

## Appendix G. Soils Information

This appendix presents supporting information on the soil types at Lake Berryessa. Seven soil map unit types and complexes and one miscellaneous land type have been mapped by the Natural Resource Conservation Service at the five recreation areas at Lake Berryessa (Lambert et al. 1978). The soil types include: Bressa-Dibble soils and Los Gatos loam found on old alluvial fans, terraces, and upland plateaus; Bressa-Dibble soils, Los Gatos loam, and Montara clay loam found on upland foot slopes, side slopes, and ridge tops; and Bressa-Dibble soils, Henneke gravelly loam, Los Gatos loam, and Montara clay loam situated on upland plateaus, ridge tops, side slopes, and foot slopes. Table F-1 summarizes information on the soil map units and identifies which recreation area(s) they are found in. Figures F-1 through F-5 at the end of this appendix display the soil map units at each recreation area. Descriptions of the soil map units are presented below.

### The Bressa Series

The Bressa series consists of well-drained soils on uplands. Slopes are 5–50 percent, and elevations are 400–2,000 feet above mean sea level (msl). These soils formed in material weathered from sandstone and shale. The plant cover is mostly annual grasses and scattered oaks. The mean annual precipitation is 25–35 inches. The mean annual air temperature is 62–64°F. Summers are hot and dry, and winters are cool and moist. The frost-free season is 220–260 days. Bressa series soils are used mostly for range. Some areas near Lake Berryessa are used for recreation. Bressa soils are mapped in combination with Dibble soils as complexes.

In a representative profile, the surface layer is pale brown, slightly acid silt loam, and 10 inches thick. The subsoil is light yellowish brown and yellowish brown, slightly acid and medium acid silty clay loam, and 23 inches thick. Weathered, soft sandstone is at a depth of 33 inches. Permeability is moderately slow. The effective rooting depth is 30–40 inches, and the available water capacity is 4–6 inches. A representative profile for Bressa silt loam is located in an area of Bressa-Dibble complex, 30 to 50 percent slopes, approximately 1 mile north of the intersection between Wooden Valley and Gordon Valley roads, about 100 feet north of the cattle guard on Gordon Valley Road, and 150 feet east of Gordon Valley Road on the hillside [NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 19 (projected), T. 6 N., R. 2 W].

The A horizon (i.e., the layer typically referred to as the topsoil) is light brownish gray, pale brown, or light yellowish brown (10YR 6/2, 6/3, and 6/4) silt loam, loam, or sandy loam. Reaction is slightly acid or neutral. The Bt horizon (i.e., the horizon that contains illuvial layer-lattice clays) is brown, dark yellowish brown, light yellowish brown, or yellowish brown (10YR 4/3, 4/4, 6/4, and 5/4) clay loam or silty clay loam. Reaction is medium acid to neutral. Depth to weathered sandstone or shale ranges from 30–40 inches. The Cr horizon (i.e., the horizon where lutites underlie soils) is weathered sandstone or shale. Soil material from the A and B horizons is mixed in places within the upper 6 inches of this horizon.

## Dibble Series

The Dibble series consists of well-drained soils on uplands. Slopes are 5–75 percent, and elevations are 200–2,000 feet above msl. These soils formed in material weathered from sandstone and shale. The vegetation is mostly annual grasses and scattered oaks. The mean annual precipitation is 25–35 inches, and the mean annual temperature is 62–64°F. Summers are hot and dry, and winters are cool and moist. The frost-free season is 220–260 days. Dibble soils are used mostly for range. Some areas in the vicinity of Lake Berryessa are used for recreation. The Dibble soils are mapped in combination with Bressa soils as complexes.

