

are defined in the Glossary. The acreage and proportionate extent of the mapping units are shown in table 7. The location of the soils in the Marion County Area is shown on the detailed soil map at the back of this survey.

## Abiqua Series

The Abiqua series consists of well-drained soils that have formed in alluvium. These soils have slopes of 0 to 5 percent. They occur on low foothills, along small streams and in drainageways, at elevations of 250 to 1,000 feet. The average annual precipitation is 40 to 60 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 Douglas-fir, native grasses, and shrubs. Abiqua soils are associated with McAlpin and Waldo soils.

In a typical profile, the surface layer is very dark brown silty clay loam about 6 inches thick. The subsurface layer is also very dark brown silty clay loam and is about 15 inches thick. The upper part of the subsoil is dark reddish-brown silty clay that extends to a depth of about 54 inches. The lower part of the subsoil is dark-brown silty clay loam that extends to a depth of 72 inches or more.

The Abiqua soils are used mainly for small grains, grass grown for seed, orchards, and pastures. When irrigated, they are used for other crops.

**Abiqua silty clay loam, 0 to 3 percent slopes (AbA).** This soil is along streams and in drainageways of the Salem and Waldo Hills. The areas are small.

Representative profile 85 feet east and 60 feet south of road intersection (in the corner of SW1/48W1/4NE1/4 sec. 2, T. 9 S., R. 1 W.)

Ap-0 to 6 inches, very dark brown (10YR 2/2) silty clay loam, dark brown (7.5YR 3/2) when dry; moderate, very fine, granular structure; friable, hard, slightly plastic and slightly sticky; many roots; many interstitial pores; medium acid (pH 5.8); abrupt, smooth boundary. (5 to 7 inches thick.)

A3-6 to 21 inches, very dark brown (10YR 2/2) silty clay loam, dark brown (7.5YR 3/2) when dry; moderate, fine and very fine, subangular blocky structure; firm, hard, plastic and sticky; many roots; many, fine, tubular pores; thin, patchy, darker colored coatings on ped surfaces; medium acid (pH 5.6); clear, smooth boundary. (13 to 17 inches thick.)

B21-21 to 36 inches, dark reddish-brown (5YR 2/2) silty clay, dark reddish brown (5YR 3/4) when dry; weak, prismatic structure breaking to moderate, medium, subangular blocky structure; firm, very hard, very plastic and very sticky; common roots; many, fine and very fine, tubular pores; thin, continuous, slightly darker colored coatings on ped surfaces; strongly acid (pH 5.4); diffuse, smooth boundary. (10 to 20 inches thick.)

B22-36 to 54 inches, dark reddish-brown (5YR 3/2) silty clay, reddish brown (5YR 4/4) when dry; very weak, prismatic structure breaking to moderate, medium, subangular blocky structure; firm, very hard, very plastic and very sticky; few roots; many, fine and very fine, tubular pores; thin, continuous, dark reddish-brown (5YR 3/4) coatings on ped surfaces when dry; common, fine and very fine fragments of weathered rock; strongly acid (pH 5.3); diffuse, smooth boundary. (13 to 23 inches thick.)

B3-54 to 72 inches, dark-brown (7.5YR 3/2) silty clay loam, reddish brown (5YR 4/3) when dry; moderate, medium, subangular blocky structure; firm, hard, plastic and sticky; very few roots; many, fine and very fine, tubular pores; many fine and very fine fragments of weathered rock; strongly acid (pH 5.3).

Color of the A horizon is dark brown or very dark brown, and texture of that horizon ranges from silt loam to silty clay loam. Color of the B horizon ranges from dark brown to dark reddish brown. Texture of the B horizon ranges from silty clay to clay, except that the B3 horizon is silty clay loam in many places. In some areas a few angular pebbles are scattered throughout the profile.

Included with this soil in mapping were small areas that contain a layer of gravel below a depth of 40 inches. Also included were small areas of McAlpin and Waldo soils.

The available water capacity is 10 to 11 inches, permeability is moderately slow, and fertility is moderate. Runoff is slow, and the hazard of erosion is only slight. Where additions of organic matter are regularly supplied, workability of this soil is good. Depth to which roots can penetrate is not restricted.

