Custom Soil Resource Report for Yakama Nation Closed Area, Washington, Parts of Klickitat and Yakima Counties; Yakama Nation Irrigated Area, Washington, Part of Yakima County; and Yakima County Area, Washington
Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil
scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.
The soil surveys that comprise your AOI were mapped at scales ranging from 1:12,000 to 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Yakama Nation Closed Area, Washington, Parts of Klickitat and Yakima Counties
Survey Area Data: Version 6, Sep 21, 2016

Soil Survey Area: Yakama Nation Irrigated Area, Washington, Part of Yakima County
Survey Area Data: Version 12, Sep 8, 2016

Soil Survey Area: Yakima County Area, Washington
Survey Area Data: Version 16, Sep 21, 2016

Your area of interest (AOI) includes more than one soil survey area. These survey areas may have been mapped at different scales, with a different land use in mind, at different times, or at different levels of detail. This may result in map unit symbols, soil properties, and interpretations that do not completely agree across soil survey area boundaries.

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.
<table>
<thead>
<tr>
<th>MAP LEGEND</th>
<th>MAP INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Date(s) aerial images were photographed: Jul 19, 2010—Aug 19, 2010</td>
</tr>
<tr>
<td></td>
<td>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</td>
</tr>
</tbody>
</table>
## Map Unit Legend

### Yakama Nation Closed Area, Washington, Parts of Klickitat and Yakima Counties (WA676)

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOTPUB</td>
<td>Not Public Information</td>
<td>2,450.9</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Subtotals for Soil Survey Area</strong></td>
<td></td>
<td>2,450.9</td>
<td>3.6%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td>68,285.6</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Yakama Nation Irrigated Area, Washington, Part of Yakima County (WA678)

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>AhA</td>
<td>Ahtanum silt loam, 0 to 2 percent slopes</td>
<td>52.7</td>
<td>0.1%</td>
</tr>
<tr>
<td>Eta</td>
<td>Esquatzel silt loam, 0 to 2 percent slopes</td>
<td>383.1</td>
<td>0.6%</td>
</tr>
<tr>
<td>EtB</td>
<td>Esquatzel silt loam, 2 to 5 percent slopes</td>
<td>177.9</td>
<td>0.3%</td>
</tr>
<tr>
<td>Ks</td>
<td>Kittitas silt loam</td>
<td>80.5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Lg</td>
<td>Logy silt loam</td>
<td>9.7</td>
<td>0.0%</td>
</tr>
<tr>
<td>OnA</td>
<td>Onyx silt loam, 0 to 2 percent slopes</td>
<td>108.9</td>
<td>0.2%</td>
</tr>
<tr>
<td>OnB</td>
<td>Onyx silt loam, 2 to 5 percent slopes</td>
<td>175.3</td>
<td>0.3%</td>
</tr>
<tr>
<td>RtB</td>
<td>Ritzville silt loam, 2 to 5 percent slopes</td>
<td>586.9</td>
<td>0.9%</td>
</tr>
<tr>
<td>RtC</td>
<td>Ritzville silt loam, 5 to 8 percent slopes</td>
<td>670.5</td>
<td>1.0%</td>
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<tr>
<td>RtD</td>
<td>Ritzville silt loam, 8 to 15 percent slopes</td>
<td>363.9</td>
<td>0.5%</td>
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<tr>
<td>RtE</td>
<td>Ritzville silt loam, 15 to 30 percent slopes</td>
<td>111.5</td>
<td>0.2%</td>
</tr>
<tr>
<td>RtF</td>
<td>Ritzville silt loam, 30 to 65 percent slopes</td>
<td>343.2</td>
<td>0.5%</td>
</tr>
<tr>
<td>RuC</td>
<td>Ritzville silt loam, gravely subsoil variant, 5 to 8 percent slopes</td>
<td>268.0</td>
<td>0.4%</td>
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<tr>
<td>RuD</td>
<td>Ritzville silt loam, gravely subsoil variant, 8 to 15 percent slopes</td>
<td>98.4</td>
<td>0.1%</td>
</tr>
<tr>
<td>RvE</td>
<td>Rock Creek very stony loam, 0 to 20 percent slopes</td>
<td>7.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Sta</td>
<td>Stanfield silt loam, 0 to 2 percent slopes</td>
<td>127.2</td>
<td>0.2%</td>
</tr>
<tr>
<td>ToA</td>
<td>Toppenish silt loam, 0 to 2 percent slopes</td>
<td>38.6</td>
<td>0.1%</td>
</tr>
<tr>
<td>Tp</td>
<td>Toppenish silty clay loam</td>
<td>98.5</td>
<td>0.1%</td>
</tr>
<tr>
<td>Um</td>
<td>Umapine silt loam</td>
<td>323.5</td>
<td>0.5%</td>
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### Yakama Nation Irrigated Area, Washington, Part of Yakima County (WA678)

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>W</td>
<td>Water</td>
<td>5.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>WfB</td>
<td>Warden silt loam, 2 to 5 percent slopes</td>
<td>120.7</td>
<td>0.2%</td>
</tr>
<tr>
<td>WfC</td>
<td>Warden silt loam, 5 to 8 percent slopes</td>
<td>98.7</td>
<td>0.1%</td>
</tr>
<tr>
<td>WfD</td>
<td>Warden silt loam, 8 to 15 percent slopes</td>
<td>33.1</td>
<td>0.0%</td>
</tr>
<tr>
<td>WfE</td>
<td>Warden silt loam, 15 to 30 percent slopes</td>
<td>31.5</td>
<td>0.0%</td>
</tr>
<tr>
<td>WoA</td>
<td>Weirman fine sandy loam, 0 to 2 percent slopes</td>
<td>0.9</td>
<td>0.0%</td>
</tr>
<tr>
<td>WoB</td>
<td>Weirman fine sandy loam, 2 to 5 percent slopes</td>
<td>13.6</td>
<td>0.0%</td>
</tr>
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</table>

**Subtotals for Soil Survey Area**

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<tr>
<td></td>
<td></td>
<td>4,329.1</td>
<td>6.3%</td>
</tr>
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**Totals for Area of Interest**

|                |                                              | 68,285.6     | 100.0%         |