In a representative profile, the surface layer is pale brown and brown, slightly acid silty clay loam, and 9 inches thick. The subsoil is brown and yellowish brown, slightly acid silty clay and clay, and 25 inches thick. Weathered sandstone is at a depth of 34 inches. Permeability is slow. The effective rooting depth is 20–40 inches. Available water capacity is 5–7 inches. A representative profile for Dibble silty clay loam is located in an area of Bressa-Dibble complex, 15 to 30 percent slopes, approximately 6,000 feet west of the intersection of Browns Valley and Patrick roads and 900 feet north of Patrick Road within an ornamental eucalyptus orchard (T. 6 N., R. 5 W). The A horizon is light brownish gray, pale brown, brown, or yellowish brown (10YR 5/3, 6/2, 6/3, and 6/4) silt loam, loam, or silty clay loam. The Bt horizon is brown, dark yellowish brown, light yellowish brown or yellowish brown (10YR 5/3, 6/4, 5/4, and 4/4). Reaction is slightly acid or neutral. Depth to weathered sandstone is 20–40 inches.

## Henneke Series

The Henneke series consists of excessively drained soils on uplands. Slopes are 5–75 percent, and elevations are 500–4,000 feet above msl. These soils formed in material weathered from serpentine. The vegetation is scattered oak, digger pine, scrub oak, manzanita, buckbrush, toyon, McNabb cypress, and a few annual grasses. Chamise is the dominant plant growing in the Henneke series soils around the concession sites. The mean annual precipitation is 25–45 inches, and the mean annual temperature 59–62°F. Summers are hot and dry, and winters are cool and moist. The frost-free season is 220–260 days. Henneke soils are used for wildlife habitat, watershed, and limited grazing.

In a representative profile, the surface layer is reddish brown, neutral gravelly loam, and 7 inches thick. The subsoil is reddish brown, mildly alkaline very gravelly clay loam, and 8 inches thick. Fractured, greenish blue serpentine is at a depth of 15 inches. Permeability is moderately slow. The effective rooting depth is 10–20 inches. Available water capacity is 1–3 inches. A representative profile for Henneke gravelly loam, 30 to 75 percent slopes, is located approximately 200 feet north and 200 feet west of the intersection of Pope Canyon and Berryessa-Knoxville roads. The A1 horizon is dark brown, reddish gray, or reddish brown (7.5YR 4/2 and 5YR 4/3, 5/2, and 5/3) gravelly loam or gravelly clay loam. The gravel content ranges from 25–35 percent. Reaction is slightly acid or neutral. The B2t horizon ranges from dark brown, reddish yellow, reddish brown, dusky red, or red (5YR 7/6, 6/6, 4/3, 5/4, and 3/4 and 2.5YR 3/2, 5/6, and 4/6) clay loam or clay that has gravel, cobbles or stones. Rock fragments make up 35–50 percent of the horizon. Reaction is neutral to moderately alkaline. Depth to weathered serpentine ranges from 10–20 inches.

## Los Gatos Series

The Los Gatos series consists of well-drained soils on uplands. Slopes are 5–75 percent, and elevations are 400–2,500 feet above msl. These soils formed in material weathered from sandstone. The vegetation is mainly brush and a few scattered oaks and small areas of grass. The mean annual precipitation ranges from 30–40 inches, and the mean annual temperature is 54–57°F. Summers are warm and dry, and winters are cool and moist. The frost-free season is 220–250 days. Los Gatos soils are mainly used for wildlife habitat and watershed. A few areas are used for range.

In a representative profile, the surface layer is yellowish brown and brown, neutral loam, and 16 inches thick. The subsoil is brown, slightly acid loam and clay loam, and 20 inches thick. Massive sandstone is at a depth of 36 inches. Permeability is moderately slow. The effective rooting depth is 22–40 inches. Available water capacity is 3–8 inches. A representative profile for Los Gatos loam, 30 to 50 percent slopes, is located approximately 800 feet east of the Mahogany Bay concession site off State Route 128 (NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub> sec. 31, T. 8 N., R. 2 W). The A horizon is yellowish brown, grayish brown, or brown (10YR 5/4, 5/3, and 5/2 and 7.5YR 5/2, 4/2) loam, gravelly loam, clay loam, or gravelly clay loam. The gravel content is 0–20 percent. Reaction is slightly acid or neutral. The Bt horizon is mainly brown, reddish brown, or yellowish red (7.5YR 5/4 and 5YR 5/3, 4/3, 5/6, and 4/6) clay loam, but it is gravelly clay loam in some profiles. Reaction is medium acid to neutral. Depth to sandstone is 20–40 inches.

