

Major Land Resource Area 041X Madrean Archipelago

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Ecological site group keys

16-20" PZ within Land Resource Unit 41.AZ1, Mexican Oak-Pine Forest and Oak Savannah

I. Flooded (bottom position, flooded from the valley-side or over-bank)

- A. Soils with a perennial high water-table (3-15 ft.)
 - 1 Soils sandy and gravelly with redox features
 - 2 Soils loamy to clayey with redox features
- B. Soils with seasonal (summer) water table (3-15 ft.)
 - 1 Soils sandy loam to clay loam
- C. Soils without a high water table (3-15 ft.)
 - 1 Soils sandy
 - 2 Soils sandy loam to clay loam
 - 3 Soils clayey (vertic)

II. Not Flooded (upland position, receives only precipitation)

- A. Slopes less than 15%
 - 1 Soils calcareous throughout
 - a. Soils shallow (less than 20 inches deep)
 - 1 Soils with a lime cemented hardpan
 - b. Soils moderately deep to deep (30 to 60 inches)
 - 1 Soils with an argillic horizon
 - 2 Soils non calcareous in upper 10 inches
 - a. Soils shallow (less than 20 inches deep)
 - 1 Soils underlain by granite, schist, rhyolite bedrock
 - b. Soils moderately deep to deep (30 to 60 inches)
 - 1 Soils without an argillic horizon
 - a. Soils loamy fine sand to sandy loam
 - 2 Soils with an argillic horizon
 - a. Soils with sandy loam surface 4 in. or thicker
 - b. Soils with sandy loam surface less than 4 in.
 - c. Soils with clay loam surface (not vertic)
 - d. Soils with a clayey surface (vertic)
- B. Slopes greater than 15%
 - 1 Soils shallow (less than 20 inches deep)
 - a. Soils calcareous throughout
 - 1 Soils over limestone parent materials

b. Soils non calcareous

1 Soils over granite, schist, gneiss, rhyolite (acid igneous)

2 Soils over basalt, andesite, welded tuff (basic igneous)

2 Soils moderately deep and deep (30 to 60 inches)

a. Soils calcareous throughout

1 Soils dark colored in the surface 5 inches (10YR, 4/2)

b. Soils non calcareous in the upper 10 inches

1 Soils sandy loam to clay loam

2 Soils clayey

3 Add criteria

Talbot-Nauman Key

I. Additional water

A. Perennial water ... 041XESG09 – Riparian

B. Ephemeral water

1 Subsurface EC>4 ... 041XESG10 – Saline Bottoms

2 Subsurface EC <4

i. Sand >50% & Clay <25% for surface and subsurface ... 041XESG13 – Sandy Bottoms