### Yakima County Area, Washington (WA677)

<table>
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<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Ashue loam</td>
<td>3,165.1</td>
<td>4.6%</td>
</tr>
<tr>
<td>3</td>
<td>Bakeoven very cobbly silt loam, 0 to 30 percent slopes</td>
<td>1,765.2</td>
<td>2.6%</td>
</tr>
<tr>
<td>18</td>
<td>Cleman very fine sandy loam, 0 to 2 percent slopes</td>
<td>141.8</td>
<td>0.2%</td>
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<tr>
<td>19</td>
<td>Cleman very fine sandy loam, 2 to 5 percent slopes</td>
<td>91.4</td>
<td>0.1%</td>
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<tr>
<td>20</td>
<td>Cleman very fine sandy loam, 5 to 8 percent slopes</td>
<td>34.9</td>
<td>0.1%</td>
</tr>
<tr>
<td>21</td>
<td>Cleman very fine sandy loam, 8 to 15 percent slopes</td>
<td>7.9</td>
<td>0.0%</td>
</tr>
<tr>
<td>24</td>
<td>Cowiche loam, 2 to 5 percent slopes</td>
<td>424.2</td>
<td>0.6%</td>
</tr>
<tr>
<td>25</td>
<td>Cowiche loam, 5 to 8 percent slopes</td>
<td>620.6</td>
<td>0.9%</td>
</tr>
<tr>
<td>26</td>
<td>Cowiche loam, 8 to 15 percent slopes</td>
<td>637.1</td>
<td>0.9%</td>
</tr>
<tr>
<td>27</td>
<td>Cowiche loam, 15 to 30 percent slopes</td>
<td>176.1</td>
<td>0.3%</td>
</tr>
<tr>
<td>32</td>
<td>Esquatzel silt loam, 0 to 2 percent slopes</td>
<td>3,527.2</td>
<td>5.2%</td>
</tr>
<tr>
<td>33</td>
<td>Esquatzel silt loam, 2 to 5 percent slopes</td>
<td>186.0</td>
<td>0.3%</td>
</tr>
<tr>
<td>43</td>
<td>Gorst loam, 2 to 15 percent slopes</td>
<td>1,736.1</td>
<td>2.5%</td>
</tr>
<tr>
<td>44</td>
<td>Gorst loam, 15 to 30 percent slopes</td>
<td>655.5</td>
<td>1.0%</td>
</tr>
<tr>
<td>45</td>
<td>Gorst cobbly loam, 0 to 25 percent slopes</td>
<td>552.7</td>
<td>0.8%</td>
</tr>
<tr>
<td>Map Unit Symbol</td>
<td>Map Unit Name</td>
<td>Acres in AOI</td>
<td>Percent of AOI</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>46</td>
<td>Harwood loam, 2 to 5 percent slopes</td>
<td>2,511.6</td>
<td>3.7%</td>
</tr>
<tr>
<td>47</td>
<td>Harwood loam, 5 to 8 percent slopes</td>
<td>889.4</td>
<td>1.3%</td>
</tr>
<tr>
<td>48</td>
<td>Harwood loam, 8 to 15 percent slopes</td>
<td>867.2</td>
<td>1.3%</td>
</tr>
<tr>
<td>49</td>
<td>Harwood loam, 15 to 30 percent slopes</td>
<td>166.6</td>
<td>0.2%</td>
</tr>
<tr>
<td>50</td>
<td>Harwood-Burke-Wiehl silt loams, 2 to 5 percent slopes</td>
<td>1.6</td>
<td>0.0%</td>
</tr>
<tr>
<td>52</td>
<td>Harwood-Burke-Wiehl silt loams, 8 to 15 percent slopes</td>
<td>7.2</td>
<td>0.0%</td>
</tr>
<tr>
<td>53</td>
<td>Harwood-Burke-Wiehl silt loams, 15 to 30 percent slopes</td>
<td>75.0</td>
<td>0.1%</td>
</tr>
<tr>
<td>54</td>
<td>Harwood-Burke-Wiehl silt loams, 30 to 60 percent slopes</td>
<td>152.6</td>
<td>0.2%</td>
</tr>
<tr>
<td>65</td>
<td>Kiona stony silt loam, 15 to 45 percent slopes</td>
<td>2,135.1</td>
<td>3.1%</td>
</tr>
<tr>
<td>66</td>
<td>Kittitas silt loam</td>
<td>1,618.4</td>
<td>2.4%</td>
</tr>
<tr>
<td>68</td>
<td>Lickskillet very stony silt loam, 5 to 45 percent slopes</td>
<td>1,315.6</td>
<td>1.9%</td>
</tr>
<tr>
<td>69</td>
<td>Logy silt loam, 0 to 2 percent slopes</td>
<td>954.1</td>
<td>1.4%</td>
</tr>
<tr>
<td>80</td>
<td>Mikkalo silt loam, 5 to 15 percent slopes</td>
<td>5.2</td>
<td>0.0%</td>
</tr>
<tr>
<td>81</td>
<td>Mikkalo silt loam, 15 to 30 percent slopes</td>
<td>5.6</td>
<td>0.0%</td>
</tr>
<tr>
<td>83</td>
<td>Moxee silt loam, 2 to 15 percent slopes</td>
<td>440.8</td>
<td>0.6%</td>
</tr>
<tr>
<td>84</td>
<td>Moxee silt loam, 15 to 30 percent slopes</td>
<td>85.8</td>
<td>0.1%</td>
</tr>
<tr>
<td>85</td>
<td>Moxee cobbly silt loam, 0 to 30 percent slopes</td>
<td>0.4</td>
<td>0.0%</td>
</tr>
<tr>
<td>86</td>
<td>Naches loam</td>
<td>2,666.5</td>
<td>3.9%</td>
</tr>
<tr>
<td>92</td>
<td>Outlook silt loam</td>
<td>361.5</td>
<td>0.5%</td>
</tr>
<tr>
<td>93</td>
<td>Pits</td>
<td>17.6</td>
<td>0.0%</td>
</tr>
<tr>
<td>95</td>
<td>Quincy loamy fine sand, 0 to 10 percent slopes</td>
<td>82.1</td>
<td>0.1%</td>
</tr>
<tr>
<td>99</td>
<td>Ritzville silt loam, 2 to 5 percent slopes</td>
<td>1,621.4</td>
<td>2.4%</td>
</tr>
<tr>
<td>100</td>
<td>Ritzville silt loam, 5 to 8 percent slopes</td>
<td>915.5</td>
<td>1.3%</td>
</tr>
<tr>
<td>101</td>
<td>Ritzville silt loam, 8 to 15 percent slopes</td>
<td>916.3</td>
<td>1.3%</td>
</tr>
<tr>
<td>102</td>
<td>Ritzville silt loam, 15 to 30 percent slopes</td>
<td>376.9</td>
<td>0.6%</td>
</tr>
<tr>
<td>Map Unit Symbol</td>
<td>Map Unit Name</td>
<td>Acres in AOI</td>
<td>Percent of AOI</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------------------------------------------</td>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>103</td>
<td>Ritzville silt loam, 30 to 60 percent slopes</td>
<td>338.1</td>
<td>0.5%</td>
</tr>
<tr>
<td>109</td>
<td>Rock Creek very stony silt loam, 0 to 30 percent slopes</td>
<td>1,175.8</td>
<td>1.7%</td>
</tr>
<tr>
<td>110</td>
<td>Rock Creek-Clint-Simcoe complex, 0 to 45 percent slopes</td>
<td>804.8</td>
<td>1.2%</td>
</tr>
<tr>
<td>112</td>
<td>Roza clay loam, 8 to 15 percent slopes</td>
<td>54.3</td>
<td>0.1%</td>
</tr>
<tr>
<td>113</td>
<td>Roza clay loam, 15 to 30 percent slopes</td>
<td>118.9</td>
<td>0.2%</td>
</tr>
<tr>
<td>128</td>
<td>Selah silt loam, 2 to 5 percent slopes</td>
<td>240.0</td>
<td>0.4%</td>
</tr>
<tr>
<td>129</td>
<td>Selah silt loam, 5 to 8 percent slopes</td>
<td>270.9</td>
<td>0.4%</td>
</tr>
<tr>
<td>130</td>
<td>Selah silt loam, 8 to 15 percent slopes</td>
<td>285.8</td>
<td>0.4%</td>
</tr>
<tr>
<td>131</td>
<td>Selah silt loam, 15 to 30 percent slopes</td>
<td>10.4</td>
<td>0.0%</td>
</tr>
<tr>
<td>136</td>
<td>Simcoe silt loam, 5 to 15 percent slopes</td>
<td>424.9</td>
<td>0.6%</td>
</tr>
<tr>
<td>137</td>
<td>Simcoe silt loam, 15 to 30 percent slopes</td>
<td>479.7</td>
<td>0.7%</td>
</tr>
<tr>
<td>140</td>
<td>Sinloc silt loam, 2 to 5 percent slopes</td>
<td>14.8</td>
<td>0.0%</td>
</tr>
<tr>
<td>141</td>
<td>Sinloc silt loam, 5 to 8 percent slopes</td>
<td>8.6</td>
<td>0.0%</td>
</tr>
<tr>
<td>142</td>
<td>Starbuck silt loam, 2 to 15 percent slopes</td>
<td>86.9</td>
<td>0.1%</td>
</tr>
<tr>
<td>143</td>
<td>Starbuck-Rock outcrop complex, 0 to 45 percent slopes</td>
<td>1,006.2</td>
<td>1.5%</td>
</tr>
<tr>
<td>144</td>
<td>Starbuck-Rock outcrop complex, 45 to 60 percent slopes</td>
<td>1,191.4</td>
<td>1.7%</td>
</tr>
<tr>
<td>158</td>
<td>Tieton loam, 2 to 5 percent slopes</td>
<td>699.9</td>
<td>1.0%</td>
</tr>
<tr>
<td>159</td>
<td>Tieton loam, 5 to 8 percent slopes</td>
<td>797.3</td>
<td>1.2%</td>
</tr>
<tr>
<td>160</td>
<td>Tieton loam, 8 to 15 percent slopes</td>
<td>484.4</td>
<td>0.7%</td>
</tr>
<tr>
<td>161</td>
<td>Tieton loam, 15 to 30 percent slopes</td>
<td>14.8</td>
<td>0.0%</td>
</tr>
<tr>
<td>162</td>
<td>Tieton-Rock outcrop complex, 0 to 30 percent slopes</td>
<td>792.0</td>
<td>1.2%</td>
</tr>
<tr>
<td>163</td>
<td>Toppenish silt loam</td>
<td>729.8</td>
<td>1.1%</td>
</tr>
<tr>
<td>164</td>
<td>Torriorthents, steep</td>
<td>99.2</td>
<td>0.1%</td>
</tr>
<tr>
<td>165</td>
<td>Track loam</td>
<td>1,005.0</td>
<td>1.5%</td>
</tr>
</tbody>
</table>
Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the...
characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered
practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.
Yakama Nation Closed Area, Washington, Parts of Klickitat and Yakima Counties