## Montara Series

The Montara series consists of well-drained soils on uplands. Slopes are 5–50 percent, and elevations are 500–1,500 feet above msl. These soils formed in material weathered from serpentine. The vegetation consists mainly of annual grasses and a few foothill pines. The mean annual precipitation is 25–45 inches, and the mean annual temperature is 59–62°F. Summers are hot and dry, and winters are cool and moist. The frost-free season is 240–260 days. Montara soils are used mostly for wildlife habitat and watershed. Areas of Montara soils that adjoin areas of other soils that are in pasture are used for grazing.

In a representative profile the surface layer is grayish brown and dark grayish brown mildly alkaline clay loam underlain at a depth of 12 inches by serpentine. Permeability is moderately slow. The effective rooting depth is 10–15 inches. Available water capacity is 2–2.5 inches. A representative profile for Montara clay loam, 5 to 30 percent slopes, is located approximately 0.25 mile northwest of the intersection of Snell Valley and Spanish Trail roads (SE<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub> sec. 22, T 10 N., R. 5 W). The A horizon is gray, grayish brown, or dark grayish brown (10YR 5/2, 4/2, and 5/1 and 2.5Y 5/2, 4/2). Reaction is neutral to moderately alkaline. Depth to bedrock is 10–15 inches. Gravel and cobbles that are mainly serpentine make up 5–10 percent of the profile.

**Table F-1. Summary of Soil Map Units at the Five Recreation Areas at Lake Berryessa**

Map Symbol	Map Unit Name	Hydric (Y/N)	General Description	Recreation Area(s)
113	Bressa-Dibble complex (15-30% slopes)	N	This complex consists of moderately steep soils on narrow ridgetops that are on uplands. These soils formed in material weathered from sandstone and shale. Runoff is medium. The hazard of erosion is slight to moderate.	Steele Canyon
114	Bressa-Dibble complex (30-50% slopes)	N	This complex consists of steep soils on uplands at an elevation of 1,000 to 2,000 feet. These soils formed in material weathered from sandstone and shale. Runoff is rapid. The hazard of erosion is moderate to severe.	Putah Canyon, Spanish Flat, Steele Canyon
154	Henneke gravelly loam	N	This series consists of excessively drained soils on uplands. Slope is 5 to 75 percent. Elevation is 500 to 4,000 feet. This steep and very steep soil is on uplands. Runoff is rapid to very rapid. The hazard of erosion is moderate to high. This soil is very low in fertility.	Putah Canyon, Monticello Shores
158	Los Gatos loam (5-30% slopes)	N	This series consists of well-drained soils on uplands. This moderately sloping to moderately steep soil is on toe slopes and side slopes on uplands. Elevation is 400 to 2,500 feet. These soils formed in material weathered from sandstone. Runoff is medium. The hazard of erosion is slight.	Putah Canyon, Monticello Shores
159	Los Gatos loam (30-50% slopes)	N	This series consists of well-drained soils on uplands. Elevation is 400 to 2,500 feet. These soils formed in material weathered from sandstone. This steep soil is on uplands. Runoff is rapid. The hazard of erosion is moderate.	Monticello Shores, Berryessa Point
166	Montara clay loam (5-30% slopes)	N	This series consists of well-drained soils on uplands. Elevation is 500 to 1,500 feet. These soils formed in material weathered from serpentine. This steep soil is on uplands. Runoff is rapid. The hazard of erosion is high.	Putah Canyon
167	Montara clay loam (30-50% slopes)	N	This series consists of well-drained soils on uplands. Elevation is 500 to 1,500 feet. These soils formed in material weathered from serpentine. This steep soil is on uplands. Runoff is rapid. The hazard of erosion is high.	Monticello Shores, Berryessa Point, Spanish Flat
183	Water	N/A	Land type, not a mapped soil.	All