ii. Sand <50% & Clay >25% for surface and subsurface ... 041XESG01 – Bottoms

II. Uplands

A. >75% bedrock outcrop ... 041XESG08 – Outcrops

B. <75% bedrock outcrop

1 Surface SAR >8, or Subsurface EC >8, or Surface EC >4 ... 041XESG11 – Saline Hills

2 Surface SAR <8, or Subsurface EC <8, or Surface EC <4

i. Gypsum >5% surface or >10% subsurface ... 041XESG06 – Gypsum

ii. Gypsum <5% surface and <10% subsurface

a. EC >1.5 surface or >2 subsurface ... 041XESG12 – Saline Uplands

b. EC <1.5 surface or <2 subsurface

1) slope >35% & >40% surface rock ... 041XESG02 – Breaks

2) slope <35% or <40% surface rock

a) Depth <30cm ... 041XESG16 – Very Shallow

b) depth: 30-55cm ... 041XESG15 – Shallow

c) depth >55cm

(1) Rock >30% surface or >30% subsurface ... 041XESG04 – Deep Rocky

(2) Rock <30% surface and <30% subsurface

(a) Clay >30% surface or >35% subsurface ... 041XESG03 – Clay Uplands

(b) Clay <30% surface and <35% subsurface

**(1) sand >75% or texture is Loamy Sand or sandier in surface & subsurface ... 041XESG14 –
Sandy Uplands**

(2) sand <75% or texture is Loamy Fine Sand or finer in surface & subsurface

**(a) Clay <20% or texture is Sandy Loam or sandier in surface ... 041XESG07 –
Loamy Uplands**

**(b) Clay >20% or texture is Fine Sandy Loam or finer in surface ... 041XESG05 – Finer
Uplands**

National Park Service

I. Additional water

A. Perennial water ... 041XESG09 – Riparian

B. Ephemeral water

1 Subsurface EC >4 - 040XESG10 Saline Bottoms

2 Subsurface EC <4

i. Sand >50% & clay <25% for surface and subsurface - 040XESG13 Sandy Bottoms

ii. Sand <50% or clay >25% for surface and subsurface - 040XESG01 Bottoms

II. Uplands

A. Surface SAR >8

1 Elevation - 2500-3700 ft ... 041XESG62 – Thornscrub Saline Hills

2 Elevation - 3700-4500 ft - 042BESG63 Semi-Desert Grassland Saline Hills

3 Elevation - 4500-6000 ft - 042BESG38 Madrean Woodland Saline Hills

4 Elevation - >6000 ft - 070BESG64 Temperate Forest Saline Hills

B. Surface SAR <8

1 Gypsum >5% surface or >10% subsurface

i. Elevation - 2500-3700 ft - 042AESG33 Gypsum Thornscrub

ii. Elevation - 3700-4500 ft - 042BESG55 Gypsum Semi-Desert Grassland

2 Gypsum <5% surface or <10% subsurface

i. Subsurface EC >8 or surface EC >4

a. Elevation - 2500-3700 ft ... 041XESG62 – Thornscrub Saline Hills

b. Elevation - 3700-4500 ft - 042BESG63 Semi-Desert Grassland Saline Hills

c. Elevation - 4500-6000 ft - 042BESG38 Madrean Woodland Saline Hills

d. Elevation - >6000 ft - 070BESG64 Temperate Forest Saline Hills

ii. Subsurface EC <8 and surface EC <4

a. EC >1.5 surface or >2 subsurface

1) Elevation - 2500-3700 ft ... 041XESG39 – Thornscrub Saline Uplands

- 2) Elevation - 3700-4500 ft ... 041XESG65 – Semi-Desert Grassland Saline Uplands
- 3) Elevation - 4500-6000 ft - 042BESG66 Madrean Woodland Saline Uplands
- 4) Elevation - >6000 ft - 070BESG67 Temperate Forest Saline Uplands
- b. EC <1.5 surface and <2 subsurface
 - 1) Slope >35% & >40% surface rock - 038XESG19 Marean Woodland Breaks
 - 2) Slope <35% or <40% surface rock
 - a) Depth <30cm
 - (1) Elevation - 2500-3700 ft - 040XESG46 Very Shallow Thornscrub
 - (2) Elevation - 3700-4500 ft - 042AESG47 Very Shallow Semi-Desert Grassland
 - (3) Elevation - 4500-6000 ft - 042AESG48 Very Shallow Madrean Woodland
 - (4) Elevation - >6000 ft - 070BESG49 Very Shallow Temperate Forest
 - b) Depth: 30-55cm
 - (1) Elevation - 2500-3700 ft - 040XESG42 Shallow Thornscrub
 - (2) Elevation - 3700-4500 ft - 042AESG43 Shallow Semi-Desert Grassland
 - (3) Elevation - 4500-6000 ft - 038XESG44 Shallow Madrean Woodland
 - (4) Elevation - >6000 ft - 070BESG45 Shallow Temperate Forest
 - c) Depth >55cm
 - (1) Rock >30% surface or >30% subsurface
 - (a) Elevation - 3700-4500 ft - 042AESG26 Deep Rocky Semi-Desert Grassland
 - (b) Elevation - 4500-6000 ft - 042BESG27 Deep Rocky Madrean Woodland
 - (2) Rock <30% surface and <30% subsurface
 - (a) Clay >30% surface or >35% subsurface
 - (1) Elevation - 2500-3700 ft - 040XESG21 Thornscrub Clay Uplands
 - (2) Elevation - 3700-4500 ft ... 041XESG22 – Semi-Desert Grassland Clay Uplands
 - (3) Elevation - 4500-6000 ft - 038XESG23 Madrean Woodland Clay Uplands
 - (4) Elevation - >6000 ft - 038XESG24 Temperate Forest Clay Uplands
 - (b) Clay <30% surface and <35% subsurface
 - (1) Sand >75% or texture is loamy sand or sandier in surface & subsurface
 - (a) Elevation - 2500-3700 ft - 042CESG40 Thornscrub Sandy Uplands
 - (b) Elevation - 3700-4500 ft - 042BESG41 Semi-Desert Grassland Sandy Uplands
 - (c) Elevation - 4500-6000 ft - 042BESG68 Madrean Woodland Sandy Uplands
 - (2) Sand <75% or texture is sandy loam or finer in surface & subsurface
 - (a) Clay <20% or texture is sandy loam or sandier in surface
 - (1) Elevation - 2500-3700 ft - 040XESG34 Thornscrub Loamy Uplands
 - (2) Elevation - 3700-4500 ft ... 041XESG35 – Semi-Desert Grassland Loamy Uplands
 - (3) Elevation - 4500-6000 ft - 042BESG36 Madrean Woodland Loamy Uplands
 - (4) Elevation - >6000 ft - 070BESG37 Temperate Forest Loamy Uplands
 - (b) Clay >20% or texture is finer than sandy loam in surface
 - (1) Elevation - 2500-3700 ft - 042AESG29 Thornscrub Finer Uplands

(2) **Elevation - 3700-4500 ft ... 041XESG30 – Semi-Desert Grassland
Finer Uplands**

(3) **Elevation - 4500-6000 ft - 070BESG31 Madrean Woodland Finer Uplands**

(4) **Elevation - >6000 ft - 070BESG32 Temperate Forest Finer Uplands**