NOTPUB—Not Public Information

Map Unit Composition
Not public information: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Not Public Information

Properties and qualities
Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Yakama Nation Irrigated Area, Washington, Part of Yakima County

AhA—Ahtanum silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29w9
Elevation: 700 to 3,000 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 140 to 165 days
Farmland classification: Not prime farmland

Map Unit Composition
Ahtanum and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ahtanum
Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 10 inches: silt loam
H2 - 10 to 21 inches: silt loam
H3 - 21 to 31 inches: cemented silt loam
H4 - 31 to 50 inches: silt loam
H5 - 50 to 60 inches: loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Very low (about 2.1 inches)

Interpretive groups
Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components
Kittitas
Percent of map unit: 5 percent
Hydric soil rating: No
Toppenish

Percent of map unit: 5 percent
Hydric soil rating: No

EtA—Esquatzel silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29wj
Elevation: 300 to 2,900 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Esquatzel and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Esquatzel

Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 9 inches: silt loam
H2 - 9 to 30 inches: silt loam
H3 - 30 to 60 inches: stratified fine sandy loam to silt loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mhos/cm)
Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups
Land capability classification (irrigated): 2c
Land capability classification (nonirrigated): 6c
Hydrologic Soil Group: B
Hydric soil rating: No
EtB—Esquatzel silt loam, 2 to 5 percent slopes

Map Unit Setting

- **National map unit symbol:** 29wk
- **Elevation:** 300 to 2,900 feet
- **Mean annual precipitation:** 6 to 12 inches
- **Mean annual air temperature:** 48 to 54 degrees F
- **Frost-free period:** 130 to 200 days
- **Farmland classification:** Prime farmland if irrigated

Map Unit Composition

- **Esquatzel and similar soils:** 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Esquatzel

Setting

- **Landform:** Flood plains
- **Parent material:** Alluvium

Typical profile

- **H1 - 0 to 9 inches:** silt loam
- **H2 - 9 to 30 inches:** silt loam
- **H3 - 30 to 60 inches:** stratified fine sandy loam to silt loam

Properties and qualities

- **Slope:** 2 to 5 percent
- **Depth to restrictive feature:** More than 80 inches
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 5 percent
- **Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- **Available water storage in profile:** Very high (about 12.6 inches)

Interpretive groups

- **Land capability classification (irrigated):** 2e
- **Land capability classification (nonirrigated):** 6e
- **Hydrologic Soil Group:** B
- **Hydric soil rating:** No
Ks—Kittitas silt loam

