

fir, cottonwood, bigleaf maple, Oregon white oak, ash, and an understory of vine maple, wild blackberry, vines, shrubs, and grasses. Cloquato soils are associated with Chehalis and Newberg soils.

In a typical profile, the surface layer is dark-brown silt loam about 9 inches thick. The subsoil, which is also dark brown silt loam, is about 56 inches thick. The substratum is dark-brown fine sandy loam that extends to a depth of 83 inches or more.

Cloquato soils that are not irrigated are used mainly for small grains, orchards, pasture, hay, and grass grown for seed. When irrigated, these soils are used for all the crops commonly grown in the survey area.

Cloquato silt loam (Cm).-This is the only Cloquato soil mapped in the survey area. It occupies large areas along the Willamette, Pudding, and Santiam Rivers and along Butte Creek.1 Representative profile (E1/2SE1/4 sec. 20, T. 6 S., R.

Ap-0 to 9 inches, dark-brown (10YR 3/3) silt loam, brown (10YR 5/3) when dry; weak, medium and coarse, subangular blocky structure; friable, slightly hard, slightly sticky and slightly plastic; many roots; many, fine and very fine, tubular pores; medium acid (pH 6.0); clear, smooth boundary. (6 to 10 inches thick.)

B2-9 to 41 inches, dark-brown (10YR 3/3) silt loam, brown (10YR 5/3) when dry; weak, medium, subangular blocky structure; friable, slightly hard, slightly sticky and slightly plastic; common roots; many, very fine, tubular pores; slightly acid (pH 6.2); gradual, smooth boundary. (15 to 35 inches thick.)

B3-41 to 65 inches, dark-brown (10YR 4/3) silt loam, pale brown (10YR 6/3) when dry; very weak, coarse, subangular blocky structure; very friable, slightly hard, slightly sticky and nonplastic; few roots; many, fine, tubular pores; slightly acid (pH 6.4); clear, smooth boundary. (0 to 25 inches thick.)

C-65 to 83 inches, dark-brown (10YR 4/3) fine sandy loam, pale brown (10YR 6/3) when dry; massive; very friable, soft, nonsticky and nonplastic; no roots; many fine pores; slightly acid (pH 6.4).

Texture of the B2 horizon is dominantly silt loam, but this horizon contains thin layers of sandy material in places. This sandy material is generally below a depth of 30 inches.

Included with this soil in mapping were small areas of Chehalis, Newberg, and Camas soils, and small areas in which the substratum is gravelly. Also included were areas of steeper soils that have short slopes and that are adjacent to sloughs and old stream channels. The included areas make up from 10 to 15 percent of the acreage in this mapping unit.

The available water capacity is 12 to 14 inches. Permeability is moderate, and fertility is high. Runoff is slow, but the hazard of erosion is slight to moderate as the result of periodic overflow. Overflow generally occurs about once in 3 or 4 years, but it occurs two or more times in some years. Roots can penetrate to a depth of 5 feet or more. Workability is very good.

This soil is used mainly for small grains, orchards, pasture, hay, and grass grown for seed. When irrigated, it is used for all the crops commonly grown in the survey area.

This soil is well suited to all the commonly grown crops. Floodwaters leave debris, and they can erode deep holes in orchards and in areas occupied by other permanent crops. (Capability unit IIw-3; not placed in a woodland suitability group).

Concord Series

The Concord series consists of poorly drained soils that have formed in alluvium of mixed mineralogy. These soils are on broad valley terraces, in slightly concave depressions and in drainageways. They have slopes of 0 to 2 percent. Elevations range from 125 to 350 feet. The average annual precipitation is 40 to 45 inches, the average annual air temperature is 52° to 54° F., and the length of the frost-free season is 200 to 210 days. In areas that are not cultivated, the vegetation is mainly rushes, sedges, wild blackberry, hazel, annual grasses, and ash trees. Concord soils are associated with Amity and Dayton soils.

In a typical profile, the surface layer is very dark grayish-brown silt loam about 6 inches thick. The subsurface layer is mottled dark-gray silt loam about 9 inches thick. Just below the subsurface layer is a layer of mottled gray and dark-gray silty clay about 4 inches thick. The subsoil is about 10 inches thick. It consists of mottled grayish-brown silty clay in the upper part and of mottled dark grayish-brown silty clay in the lower part. The substratum of mottled dark grayish-brown silt loam extends to a depth of 60 inches or more.

Concord soils that are neither drained nor irrigated are used mainly for cereal grains, pasture, hay, and grass grown for seed. When irrigated, the drained areas are used mainly for berries and vegetables.

Concord silt loam (Co).-This is the only soil of the Concord series mapped in the survey area. It occupies narrow strips along and at the heads of drainageways, and it is also in depressions on terraces. In most places the slope is less than 2 percent.

