.z.**

**ii. Site not located in flood plain**

**a. Seasonal high water table 24" to 40" – Subirrigated (Sb) ... R058AC044MT – Subirrigated (Sb) RRU 58A-C 11-14" p.z.**

**b. Seasonal high water table < 24" ... R058AC043MT – Wet Meadow (WM) RRU 58A-C 11-14" p.z.**

**II. Site does not receive additional effective moisture**

**A. Soil saline or saline-sodic within surface 20" or soils with natric or relic natric horizons.**

**1 No columnar structure; site dominated by salt tolerant plants – Saline Upland (SU) ... R058AC050MT – Saline Upland (SU) RRU 58A-C 11-14" p.z.**

**2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface ... R058AC054MT – Claypan (Cp) RRU 58A-C 11-14" p.z.**

**B. Site not as above**

**1 Coarse granular clay (typically acid shales), site contains sandy vegetation (e.g. Prairie sandreed) – Coarse Clay (CoC) ... R058AC614MT – Coarse Clay (CC) RRU 58A-C 11-14" p.z.**

**2 Site not as above**

**i. Soils shallow to very shallow (< 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**a. Soil very shallow (< 10" deep to bedrock, lithic, or paralithic root restrictive layer)**

**1) Bedrock is Shale ... R058AC052MT – Shale (Sh) RRU 58A-C 11-14" p.z.**

**2) Other ... R058AC058MT – Very Shallow (VSw) RRU 58A-C 11-14" p.z.**

**b. Soil shallow (10" – 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**1) Clay content < 32% in surface mineral 4" (able to make a ribbon < 2" long) ... R058AC057MT – Shallow (Sw) RRU 58A-C 11-14" p.z.**

**2) Clay content > 32% in surface mineral 4" (ribbon length > 2" long) – Shallow Clay (SwC) ... R058AC059MT – Shallow Clay (SwC) RRU 58A-C 11-14" p.z.**

**ii. Soils moderately deep, deep, or very deep (? 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**a. Soil skeletal to within 20" of soil surface (averages > 35% rock fragments in the 10"-20" layer)**

**1) Sandy-skeletal within 10-20" of soil surface & typically consists of gravels and/or cobbles ... R058AC194MT – Shallow to Gravel (SwGr) RRU 58A-C 11-14" p.z.**

**2) Sandy-skeletal within 10" of soil surface – Gravelly (Gr) ... R058AC055MT – Gravel (Gr) RRU 58A-C 11-14" p.z.**

**b. Site not as above**

**1) Slope < 15%**

a) **Coarse sandy loam to fine sandy loam texture within surface mineral 4"** ... R058AC042MT – Sandy (Sy) RRU 58A-C 11-14" p.z.

b) **Site not as above**

(1) **Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long)**

(a) **Soil 32% to 45% clay within surface mineral 4" – Clayey (Cy)** ... R058AC041MT – Clayey (Cy) RRU 58A-C 11-14" p.z.

(b) **Soil > 45% clay within surface mineral 2" – Dense Clay** ... R058AC053MT – Dense Clay (DC) RRU 58A-C 11-14" p.z.

(2) **Clay content is < 32% in surface mineral 4"** ... R058AC040MT – Silty (Si) RRU 58A-C 11-14" p.z.

**2) Slope ?15%**

a) **Mollic epipedon present** ... R058AC049MT – Silty-Steep (SiStp) RRU 58A-C 11-14" p.z.

b) **Mollic epipedon not present** ... R058AC616MT – Thin Breaks (TB) RRU 58A-C 11-14" p.z.

## Montana Legacy RRU East ESD Key

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### I. Site receives additional effective moisture

A. **Soil saline (EC > 4 within surface 4") and water table > 40"** ... R058AE012MT – Saline Lowland (SL) RRU 58A-E 10-14" p.z.

B. **Site not as above**

1 **Seasonal high water table ? 40" from ground surface; site regularly receives more than normal soil moisture because of run-in or stream overflow – Overflow (Ov)** ... R058AE007MT – Overflow (Ov) RRU 58A-E 10-14" p.z.