Map Unit Setting
- **National map unit symbol:** 29wr
- **Elevation:** 500 to 1,100 feet
- **Mean annual precipitation:** 6 to 12 inches
- **Mean annual air temperature:** 48 to 52 degrees F
- **Frost-free period:** 130 to 180 days
- **Farmland classification:** Not prime farmland

Map Unit Composition
- **Kittitas, drained, and similar soils:** 100 percent
- *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Kittitas, Drained

**Setting**
- **Landform:** Alluvial flats
- **Parent material:** Alluvium

**Typical profile**
- **H1 - 0 to 7 inches:** silt loam
- **H2 - 7 to 18 inches:** silty clay loam
- **H3 - 18 to 45 inches:** silt loam
- **H4 - 45 to 63 inches:** stratified fine sandy loam to silty clay loam

**Properties and qualities**
- **Slope:** 0 to 2 percent
- **Depth to restrictive feature:** More than 80 inches
- **Natural drainage class:** Somewhat poorly drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high (0.20 to 0.57 in/hr)
- **Depth to water table:** About 12 to 24 inches
- **Frequency of flooding:** Occasional
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 15 percent
- **Salinity, maximum in profile:** Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
- **Sodium adsorption ratio, maximum in profile:** 5.0
- **Available water storage in profile:** High (about 11.3 inches)

**Interpretive groups**
- **Land capability classification (irrigated):** 4w
- **Land capability classification (nonirrigated):** 6w
- **Hydrologic Soil Group:** C/D
- **Hydric soil rating:** Yes
Lg—Logy silt loam

Map Unit Setting
National map unit symbol: 29wt
Mean annual precipitation: 6 to 10 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Logy and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Logy

Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 19 inches: gravelly loam
H3 - 19 to 39 inches: very gravelly sandy loam
H4 - 39 to 60 inches: very gravelly coarse sand

Properties and qualities
Slope: 0 to 5 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 3.9 inches)

Interpretive groups
Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B
Hydric soil rating: No

OnA—Onyx silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29wy
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
- Onyx variant and similar soils: 95 percent
- Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Onyx Variant

Setting
- Landform: Flood plains
- Parent material: Alluvium

Typical profile
- H1 - 0 to 6 inches: silt loam
- H2 - 6 to 60 inches: silt loam

Properties and qualities
- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: Occasional
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: High (about 12.0 inches)

Interpretive groups
- Land capability classification (irrigated): 3w
- Land capability classification (nonirrigated): 6w
- Hydrologic Soil Group: B
- Hydric soil rating: No

Minor Components

Zillah
- Percent of map unit: 5 percent
- Landform: Channels
- Hydric soil rating: Yes

OnB—Onyx silt loam, 2 to 5 percent slopes

Map Unit Setting
- National map unit symbol: 29wz
- Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Onyx variant and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Onyx Variant
Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 6 inches: silt loam
H2 - 6 to 60 inches: silt loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups
Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: B
Hydric soil rating: No

RtB—Ritzville silt loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 29x2
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Ritzville

Setting
- Landform: Hillslopes
- Parent material: Loess

Typical profile
- H1 - 0 to 9 inches: silt loam
- H2 - 9 to 33 inches: silt loam
- H3 - 33 to 60 inches: silt loam

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Available water storage in profile: High (about 12.0 inches)

Interpretive groups
- Land capability classification (irrigated): 2e
- Land capability classification (nonirrigated): 3e
- Hydrologic Soil Group: B
- Hydric soil rating: No

RtC—Ritzville silt loam, 5 to 8 percent slopes

Map Unit Setting
- National map unit symbol: 29x3
- Elevation: 800 to 3,000 feet
- Mean annual precipitation: 9 to 12 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 100 to 180 days
- Farmland classification: Farmland of statewide importance

Map Unit Composition
- Ritzville and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting
- Landform: Hillslopes
- Parent material: Loess

Typical profile
- H1 - 0 to 9 inches: silt loam
- H2 - 9 to 33 inches: silt loam
Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

RtD—Ritzville silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29x4
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting

Landform: Hillslopes
Parent material: Loess

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 33 inches: silt loam
H3 - 33 to 60 inches: silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 12.0 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

RtE—Ritzville silt loam, 15 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29x5
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Ritzville
Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 9 inches: silt loam
H2 - 9 to 33 inches: silt loam
H3 - 33 to 60 inches: silt loam

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: High (about 12.0 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Hydric soil rating: No
RtF—Ritzville silt loam, 30 to 65 percent slopes

Map Unit Setting

- National map unit symbol: 29x6
- Elevation: 800 to 3,000 feet
- Mean annual precipitation: 9 to 12 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 100 to 180 days
- Farmland classification: Not prime farmland

Map Unit Composition

- Ritzville and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting

- Landform: Hillslopes
- Parent material: Loess

Typical profile

- H1 - 0 to 9 inches: silt loam
- H2 - 9 to 33 inches: silt loam
- H3 - 33 to 60 inches: silt loam

Properties and qualities

- Slope: 30 to 65 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Available water storage in profile: High (about 12.0 inches)

Interpretive groups

- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 7e
- Hydrologic Soil Group: B
- Hydric soil rating: No

RuC—Ritzville silt loam, gravelly subsoil variant, 5 to 8 percent slopes

Map Unit Setting

- National map unit symbol: 29x7
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 140 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ritzville variant and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville Variant
Setting
Landform: Hillslopes
Parent material: Loess over alluvium

Typical profile
H1 - 0 to 9 inches: silt loam
H2 - 9 to 22 inches: silt loam
H3 - 22 to 60 inches: very cobbly silt loam

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

RuD—Ritzville silt loam, gravelly subsoil variant, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 29x8
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 140 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Ritzville variant and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Ritzville Variant

Setting

Landform: Hillslopes
Parent material: Loess over alluvium

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 22 inches: silt loam
H3 - 22 to 60 inches: very cobbly silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

RvE—Rock Creek very stony loam, 0 to 20 percent slopes

Map Unit Setting

National map unit symbol: 29x9
Elevation: 1,400 to 4,200 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock creek and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Creek

Setting

Landform: Hillslopes
Parent material: Residuum from basalt mixed with loess

Typical profile

H1 - 0 to 2 inches: very stony loam
H2 - 2 to 14 inches: very cobbly clay loam
H3 - 14 to 18 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 20 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

StA—Stanfield silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29xm
Elevation: 300 to 3,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition
Stanfield and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stanfield
Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 4 inches: silt loam
H2 - 4 to 23 inches: silt loam
H3 - 23 to 27 inches: cemented material

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 38 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups
Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components
Ahtanum
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

ToA—Toppenish silt loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29xp
Elevation: 700 to 1,800 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Toppenish and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toppenish

Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 6 inches: silt loam
H2 - 6 to 31 inches: silty clay loam
H3 - 31 to 46 inches: clay loam
H4 - 46 to 60 inches: very gravelly sandy loam

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Moderate (about 6.3 inches)

Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components
Track
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Tp—Toppenish silty clay loam

Map Unit Setting
National map unit symbol: 29xr
Elevation: 700 to 1,800 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Toppenish and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toppenish
Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 6 inches: silty clay loam
H2 - 6 to 31 inches: silty clay loam
H3 - 31 to 46 inches: very gravelly clay loam, very gravelly loam
H3 - 31 to 46 inches: very gravelly sandy loam
H4 - 46 to 60 inches:
**Properties and qualities**

*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high (0.20 to 0.57 in/hr)  
*Depth to water table:* About 12 to 24 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)  
*Sodium adsorption ratio, maximum in profile:* 10.0  
*Available water storage in profile:* Moderate (about 7.5 inches)

**Interpretive groups**

*Land capability classification (irrigated):* 4w  
*Land capability classification (nonirrigated):* 6w  
*Hydrologic Soil Group:* C/D  
*Hydric soil rating:* No

**Minor Components**

**Yost**  
*Percent of map unit:* 5 percent  
*Landform:* Depressions  
*Hydric soil rating:* Yes

**Um—Umapine silt loam**

**Map Unit Setting**

*National map unit symbol:* 29xw  
*Elevation:* 250 to 3,500 feet  
*Mean annual precipitation:* 6 to 12 inches  
*Mean annual air temperature:* 48 to 50 degrees F  
*Frost-free period:* 110 to 195 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Umapine and similar soils:* 100 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Umapine**

**Setting**

*Landform:* Terraces, flood plains  
*Parent material:* Alluvium

**Typical profile**

*H1 - 0 to 5 inches:* silt loam  
*H2 - 5 to 60 inches:* silt loam
Properties and qualities

- **Slope:** 0 to 2 percent
- **Depth to restrictive feature:** More than 80 inches
- **Natural drainage class:** Somewhat poorly drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** About 24 to 42 inches
- **Frequency of flooding:** Occasional
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 15 percent
- **Salinity, maximum in profile:** Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
- **Sodium adsorption ratio, maximum in profile:** 20.0
- **Available water storage in profile:** High (about 11.9 inches)

Interpretive groups

- **Land capability classification (irrigated):** 6s
- **Land capability classification (nonirrigated):** 6s
- **Hydrologic Soil Group:** C
- **Hydric soil rating:** No

W—Water

Map Unit Composition

- **Water:** 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water

Setting

- **Parent material:** Alluvium

WfB—Warden silt loam, 2 to 5 percent slopes

Map Unit Setting

- **National map unit symbol:** 29y4
- **Elevation:** 600 to 1,300 feet
- **Mean annual precipitation:** 6 to 9 inches
- **Mean annual air temperature:** 48 to 52 degrees F
- **Frost-free period:** 135 to 200 days
- **Farmland classification:** Prime farmland if irrigated

Map Unit Composition

- **Warden and similar soils:** 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.
Description of Warden

Setting
Landform: Hillslopes, terraces
Parent material: Loess over lacustrine deposits

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 22 inches: silt loam
H3 - 22 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

WfC—Warden silt loam, 5 to 8 percent slopes

Map Unit Setting
National map unit symbol: 29y5
Elevation: 600 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Warden and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Warden
Setting
Landform: Hillslopes, terraces
Parent material: Loess over lacustrine deposits
Typical profile
- H1 - 0 to 12 inches: silt loam
- H2 - 12 to 22 inches: silt loam
- H3 - 22 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities
- Slope: 5 to 8 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmmhos/cm)
- Available water storage in profile: High (about 11.8 inches)

Interpretive groups
- Land capability classification (irrigated): 3e
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: B
- Hydric soil rating: No

WfD—Warden silt loam, 8 to 15 percent slopes

Map Unit Setting
- National map unit symbol: 29y6
- Elevation: 600 to 1,300 feet
- Mean annual precipitation: 6 to 9 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 135 to 200 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Warden and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Warden

Setting
- Landform: Hillslopes, terraces
- Parent material: Loess over lacustrine deposits

Typical profile
- H1 - 0 to 12 inches: silt loam
- H2 - 12 to 22 inches: silt loam
- H3 - 22 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities
- Slope: 8 to 15 percent
**Depth to restrictive feature:** More than 80 inches  
**Natural drainage class:** Well drained  
**Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)  
**Depth to water table:** More than 80 inches  
**Frequency of flooding:** None  
**Frequency of ponding:** None  
**Calcium carbonate, maximum in profile:** 5 percent  
**Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
**Available water storage in profile:** High (about 11.8 inches)  

**Interpretive groups**  
- **Land capability classification (irrigated):** 3e  
- **Land capability classification (nonirrigated):** 6e  
- **Hydrologic Soil Group:** B  
- **Hydric soil rating:** No

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**WfE—Warden silt loam, 15 to 30 percent slopes**

**Map Unit Setting**  
- **National map unit symbol:** 29y7  
- **Elevation:** 600 to 1,300 feet  
- **Mean annual precipitation:** 6 to 9 inches  
- **Mean annual air temperature:** 48 to 52 degrees F  
- **Frost-free period:** 135 to 200 days  
- **Farmland classification:** Farmland of unique importance

**Map Unit Composition**  
- **Warden and similar soils:** 100 percent

**Estimates are based on observations, descriptions, and transects of the mapunit.**

**Description of Warden**

**Setting**  
- **Landform:** Hillslopes, terraces  
- **Parent material:** Loess over lacustrine deposits

**Typical profile**  
- **H1 - 0 to 12 inches:** silt loam  
- **H2 - 12 to 22 inches:** silt loam  
- **H3 - 22 to 60 inches:** stratified very fine sandy loam to silt loam

**Properties and qualities**  
- **Slope:** 15 to 30 percent  
- **Depth to restrictive feature:** More than 80 inches  
- **Natural drainage class:** Well drained  
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)  
- **Depth to water table:** More than 80 inches  
- **Frequency of flooding:** None  
- **Frequency of ponding:** None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.8 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No

WoA—Weirman fine sandy loam, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29yb
Elevation: 400 to 2,200 feet
Mean annual precipitation: 6 to 14 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Weirman and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weirman
Setting
Landform: Alluvial flats
Parent material: Alluvium

Typical profile
H1 - 0 to 9 inches: fine sandy loam
H2 - 9 to 20 inches: loamy fine sand
H3 - 20 to 60 inches: very gravelly loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No
Minor Components

Track
  Percent of map unit: 5 percent
  Landform: Depressions
  Hydric soil rating: Yes

