

this pan and is more successful if done when the soil is dry than when wet. Tile drainage systems installed across the slope improve efficiency. Sprinkler irrigation can be used to increase crop production in dry periods in summer. Water needs to be applied slowly to prevent runoff. Grain and grass crops respond to nitrogen. Legumes respond to phosphorus, potassium, sulfur, and lime and in places, to boron. Berries respond to nitrogen, phosphorus, potassium, and sulfur and in places, to boron. Strawberries, alfalfa, and other crops that require good drainage can be grown if a deep, random tile system is installed.

The vegetation in areas not cultivated is Douglas-fir, Oregon white oak, western redcedar, bigleaf maple, willow, western hazel, creambush oceanspray, roses, trailing blackberry, salal, tall Oregon-grape, common snowberry, Pacific dogwood, brackenfern, forbs, and grasses.

A wide variety of grasses, grain, and fruit and vegetable crops along with shrubs and trees grow on this soil. This variety of plants furnishes good food and cover for ring-necked pheasant, California quail, and ruffed grouse. Other common wildlife species are some black-tailed deer, foxes, skunks, raccoon, opossum, rabbits, squirrels, and mice. Birdlife includes hawks, owls, jays, crows, woodpeckers, robins, blackbirds, larks, starlings, and many kinds of small birds. The potential for wildlife habitat is good. Planting desirable vegetation and protecting existing vegetation improve the habitat.

Increased population growth has resulted in increased urban development on this soil. The main limitations for urban development are a seasonal high water table, moderately slow permeability, low strength, and slopes of 8 to 15 percent. Dwellings and roads can be designed to offset these limitations if sewers are provided. In places, septic tank absorption fields do not function properly during rainy periods because of wetness and the moderately slow permeability. Drainage is required for best results with lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetables, and irrigation during summer is desirable. Plants that tolerate droughty conditions should be selected if irrigation is not provided.

This soil is in capability subclass IIIe.

**37A-Quatama loam, 0 to 3 percent slopes.** This moderately well drained soil is on low terraces. This soil formed in old alluvium. Elevation is 75 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam and clay loam about 39 inches thick, it is mottled in the lower part. The substratum is dark brown, mottled loam and sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Cascade, Aloha, Powell, Quafeno, and Latourell soils. The

included soils make up as much as 10 percent of this map unit.

Permeability is moderately slow. Effective rooting depth is 60 inches or more. Available water capacity is 8 to 10 inches. Water-supplying capacity is 18 to 20 inches. Runoff is slow, and the hazard of erosion is slight. A water table is at a depth of 2 to 3 feet from December through April.

This soil is used for farming, urban development, and wildlife habitat.

This soil is well suited to farming. If it is drained, most climatically adapted crops do well. Irrigation during summer is required for maximum production of most crops. The major crops are berries, grain, hay, and pasture. Returning all crop residue to the soil and including grasses, legumes, or grass-legume mixtures in the cropping system help to maintain fertility and tilth. If the soil is to be left bare during winter, it should be fertilized and planted to a cover crop in fall. Grassed waterways help control erosion in drainageways. Limiting tillage to seedbed preparation and weed control helps control runoff and erosion. A cloddy condition helps protect the soil from erosion during rainy periods.

Excessive cultivation can result in formation of a tillage pan in this soil. Subsoiling is required to break up this pan and is more successful if done when the soil is dry than when wet. Tile drainage systems are installed across the slope to intercept ground water. Sprinkler irrigation can be used to increase crop production in dry periods in summer. Water needs to be applied slowly to prevent runoff. Grain and grass crops respond to nitrogen. Legumes respond to phosphorus, potassium, sulfur, and lime and in places, to boron. Berries respond to nitrogen, phosphorus, potassium, and sulfur and in places, to boron. Strawberries, alfalfa, and other crops that require good drainage can be grown if a deep, random tile system is installed.

The vegetation in areas not cultivated is Douglas-fir, Oregon white oak, western redcedar, bigleaf maple, willow, western hazel, creambush oceanspray, roses, trailing blackberry, salal, tall Oregon-grape, common snowberry, Pacific dogwood, brackenfern, forbs, and grasses.

A wide variety of grasses, grain, and fruit and vegetable crops along with shrubs and trees grow on this soil. This variety of plants furnishes good food and cover for ring-necked pheasant and California quail. Other common wildlife species are black-tailed deer, foxes, skunks, raccoon, opossum, rabbits, squirrels, and mice. Birdlife includes hawks, owls, jays, crows, woodpeckers, robins, blackbirds, larks, starlings, and many kinds of small birds. The potential for wildlife habitat is good. Planting desirable vegetation and protecting existing vegetation improve the habitat.