Representative profile at the eastern edge of the Baldock Freeway, 200 feet north of the overpass (NE1/4NE1/4NW1/4 sec. 33, T. 5 S., R. 2 W.)

Ap-0 to 6 inches, very dark grayish-brown (10YR 3/2) silt loam, light brownish gray (10YR 6/2) when dry; moderate, fine, subangular blocky structure breaking to moderate, fine, granular structure; friable, hard, sticky and plastic; abundant fine roots; many interstitial pores and wormholes; common, fine, brown concretions; medium acid (pH 6.0); abrupt, smooth boundary. (5 to 7 inches thick.)

A21-6 to 9 inches, dark-gray (10YR 4/1) silt loam, gray (10YR 6/1) when dry; common, fine, distinct, dark brown (7.5YR 4/2) mottles; moderate, medium, subangular blocky structure; friable, hard, sticky and plastic; abundant fine roots; many, very fine and few, fine, tubular pores; common, fine, very dark brown concretions; medium acid (pH 5.8); clear, smooth boundary. (1 to 6 inches thick.)

A22-9 to 15 inches, dark-gray (10YR 4/1) heavy silt loam, light gray (10YR 7/1) when dry; common, fine, distinct, dark-brown (7.5YR 4/4) mottles; weak, medium, prismatic structure breaking to moderate, medium, subangular blocky structure; friable, hard, sticky and plastic; few fine roots; many, very fine and common, fine, tubular pores; common, fine, very dark brown concretions; medium acid (pH 6.0); clear, smooth boundary. (4 to 9 inches thick.)

A&B-15 to 19 inches, gray (10YR 5/1) and dark-gray (10YR 4/1) light silty clay, light gray (10YR 7/1 and 10YR 6/1) when dry; darker colors in ped interiors; common, fine, distinct, dark-brown (7.5YR 4/4) mottles; weak, medium, prismatic structure breaking to moderate, medium, subangular blocky structure; friable, hard, sticky and plastic; few fine roots; many, very fine, tubular pores; many, fine, very dark brown concretions; slightly acid (pH 6.2); clear, smooth boundary. (2 to 7 inches thick.)

IIB2t-19 to 24 inches, grayish-brown (2.5Y 5/2) heavy silty clay, light brownish gray (2.5Y 6/2) when dry; common, fine, distinct, yellowish-brown (10YR 5/6) mottles; strong, fine, prismatic structure breaking to strong, medium and fine, angular blocky structure; firm, extremely hard, very sticky and very plastic; very few roots; many, very fine and few, fine and medium, tubular pores; few thin and moderately thick clay films on ped surfaces and in pores; many, fine, very dark brown and few black concretions; slightly acid (pH 6.4); clear, wavy boundary. (4 to 12 inches thick.)

IIB3t 24 to 29 inches, dark grayish-brown (2.5Y 4/2) silty clay, light brownish gray (2.5Y 6/2) when dry; many, fine, distinct, dark yellowish-brown (10YR 4/4) mottles; massive: firm, very hard, sticky and plastic; few fine roots; common fine pores; common moderately thick clay films along lines of weakness, and few clay films in pores; few, fine, dark-brown and black concretions; neutral (pH 6.6); gradual, smooth boundary. (3 to 9 inches thick.)

IIIC-29 to 60 inches, dark grayish-brown (2.5Y 4/2) silt loam, light gray (2.5Y 7/2) when dry; many, medium, distinct, dark yellowish-brown (10YR 4/4) mottles; friable, hard, sticky and plastic; massive; common, very fine, tubular pores; few black stains; neutral (pH 6.6).

The Ap horizon is dominantly silt loam, but the texture ranges to silty clay loam. In places texture of the IIB2t horizon is clay. Soil reaction ranges from medium acid in the A horizon to slightly acid and neutral in the B and C horizons.

Included with this soil in mapping were small areas of Dayton soils. These included soils make up from 5 to 10 percent of the acreage in the mapping unit.

The available water capacity ranges from 9 to 12 inches. Permeability is slow, and fertility is low. Runoff is slow, and ponding occurs in some areas, especially in depressions. The hazard of erosion is slight. Depth to which roots can penetrate is restricted by the silty clay in the subsoil. It is also restricted by wetness, caused by the poor drainage and by the seasonal high water table. This soil is easily worked, but it tends to compact if it is cultivated when too moist.