Source: Lambert et al. 1978

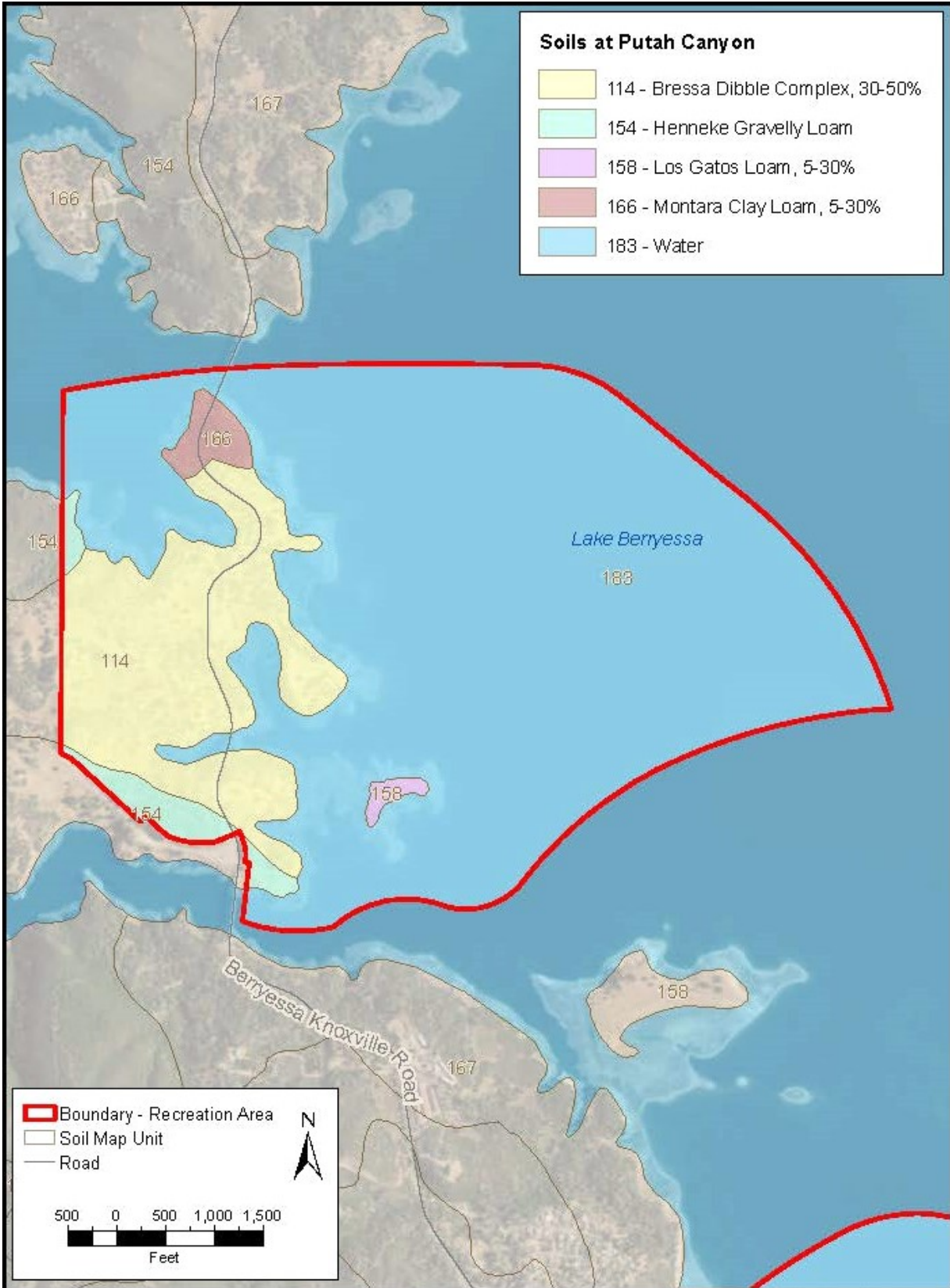


Figure G-1. Putah Canyon - Soils