Increased population growth has resulted in increased urban development on this soil. The main limitations for urban development are a seasonal high water table and moderately slow permeability. Dwellings and roads can

be designed to offset these limitations if sewers are provided. In places, septic tank absorption fields do not function properly during rainy periods because of wetness and the moderately slow permeability. Drainage is required for best results with lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetables. Irrigation during summer is desirable for lawn grasses, shrubs, vines, vegetables, and most shade and ornamental trees. Plants that tolerate droughty growing conditions should be selected when irrigation is not provided.

This soil is in capability subclass I1w.

**37B-Quatama loam, 3 to 8 percent slopes.** This moderately well drained soil is on low terraces. This soil formed in old alluvium. Elevation is 75 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam and clay loam about 39 inches thick. It is mottled in the lower part. The substratum is dark brown, mottled loam and sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Cascade, Aloha, Powell, Quafeno, and Latourell soils. The included soils make up as much as 10 percent of this map unit.

Permeability is moderately slow. Effective rooting depth is 60 inches or more. Available water capacity is 8 to 10 inches. Water-supplying capacity is 18 to 20 inches. Runoff is slow, and the hazard of erosion is slight. A water table is at a depth of 2 to 3 feet from December through April.

This soil is used for farming, urban development, and wildlife habitat.

This soil is well suited to farming. If it is drained, most climatically adapted crops do well. Irrigation during summer is required for maximum production of most crops. The major crops are berries, grain, hay, and pasture. Returning all crop residue to the soil and including grasses, legumes, or grass-legume mixtures in the cropping system help maintain fertility and tilth. If the soil is to be left bare during winter, it should be fertilized and planted to a cover crop in fall. Grassed waterways help control erosion in drainageways. Limiting tillage to seedbed preparation and weed control helps control runoff and erosion. A cloddy condition helps protect the soil from erosion during rainy periods.

Excessive cultivation can result in formation of a tillage pan in this soil. Subsoiling is required to break up this pan and is more successful if done when the soil is dry than when wet. Tile drainage systems are installed across the slope to intercept ground water. Sprinkler irrigation can be used to increase crop production in dry periods in summer. Water needs to be applied slowly to prevent runoff. Grain and grass crops respond to nitrogen. Legumes respond to phosphorus, potassium, sulfur, and lime and in places, to boron. Berries respond to

nitrogen, phosphorus, potassium, and sulfur and in places, to boron. Strawberries, alfalfa, and other crops that require good drainage can be grown if a deep, random tile system is installed.

The vegetation in areas not cultivated is Douglas-fir, Oregon white oak, western redcedar, bigleaf maple, willow, western hazel, creambush oceanspray, roses, trailing blackberry, salal, tall Oregon-grape, common snowberry, Pacific dogwood, brackenfern, forbs, and grasses.

A wide variety of grasses, grain, and fruit and vegetable crops along with shrubs and trees grow on this soil. This variety of plants furnishes good food and cover for ring-necked pheasant and California quail. Other common wildlife species are some black-tailed deer, foxes, skunks, raccoon, opossum, rabbits, squirrels, and mice. Birdlife includes hawks, owls, jays, crows, woodpeckers, robins, blackbirds, larks, starlings, and many kinds of small birds. The potential for wildlife habitat is good. Planting desirable vegetation and protecting existing vegetation improve the habitat.

Increased population growth has resulted in increased urban development on this soil. The main limitations for urban development are a seasonal high water table and moderately slow permeability. Dwellings and roads can be designed to offset these limitations if sewers are provided. In places, septic tank absorption fields do not function properly during rainy periods because of wetness and the moderately slow permeability. Drainage is required for best results with lawn grasses, shade trees, ornamental trees, shrubs, vines, and vegetables. Irrigation in summer is desirable for lawn grasses, shrubs, vines, vegetables, and most shade and ornamental trees. Plants that tolerate droughty conditions should be selected if irrigation is not provided.

This soil is in capability subclass I1e.

**37C-Quatama loam, 8 to 15 percent slopes.** This moderately well drained soil is on short escarpment fronts of low terraces. This soil formed in old alluvium. Elevation is 75 to 400 feet. The average annual precipitation is 40 to 50 inches, the average annual air temperature is 52 to 54 degrees F, and the frost-free period is 165 to 210 days.

Typically, the surface layer is dark brown loam about 9 inches thick. The subsoil is dark yellowish brown loam and clay loam about 39 inches thick. It is mottled in the lower part. The substratum is dark brown, mottled loam and sandy loam to a depth of 60 inches or more.

Included with this soil in mapping are areas of Cascade, Aloha, Powell, Latourell, and Quafeno soils and other Quatama soils. The included soils make up as much as 10 percent of this map unit.

Permeability is moderately slow. Effective rooting depth is 60 inches or more. Available water capacity is 8 to 10 inches. Water-supplying capacity is 18 to 20 inches. Runoff is medium, and the hazard of erosion is moderate. A water table is at a depth of 2 to 3 feet from December through April.