2 **Seasonal high water table < 40" from ground surface**

i. **Seasonal high water table < 24 "** ... R058AE009MT – Wet Meadow (WM) RRU 58A-E 10-14" p.z.

ii. **Seasonal high water table 24" to 40" – Subirrigated (Sb)** ... R058AE008MT – Subirrigated (Sb) RRU 58A-E 10-14" p.z.

### II. Site does not receive additional effective moisture

A. **Soil saline or saline-sodic within surface 20" or soils with natric or relic natric horizons.**

1 **No columnar structure**

i. **Site dominated by salt tolerant plants – Saline Upland (SU) ... R058AE011MT – Saline Upland (SU) RRU 58A-E 10-14" p.z.**

ii. **Site has a component of salt tolerant plants ... R058AE193MT – Silty-Saline (SiS) RRU 58A-E 10-14" p.z.**

**2 Columnar structure present, abrupt root or water restrictive clay layer present within 8" of soil surface ... R058AE013MT – Claypan (Cp) RRU 58A-E 10-14" p.z.**

**B. Site not as above**

**1 Coarse granular clay (typically acid shales), site contains sandy vegetation (e.g. Prairie sandreed) – Coarse Clay (CoC) ... R058AE192MT – Coarse Clay (CC) RRU 58A-E 10-14" p.z.**

**2 Site not as above**

**i. Soils shallow to very shallow (< 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**a. Soil very shallow (< 10" deep to bedrock, lithic, or paralithic root restrictive layer)**

**1) Bedrock shale ... R058AE015MT – Shale (Sh) RRU 58A-E 10-14" p.z.**

**2) Other ... R058AE017MT – Very Shallow (VSw) RRU 58A-E 10-14" p.z.**

**b. Soil shallow (10" – 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**1) Clay content < 32% in surface mineral 4" (able to make a ribbon < 2" long) ... R058AE019MT – Shallow (Sw) RRU 58A-E 10-14" p.z.**

**2) Clay content > 32% in surface mineral 4" (ribbon length > 2" long) – Shallow Clay (SwC) ... R058AE199MT – Shallow Clay (SwC) RRU 58A-E 10-14" p.z.**

**ii. Soils moderately deep, deep, or very deep (? 20" deep to bedrock, lithic, or paralithic root restrictive layer)**

**a. Sand or loamy sand texture within surface mineral 4" – Sands (Sa) ... R058AE018MT – Sands (Sa) RRU 58A-E 10-14" p.z.**

**b. Site not as above**

**1) Slope < 15%**

**a) Soil sandy-skeletal**

**(1) Sandy-skeletal within 10" of soil surface – Gravelly (Gr) ... R058AE016MT – Gravel (Gr) RRU 58A-E 10-14" p.z.**

**(2) Sandy-skeletal within 10-20" of soil surface & typically consists of gravels and/or cobbles ... R058AE191MT – Shallow to Gravel (SwGr) RRU 58A-E 10-14" p.z.**

**b) Site not as above**

**(1) Coarse sandy loam to fine sandy loam texture within surface mineral 4" ... R058AE003MT – Sandy (Sy) RRU 58A-E 10-14" p.z.**

**(2) Site not as above**

**(a) Clay content is > 32% in surface mineral 4" of mineral soil (ribbon > 2" long)**

**(1) Soil 32% to 45% clay within surface mineral 4" – Clayey (Cy) ... R058AE002MT – Clayey (Cy) RRU 58A-E 10-14" p.z.**

(2) Soil > 45% clay within surface mineral 2" – Dense Clay ... R058AE014MT – Dense Clay (DC) RRU 58A-E 10-14" p.z.

(b) Clay content is < 32% in surface mineral 4" ... R058AY001MT – Loamy (Lo) 10-14 P.Z.

**2) Slope ? 15%**

a) Coarse sandy loam to fine sandy loam texture within surface mineral 4" ... R058AE006MT – Sandy-Steep (SyStp) RRU 58A-E 10-14" p.z.

**b) Site not as above**

(1) Clay content is > 32% (ribbon > 2" long) in surface mineral 4" – Clayey Steep (CyStp) ... R058AE005MT – Clayey-Steep (CyStp) RRU 58A-E 10-14" p.z.

(2) Clay content is < 32% (ribbon < 2" long) in surface mineral 4" – Loamy Steep (LoStp) ... R058AE004MT – Silty-Steep (SiStp) RRU 58A-E 10-14" p.z.