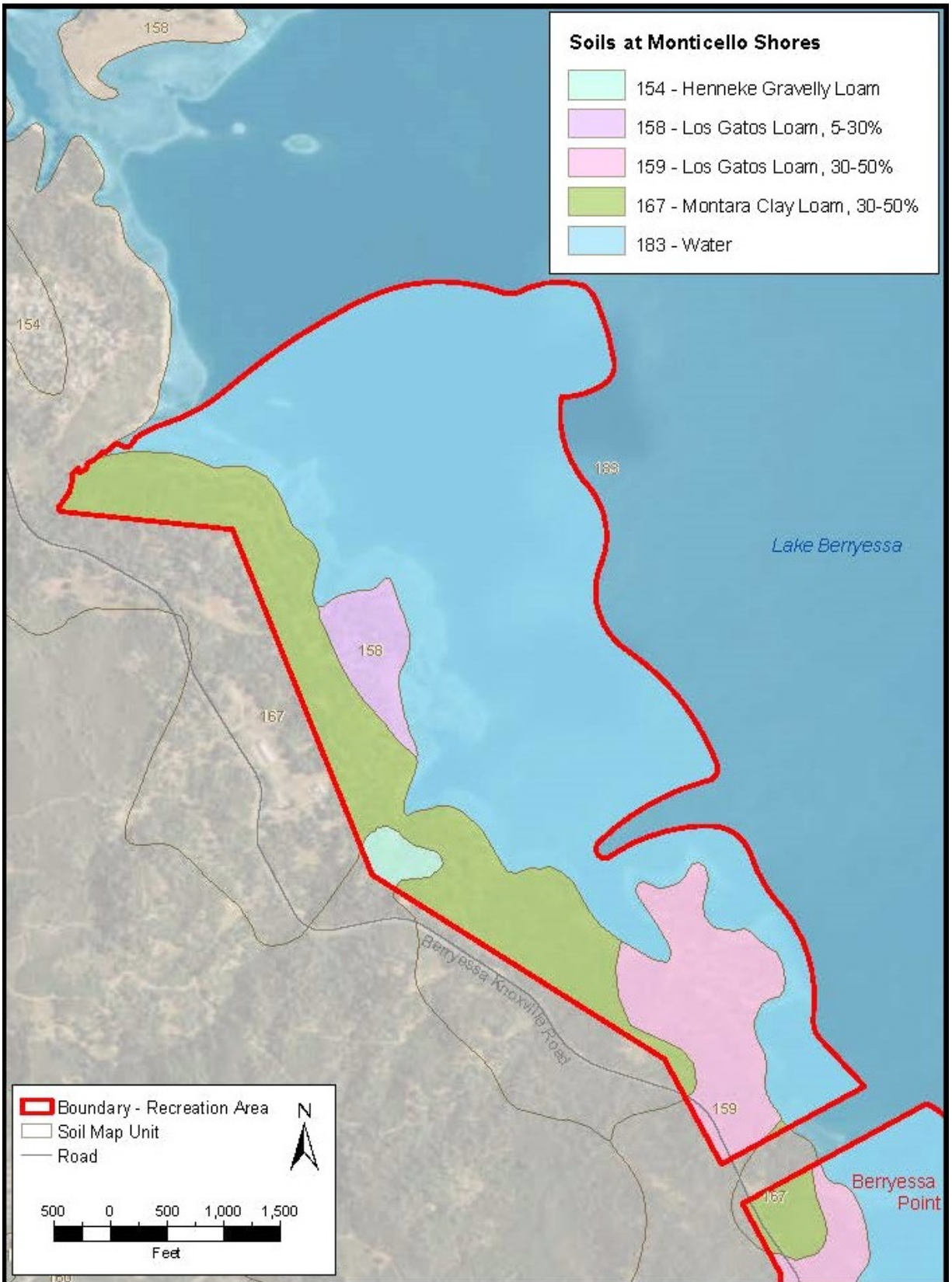


Figure G-2. Monticello Shores - Soils