This soil is used mainly for small grains, grass grown for seed, orchards, and pasture, but small areas are still in Douglas-fir. When this soil is irrigated, it is used for most of the crops commonly grown in the survey area. It is well suited to most crops, but it is not well suited to potatoes and carrots. (Capability unit I-1; not placed in a woodland suitability group)

**Abiqua silty clay loam, 3 to 5 percent slopes (AbB).** This soil has a profile similar to the one described for Abiqua silty clay loam, 0 to 3 percent slopes, except that material washed from higher slopes has been deposited on the surface in a few places. Runoff is medium, and the hazard of erosion is slight.

This soil is used for about the same crops as Abiqua silty clay loam, 0 to 3 percent slopes. (Capability unit IIe-2; not placed in a woodland suitability group)

## Alluvial Land

Alluvial land (Ad) occurs mostly along the Santiam, North Santiam, and Willamette Rivers, on or near the bed of the main stream, in overflow channels, and on islands or bars. It consists mostly of loose sand, gravel, and cobblestones, but it includes some small areas of silt loam. This material is frequently shifted by floodwaters, for this land type is subject to overflow in winter and spring.

In places this land type supports a good stand of cottonwoods, but use of these trees for timber is restricted by the very severe hazard of erosion if the trees are cut. Other areas have a cover of Douglas-fir. Still other small areas are bare, except for scattered willows. (Capability unit VIIw-1; not placed in a woodland suitability group)

## Amity Series

The Amity series consists of somewhat poorly drained soils that have formed in mixed alluvial silts. These soils have slopes of 0 to 2 percent. They occur on broad valley terraces at elevations of 150 to 350 feet. The average annual precipitation is between 40 and 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 grasses, shrubs, hardwoods, and scattered, Douglas-firs. Amity soils are associated with Dayton and Concord soils.

In a typical profile, the surface layer is very dark grayish-brown silt loam that is mottled in the lower part and is about 17 inches thick. The subsurface layer is mottled dark-gray silt loam about 7 inches thick. The subsoil is

mottled grayish-brown silty clay loam about 13 inches thick. A substratum of mottled olive-brown silt loam underlies the subsoil.

The Amity soils are used mainly for cereal grains, grass grown for seed, and pasture. When irrigated, areas that are drained can be used for all the crops commonly grown in the survey area.

**Amity silt loam (Am).**-This is the only soil of the Amity series mapped in the survey area. It occupies slightly convex or nearly level areas on terraces consisting of Willamette silts.

Representative profile 30 feet east of a paved road (SW1/2SE1/4 sec. 10, T. 5 S., R. 2 W.)

Ap-0 to 7 inches, very dark grayish-brown (10YR 3/2) silt loam, grayish brown (10YR 5/2) when dry; moderate, fine, subangular blocky structure; friable, slightly hard, slightly sticky and slightly plastic; abundant fine roots; many interstitial pores; medium acid (pH 6.0); clear, smooth boundary. (5 to 8 inches thick.)

A1-7 to 17 inches, very dark grayish-brown (10YR 3/2) silt loam grayish brown (10YR 5/2) when dry; common, fine, faint, reddish-brown mottles; moderate, medium, subangular blocky structure; friable, hard, slightly sticky and slightly plastic; abundant fine roots; common interstitial pores and few, fine and medium, tubular pores; common, fine and medium, reddish-brown concretions; medium acid (pH 6.0); clear, smooth boundary. (5 to 10 inches thick.)

A2-17 to 24 inches, dark-gray (10YR 4/1) silt loam, gray (10YR 6/1) when dry; common, fine, faint, reddish-brown mottles; weak, medium, subangular blocky structure; friable, slightly hard, slightly sticky and slightly plastic; common fine roots; common interstitial pores and common, fine and medium, tubular pores; common, fine and medium, brown concretions; medium acid (pH 6.0); clear, wavy boundary. (4 to 8 inches thick.)

B21t-24 to 29 inches, grayish-brown (2.5Y 5/2) silty clay loam, light brownish gray (10YR 6/2) when dry; common, fine, distinct, reddish-brown mottles; weak, medium, prismatic structure breaking to moderate, coarse, subangular blocky structure; friable, hard, sticky and plastic; few fine roots; common, medium, tubular pores; thin, patchy clay films in pores, on vertical surfaces of peds, and on some horizontal surfaces of peds; common, fine, red and black concretions; slightly acid (pH 6.2); gradual, wavy boundary. (4 to 9 inches thick.)