Areas of this soil that are neither drained nor irrigated are used for spring small grains, pasture, hay, and grass grown for seed. When irrigated, drained areas are used for berries and vegetables. This soil is well suited to vegetables, small grains, pasture, and hay. (Capability unit IIIw-2; not placed in a woodland suitability group)

Courtney Series

The Courtney series consists of poorly drained soils that have formed in alluvial deposits of different ages. These soils are on gravelly alluvial terraces, where they occur in shallow depressions and in drainageways. Slopes range from 0 to 2 percent, and elevations range from 175 to 650 feet. The average annual precipitation is 40 to 45 inches, the average annual air temperature is 52° to 54° F., and the length of the frost-free season is 190 to 210 days. In areas that are not cultivated, the vegetation is mainly ash, vine maple, hazel, wild rose, blackberry, rushes, sedges, and annual and perennial grasses. Courtney soils are associated with Salem and Clackamas soils.

In a typical profile, the surface layer is about 12 inches thick, and it consists of mottled, black gravelly silty clay loam in the upper part and of mottled, very dark gray gravelly silty clay loam in the lower part. The subsoil is mottled dark-gray gravelly clay about 12 inches thick.

The substratum consists of a layer of dark grayish-brown very gravelly clay loam, about 25 inches thick, that grades to mottled, dark-brown very gravelly sand, which extends to a depth of 57 inches or more.

Undrained areas of Courtney soils are used mainly for pasture, hay, and grass grown for seed. The drained areas are used for these crops and also for small grains.

Courtney gravelly silty clay loam (Cu).-This soil is on terraces between Stayton and Salem. It is in depressions and in narrow drainageways. This is the only soil of the Courtney series mapped in the survey area.

Representative profile (NW1/4SE1/4 sec. 6, T. 8 S., R. 2 W.).

A11-0 to 4 inches, black (10YR 2/1) gravelly silty clay loam, dark gray (10YR. 4/1) when dry; few, fine, distinct, dark-brown (7.5YR 4/4) mottles; strong, medium and fine, subangular blocky structure; friable, hard, sticky and plastic; many roots; many, very fine and fine, interstitial pores; iron stains in root channels; 20 to 25 percent coarse pebbles; strongly acid (pH 5.4); clear, smooth boundary. (2 to 6 inches thick.)

A12-4 to 12 inches, very dark gray (7.5YR 3/0) gravelly silty clay loam, very dark gray (10YR 3/1) when crushed and dark gray (10YR 4/1) when dry; common, medium, distinct, strong-brown (7.5YR 4/4) mottles; strong, medium and fine, subangular blocky structure; friable, hard, sticky and plastic; many roots; many, very fine, tubular pores; iron stains in root channels; 30 percent pebbles; medium acid (pH 5.8); abrupt, smooth boundary. (7 to 10 inches thick.)

IIB2t-12 to 24 inches, dark-gray (10YR 4/1) gravelly clay, gray (10YR 5/1) when dry; few, fine, distinct mottles; weak, coarse, prismatic structure; firm, very hard, very sticky and very plastic; few roots; 30 percent pebbles and a few cobblestones; slightly acid (pH 6.4); clear, smooth boundary, (10 to 20 inches thick.)

IIIC1-24 to 49 inches, dark grayish-brown (10YR 4/2) very gravelly clay loam, gray (10YR 5/1) when dry; massive; firm, hard, sticky and plastic; iron stains; 85 percent pebbles; few cobblestones; slightly acid (pH 6.2); abrupt, smooth boundary. (24 to 48 inches thick.)

IVC2-49 to 57 inches, mottled dark-brown (7.5YR 3/2) very gravelly sand, strong brown (7.5YR 5/6) when moist; massive; friable, soft, nonsticky and nonplastic; many, medium, interstitial pores; neutral (pH 6.7).

Color of the A horizon ranges from black or very dark brown to very dark gray, and texture of that horizon ranges from silty clay loam or clay loam to silty clay. In some places the B horizon is very dark gray, and it is gravelly silty clay in some areas. The amount of gravel in the B horizon ranges from 20 to 30 percent. Depth to the very gravelly C horizon ranges from 24 to 36 inches. The C horizon is stratified. Both the thickness of the different layers in the C horizon and the amount of gravel and cobblestones in that horizon are highly variable.

Included with this soil in mapping were small areas that have a surface layer of very dark gray silt loam.

Above the clay subsoil, the available water capacity is less than 3 inches. Permeability is very slow, and fertility is moderate. Runoff is ponded or very slow, and the hazard of erosion is slight. The depth to which roots can penetrate is restricted by the claypan in the subsoil, but it ranges from 12 to 16 inches. Workability is fair.

Undrained areas of this soil are used for pasture, hay, and grass grown for seed. The drained areas are used for these crops and also for spring small grains and winter wheat. When irrigated, the drained areas are used for sweet corn, berries, and beans. This soil is used for these irrigated crops because it occupies only small areas and extends through and is managed like the adjacent Sifton, Salem, and Clackamas soils. Courtney soils are poorly