Figure G-3. Berryessa Point - Soils

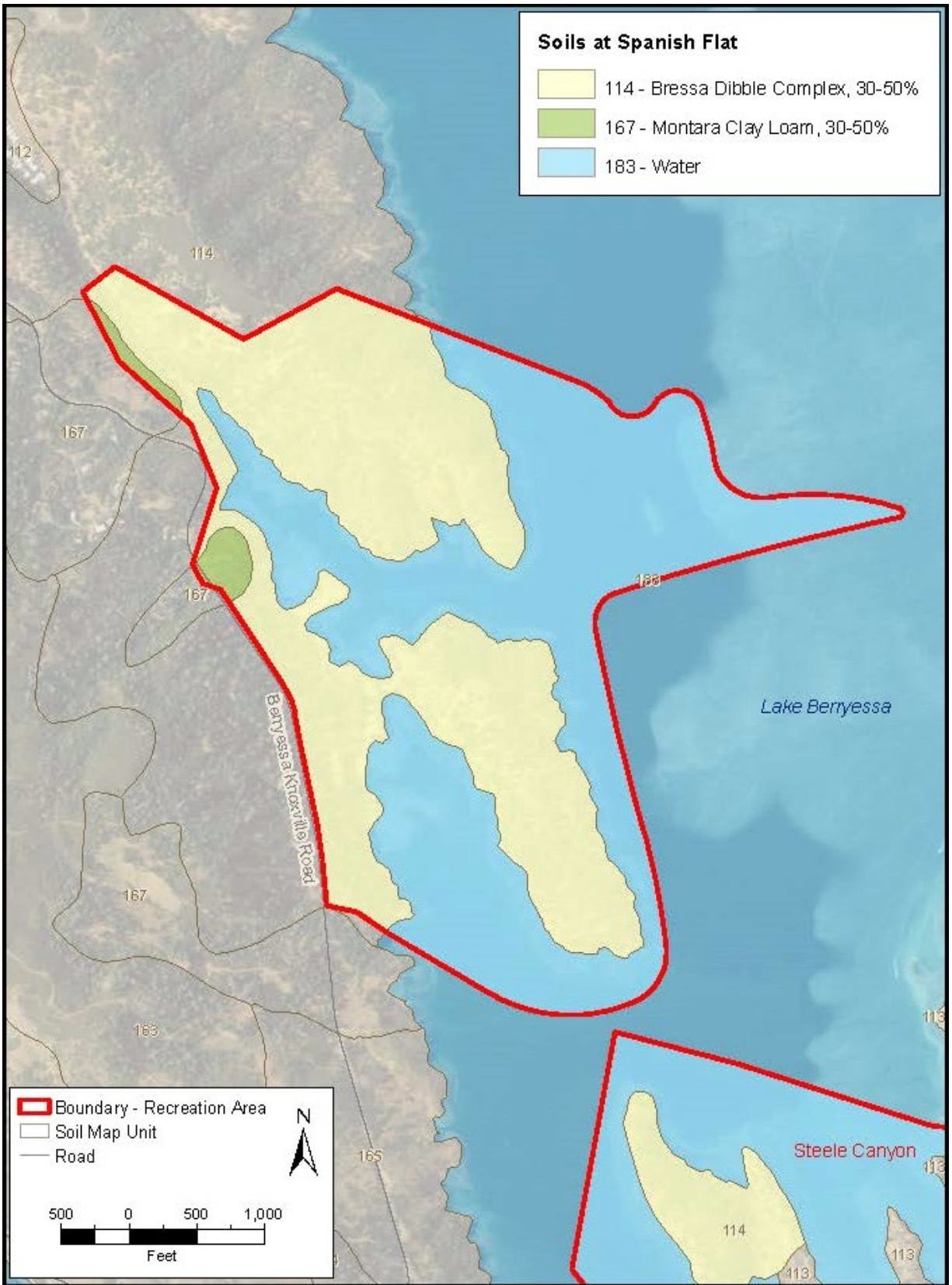


Figure G-4. Spanish