Zillah
  Percent of map unit: 5 percent
  Landform: Channels
  Hydric soil rating: Yes

WoB—Weirman fine sandy loam, 2 to 5 percent slopes

Map Unit Setting
  National map unit symbol: 29yc
  Elevation: 400 to 2,200 feet
  Mean annual precipitation: 6 to 14 inches
  Mean annual air temperature: 48 to 50 degrees F
  Frost-free period: 130 to 180 days
  Farmland classification: Not prime farmland

Map Unit Composition
  Weirman and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Weirman

Setting
  Landform: Alluvial flats
  Parent material: Alluvium

Typical profile
  H1 - 0 to 9 inches: fine sandy loam
  H2 - 9 to 20 inches: loamy fine sand
  H3 - 20 to 60 inches: very gravelly loamy sand

Properties and qualities
  Slope: 2 to 5 percent
  Depth to restrictive feature: More than 80 inches
  Natural drainage class: Somewhat excessively drained
  Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
  Depth to water table: About 36 to 60 inches
  Frequency of flooding: Occasional
  Frequency of ponding: None
  Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups
  Land capability classification (irrigated): 4s
  Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Hydric soil rating: No
Yakima County Area, Washington

2—Ashue loam

Map Unit Setting

National map unit symbol: 29sb
Elevation: 700 to 1,700 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Ashue and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashue

Setting

Landform: Terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 29 inches: very gravelly sandy clay loam, very gravelly loam
H2 - 10 to 29 inches: very gravelly sandy loam
H3 - 29 to 34 inches: extremely gravelly sand
H4 - 34 to 60 inches:

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.8 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Weirman

Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes
Zillah

Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

3—Bakeoven very cobbly silt loam, 0 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29sp
Elevation: 540 to 2,400 feet
Mean annual precipitation: 9 to 16 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Bakeoven and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Bakeoven

Setting
Landform: Hillslopes, structural benches
Parent material: Loess and residuum derived from basalt

Typical profile
H1 - 0 to 4 inches: very cobbly silt loam
H2 - 4 to 10 inches: very gravelly clay loam
H3 - 10 to 14 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 30 percent
Depth to restrictive feature: 4 to 10 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)
Hydric soil rating: No
18—Cleman very fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

- National map unit symbol: 29rt
- Elevation: 400 to 2,000 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 48 to 54 degrees F
- Frost-free period: 135 to 200 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition

- Cleman and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Cleman

Setting

- Landform: Alluvial fans, flood plains
- Parent material: Alluvium

Typical profile

- H1 - 0 to 10 inches: very fine sandy loam
- H2 - 10 to 40 inches: stratified loamy fine sand to silt loam
- H3 - 40 to 60 inches: stratified sand to loamy sand

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

- Land capability classification (irrigated): 2e
- Land capability classification (nonirrigated): 3e
- Hydrologic Soil Group: B
- Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)
- Hydric soil rating: No
19—Cleman very fine sandy loam, 2 to 5 percent slopes

Map Unit Setting

- **National map unit symbol:** 29s5
- **Elevation:** 400 to 2,000 feet
- **Mean annual precipitation:** 8 to 12 inches
- **Mean annual air temperature:** 48 to 54 degrees F
- **Frost-free period:** 135 to 200 days
- **Farmland classification:** Prime farmland if irrigated

Map Unit Composition

- **Cleman and similar soils:** 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Cleman

**Setting**

- **Landform:** Flood plains
- **Parent material:** Alluvium

**Typical profile**

- **H1 - 0 to 10 inches:** very fine sandy loam
- **H2 - 10 to 40 inches:** stratified loamy fine sand to silt loam
- **H3 - 40 to 60 inches:** stratified sand to loamy sand

**Properties and qualities**

- **Slope:** 2 to 5 percent
- **Depth to restrictive feature:** 20 to 40 inches to strongly contrasting textural stratification
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- **Available water storage in profile:** Low (about 5.8 inches)

**Interpretive groups**

- **Land capability classification (irrigated):** 2e
- **Land capability classification (nonirrigated):** 3e
- **Hydrologic Soil Group:** B
- **Ecological site:** LOAMY BOTTOM 6-10 PZ (R007XY402WA)
- **Hydric soil rating:** No
20—Cleman very fine sandy loam, 5 to 8 percent slopes

Map Unit Setting
National map unit symbol: 29sc
Elevation: 400 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Cleman and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Cleman
Setting
Landform: Alluvial fans
Parent material: Alluvium

Typical profile
H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 40 inches: stratified loamy fine sand to silt loam
H3 - 40 to 60 inches: stratified sand to loamy sand

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)
Hydric soil rating: No
21—Cleman very fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29sd
Elevation: 400 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Cleman and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cleman

Setting

Landform: Alluvial fans
Parent material: Alluvium

Typical profile

H1 - 0 to 10 inches: very fine sandy loam
H2 - 10 to 40 inches: stratified loamy fine sand to silt loam
H3 - 40 to 60 inches: stratified sand to loamy sand

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)
Hydric soil rating: No
24—Cowiche loam, 2 to 5 percent slopes

Map Unit Setting

- National map unit symbol: 29sh
- Elevation: 1,000 to 4,800 feet
- Mean annual precipitation: 9 to 12 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 135 to 185 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition

- Cowiche and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Cowiche

Setting

- Landform: Mountain slopes, hillslopes

Typical profile

- H1 - 0 to 10 inches: loam
- H2 - 10 to 35 inches: loam
- H3 - 35 to 45 inches: loam
- H4 - 45 to 60 inches: loamy fine sand, very fine sandy loam
- H4 - 45 to 60 inches:

Properties and qualities

- Slope: 2 to 5 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mhos/cm)
- Available water storage in profile: High (about 11.6 inches)

Interpretive groups

- Land capability classification (irrigated): 2e
- Land capability classification (nonirrigated): 3e
- Hydrologic Soil Group: B
- Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
- Hydric soil rating: No
25—Cowiche loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 29sj
Elevation: 1,000 to 4,800 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Cowiche and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Cowiche

Setting

Landform: Hillslopes, mountain slopes

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 35 inches: loam
H3 - 35 to 45 inches: loam
H4 - 45 to 60 inches: loamy fine sand, very fine sandy loam
H4 - 45 to 60 inches:

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
Hydric soil rating: No
26—Cowiche loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29sk
Elevation: 1,000 to 4,800 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 135 to 185 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Cowiche and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cowiche

Setting

Landform: Hillslopes, mountain slopes

Typical profile

H1 - 0 to 10 inches: loam
H2 - 10 to 35 inches: loam
H3 - 35 to 45 inches: loam
H4 - 45 to 60 inches: loamy fine sand, very fine sandy loam
H4 - 45 to 60 inches:

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
Hydric soil rating: No
27—Cowiche loam, 15 to 30 percent slopes

Map Unit Setting

- National map unit symbol: 29sl
- Elevation: 1,000 to 4,800 feet
- Mean annual precipitation: 9 to 12 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 135 to 185 days
- Farmland classification: Farmland of unique importance

Map Unit Composition

Cowiche and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cowiche

Setting

- Landform: Mountain slopes, hillslopes

Typical profile

- H1 - 0 to 10 inches: loam
- H2 - 10 to 35 inches: loam
- H3 - 35 to 45 inches: loam
- H4 - 45 to 60 inches: loamy fine sand, very fine sandy loam
- H4 - 45 to 60 inches:

Properties and qualities

- Slope: 15 to 30 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: High (about 11.6 inches)

Interpretive groups

- Land capability classification (irrigated): 6e
- Land capability classification (nonirrigated): 4e
- Hydrologic Soil Group: B
- Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
- Hydric soil rating: No
32—Esquatzel silt loam, 0 to 2 percent slopes

Map Unit Setting

- National map unit symbol: 29ss
- Elevation: 300 to 2,900 feet
- Mean annual precipitation: 6 to 12 inches
- Mean annual air temperature: 48 to 54 degrees F
- Frost-free period: 130 to 200 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition

- Esquatzel and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Esquatzel

Setting

- Landform: Flood plains
- Parent material: Alluvium

Typical profile

- H1 - 0 to 17 inches: silt loam
- H2 - 17 to 60 inches: silt loam
- H3 - 60 to 64 inches: stratified fine sandy loam to silt loam

Properties and qualities

- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups

- Land capability classification (irrigated): 2c
- Land capability classification (nonirrigated): 3c
- Hydrologic Soil Group: B
- Hydric soil rating: No
33—Esquatzel silt loam, 2 to 5 percent slopes

Map Unit Setting

- National map unit symbol: 29st
- Elevation: 300 to 2,900 feet
- Mean annual precipitation: 6 to 12 inches
- Mean annual air temperature: 48 to 54 degrees F
- Frost-free period: 130 to 200 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition

- Esquatzel and similar soils: 100 percent
  - Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Esquatzel

Setting

- Landform: Flood plains
- Parent material: Alluvium

Typical profile

- H1 - 0 to 17 inches: silt loam
- H2 - 17 to 60 inches: silt loam
- H3 - 60 to 64 inches: stratified fine sandy loam to silt loam

Properties and qualities

- Slope: 2 to 5 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Very high (about 12.6 inches)

Interpretive groups

- Land capability classification (irrigated): 2e
- Land capability classification (nonirrigated): 3e
- Hydrologic Soil Group: B
- Hydric soil rating: No
43—Gorst loam, 2 to 15 percent slopes

Map Unit Setting

- National map unit symbol: 29t5
- Elevation: 1,200 to 2,900 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 130 to 170 days
- Farmland classification: Not prime farmland

Map Unit Composition

- Gorst and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorst

Setting

- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile

- H1 - 0 to 7 inches: loam
- H2 - 7 to 15 inches: loam
- H3 - 15 to 19 inches: cemented material

Properties and qualities

- Slope: 2 to 15 percent
- Depth to restrictive feature: 12 to 20 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups

- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: D
- Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
- Hydric soil rating: No
44—Gorst loam, 15 to 30 percent slopes

Map Unit Setting
- National map unit symbol: 29t6
- Elevation: 1,200 to 2,900 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 130 to 170 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Gorst and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gorst

Setting
- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile
- H1 - 0 to 7 inches: loam
- H2 - 7 to 15 inches: loam
- H3 - 15 to 19 inches: cemented material

Properties and qualities
- Slope: 15 to 30 percent
- Depth to restrictive feature: 12 to 20 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Very low (about 2.5 inches)

Interpretive groups
- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: D
- Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
- Hydric soil rating: No
45—Gorst cobbly loam, 0 to 25 percent slopes

Map Unit Setting
- National map unit symbol: 29t7
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 50 degrees F
- Frost-free period: 135 to 150 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Gorst, cobbly, and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Gorst, Cobbly

Setting
- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile
- H1 - 0 to 7 inches: cobbly loam
- H2 - 7 to 15 inches: loam
- H3 - 15 to 19 inches: cemented material

Properties and qualities
- Slope: 0 to 25 percent
- Depth to restrictive feature: 12 to 20 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmmhos/cm)
- Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups
- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: D
- Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
- Hydric soil rating: No
46—Harwood loam, 2 to 5 percent slopes

Map Unit Setting
- National map unit symbol: 29t8
- Elevation: 1,200 to 2,000 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 50 degrees F
- Frost-free period: 135 to 150 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition
- Harwood and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Harwood

Setting
- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile
- H1 - 0 to 8 inches: loam
- H2 - 8 to 26 inches: loam
- H3 - 26 to 30 inches: gravelly loam
- H4 - 30 to 34 inches: cemented material

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: 20 to 40 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Low (about 4.9 inches)

Interpretive groups
- Land capability classification (irrigated): 3e
- Land capability classification (nonirrigated): 3s
- Hydrologic Soil Group: C
- Ecological site: LOAMY 10-16 PZ (R008XY102WA)
- Hydric soil rating: No
47—Harwood loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2919
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 135 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Harwood and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Harwood

Setting

Landform: Terraces
Parent material: Loess and old alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
48—Harwood loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29tb
Elevation: 1,200 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 135 to 150 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Harwood and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harwood

Setting

Landform: Terraces
Parent material: Loess and old alluvium

Typical profile

H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
49—Harwood loam, 15 to 30 percent slopes

Map Unit Setting

- National map unit symbol: 29tc
- Elevation: 1,200 to 2,000 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 50 degrees F
- Frost-free period: 135 to 150 days
- Farmland classification: Farmland of unique importance

Map Unit Composition

- Harwood and similar soils: 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Harwood

Setting

- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile

- H1 - 0 to 8 inches: loam
- H2 - 8 to 26 inches: loam
- H3 - 26 to 30 inches: gravelly loam
- H4 - 30 to 34 inches: cemented material

Properties and qualities

- Slope: 15 to 30 percent
- Depth to restrictive feature: 20 to 40 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

- Land capability classification (irrigated): 6e
- Land capability classification (nonirrigated): 4e
- Hydrologic Soil Group: C
- Ecological site: LOAMY 10-16 PZ (R008XY102WA)
- Hydric soil rating: No
50—Harwood-Burke-Wiehl silt loams, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 29tf
Elevation: 400 to 6,200 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Harwood and similar soils: 30 percent
Burke and similar soils: 30 percent
Wiehl and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harwood
Setting
Landform: Terraces
Parent material: Loess and old alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