B22t-29 to 37 inches, grayish-brown (2.5Y 5/2) silty clay loam, light brownish gray (2.5Y 6/2) when dry; common, fine, distinct, light yellowish-brown and black mottles; weak, medium, prismatic structure breaking to moderate, coarse, subangular blocky structure; friable, hard sticky and plastic; few fine roots; few, medium and fine, tubular pores; thin, patchy clay films in pores and on vertical and horizontal surfaces of peds; many, fine, reddish-brown and few, fine, black concretions; slightly acid (pH 6.2); diffuse boundary. (5 to 14 inches -thick.)

C-37 to 60 inches, olive-brown (2.5Y 4/4) silt loam, light yellowish brown (2.5Y 6/4) when dry; common, fine, faint, brown mottles; massive; friable, hard, slightly sticky and slightly plastic; few fine roots; few fine and medium pores; thick clay films in pores; slightly acid (pH 6.4).

When the soil is moist, color of the A horizon ranges from dark brown to very dark grayish brown. Texture of the B horizon is heavy silt loam in some areas, and the structural grade of that horizon; is moderate in places. In some places the lower part of the B horizon is weakly to moderately brittle. Bedrock is at a depth of more than 60 inches.

Included with this soil is mapping were small areas of soils that are in drainageways and depressions and that

have slopes of 2 to 5 percent. Also included were small areas of Woodburn and Concord soils.

The available water capacity ranges from 9 to 12 inches. Permeability is moderately slow, and fertility is moderate. Runoff is slow, and erosion is not a hazard or is only a slight hazard. The depth to which roots can penetrate is moderately restricted by wetness, partly caused by a high water table that is near the surface during winter and spring. Workability is good, but this soil compacts easily if it is cultivated when wet.

Undrained areas of this soil are used for small grains, pasture, and grasses grown for seed, but drainage is needed for berries, vegetables, and specialty crops. If this soil is drained and irrigated, it can be used for all the crops commonly grown in the survey area. Even after drainage is installed, however, there are slightly restrictions to use of this soil for deep-rooted crops that cannot tolerate excessive moisture. Nevertheless, response to drainage and fertilizer is generally good. (Capability unit IIw-2; not placed in a woodland suitability group)

## Bashaw Series

The Bashaw series consists of poorly drained and very poorly drained soils that have formed in alluvium. These soils are in backwater areas of the flood plains and in drainage channels of silty alluvial terraces. They have slopes of 0 to 1 percent. Elevations range from 100 to 400 feet. The average annual precipitation is between 40 and 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 annual and perennial grasses, wild blackberries, sedges, rushes, willows, and a few ash and oak trees. Bashaw soils are associated with Wapato soils.

In a typical profile, the surface layer is about 31 inches thick and consists of mottled very dark gray clay in the uppermost 3 inches and of mottled black clay below. The upper part of the substratum, just beneath the surface layer, is very dark gray clay that extends to a depth of 48 inches. The lower part of the substratum is dark grayish-brown clay or sandy clay that extends to a depth of 60 inches or more. The substratum is mottled throughout.

The Bashaw soils are used mainly for pasture.

**Bashaw clay (Ba).**-This is the only soil of the Bashaw series mapped in the survey area. It occupies concave backwater areas adjacent to silty alluvial terraces, and it is also in drainage channels on the terraces. The areas are small.

Representative profile (NW1/4SW1/4NE1/4 sec. 9, T. 6 S., R.1 W.)

A11-0 to 3 inches, very dark gray (10YR 3/1) clay, dark gray (10YR 4/1) when dry; many, fine, distinct, yellowish-red (5YR 4/6) mottles; moderate, medium and fine, subangular blocky structure; firm, very hard, very sticky and very plastic; common roots; many very fine pores; medium acid (pH 5.8); abrupt, smooth boundary. (0 to 4 inches thick.)

A12g-3 to 14 inches, black (N 2/0) clay, very dark gray (N 3/0) when dry; few, fine, distinct, yellowish-red (5YR 5/6) mottles; massive when wet; weak, coarse, prismatic structure breaking to weak, coarse, angular blocky structure when moist or dry; very firm, very hard, very sticky and very plastic; common very fine roots; many very fine pores; common, fine, red