Flat - Soils



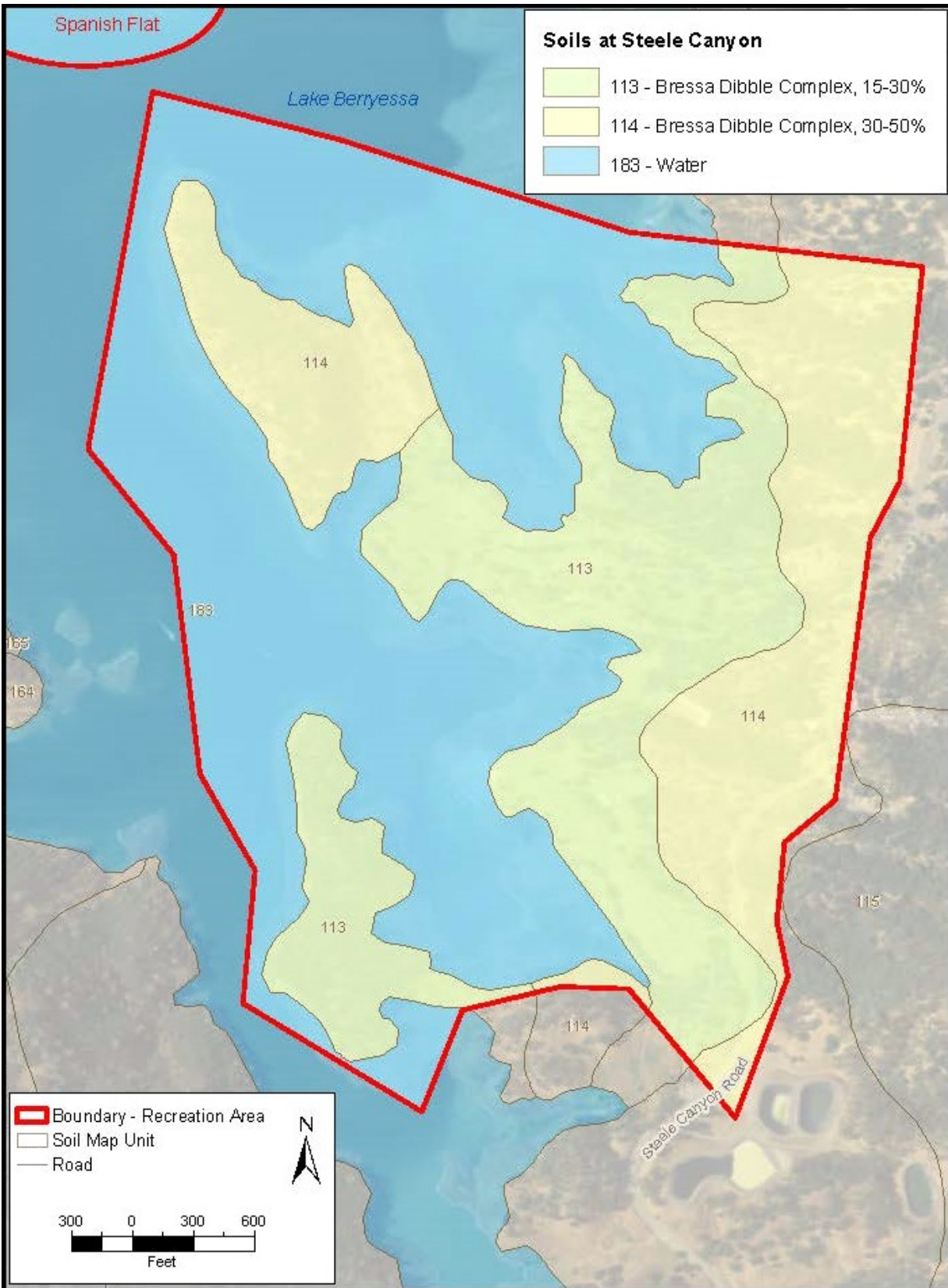


Figure G-5. Steele Canyon - Soils