Description of Burke
Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
- H1 - 0 to 7 inches: silt loam
- H2 - 7 to 25 inches: silt loam
- H3 - 25 to 29 inches: cemented material

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: 20 to 40 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Low (about 5.0 inches)

Interpretive groups
- Land capability classification (irrigated): 3e
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: C
- Ecological site: LOAMY 6-10 PZ (R007XY102WA)
- Hydric soil rating: No

Description of Wiehl

Setting
- Landform: Terraces
- Parent material: Eolian deposits over residuum weathered from sandstone and siltstone

Typical profile
- H1 - 0 to 3 inches: silt loam
- H2 - 3 to 21 inches: silt loam
- H3 - 21 to 27 inches: gravelly silt loam
- H4 - 27 to 37 inches: weathered bedrock

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Low (about 4.5 inches)

Interpretive groups
- Land capability classification (irrigated): 3s
- Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

52—Harwood-Burke-Wiehl silt loams, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 29th
Elevation: 400 to 6,200 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Harwood and similar soils: 30 percent
Burke and similar soils: 30 percent
Wiehl and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harwood
Setting
Landform: Terraces
Parent material: Loess and old alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
**Hydric soil rating:** No

**Description of Burke**

**Setting**
- **Landform:** Hillslopes
- **Parent material:** Loess

**Typical profile**
- \( H_1 \) - 0 to 7 inches: silt loam
- \( H_2 \) - 7 to 25 inches: silt loam
- \( H_3 \) - 25 to 29 inches: cemented material

**Properties and qualities**
- **Slope:** 8 to 15 percent
- **Depth to restrictive feature:** 20 to 40 inches to duripan
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Very low to moderately low (0.00 to 0.06 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 15 percent
- **Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- **Available water storage in profile:** Low (about 5.0 inches)

**Interpretive groups**
- **Land capability classification (irrigated):** 4e
- **Land capability classification (nonirrigated):** 6e
- **Hydrologic Soil Group:** C
- **Ecological site:** LOAMY 6-10 PZ (R007XY102WA)
- **Hydric soil rating:** No

**Description of Wiehl**

**Setting**
- **Landform:** Terraces
- **Parent material:** Eolian deposits over residuum weathered from sandstone and siltstone

**Typical profile**
- \( H_1 \) - 0 to 3 inches: silt loam
- \( H_2 \) - 3 to 21 inches: silt loam
- \( H_3 \) - 21 to 27 inches: gravelly silt loam
- \( H_4 \) - 27 to 37 inches: weathered bedrock

**Properties and qualities**
- **Slope:** 8 to 15 percent
- **Depth to restrictive feature:** 20 to 40 inches to paralithic bedrock
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

53—Harwood-Burke-Wiehl silt loams, 15 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29tj
Elevation: 400 to 6,200 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Harwood and similar soils: 30 percent
Burke and similar soils: 30 percent
Wiehl and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harwood

Setting
Landform: Terraces
Parent material: Loess and old alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

Description of Burke

Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 25 inches: silt loam
H3 - 25 to 29 inches: cemented material

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

Description of Wiehl

Setting
Landform: Terraces
Parent material: Eolian deposits over residuum weathered from sandstone and siltstone

Typical profile
H1 - 0 to 3 inches: silt loam
H2 - 3 to 21 inches: silt loam
H3 - 21 to 27 inches: gravelly silt loam
H4 - 27 to 37 inches: weathered bedrock

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

54—Harwood-Burke-Wiehl silt loams, 30 to 60 percent slopes

Map Unit Setting
National map unit symbol: 29tk
Elevation: 400 to 6,200 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Harwood and similar soils: 30 percent
Burke and similar soils: 30 percent
Wiehl and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Harwood

Setting
Landform: Terraces
Parent material: Loess and old alluvium

Typical profile
H1 - 0 to 8 inches: loam
H2 - 8 to 26 inches: loam
H3 - 26 to 30 inches: gravelly loam
H4 - 30 to 34 inches: cemented material

Properties and qualities
Slope: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

Description of Burke

Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 25 inches: silt loam
H3 - 25 to 29 inches: cemented material

Properties and qualities
Slope: 30 to 40 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.0 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

Description of Wiehl

Setting
Landform: Terraces
Parent material: Eolian deposits over residuum weathered from sandstone and siltstone

Typical profile
H1 - 0 to 3 inches: silt loam
H2 - 3 to 21 inches: silt loam
H3 - 21 to 27 inches: gravelly silt loam
H4 - 27 to 37 inches: weathered bedrock

Properties and qualities
Slope: 30 to 60 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mnhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

65—Kiona stony silt loam, 15 to 45 percent slopes

Map Unit Setting
National map unit symbol: 29ty
Elevation: 400 to 2,500 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 210 days
Farmland classification: Not prime farmland

Map Unit Composition
Kiona and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kiona
Setting
Landform: Hillslopes
Parent material: Loess and colluvium derived from basalt

Typical profile
H1 - 0 to 5 inches: stony silt loam
H2 - 5 to 14 inches: very cobbly loam
H3 - 14 to 60 inches: very cobbly silt loam
Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No

66—Kittitas silt loam

Map Unit Setting

National map unit symbol: 29tz
Elevation: 500 to 1,100 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Kittitas and similar soils: 90 percent
Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Kittitas

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 19 inches: silt loam
H2 - 19 to 41 inches: silt loam
H3 - 41 to 60 inches: stratified fine sandy loam to silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 11.4 inches)

Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: C/D
Hydric soil rating: Yes

Minor Components
Toppenish
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Kittitas, undrained
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

68—Lickskillet very stony silt loam, 5 to 45 percent slopes

Map Unit Setting
National map unit symbol: 29v1
Elevation: 200 to 3,600 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Lickskillet and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lickskillet
Setting
Landform: Hillslopes, ridges
Parent material: Residuum and colluvium weathered from basalt, and loess

Typical profile
H1 - 0 to 3 inches: silt loam
H2 - 3 to 20 inches: very gravelly loam, very cobbly loam
Properties and qualities

- **Slope:** 5 to 45 percent
- **Depth to restrictive feature:** 12 to 20 inches to lithic bedrock
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 5 percent
- **Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- **Available water storage in profile:** Low (about 3.8 inches)

Interpretive groups

- **Land capability classification (irrigated):** None specified
- **Land capability classification (nonirrigated):** 7s
- **Hydrologic Soil Group:** C
- **Ecological site:** DRY STONY 10-16 PZ (R008XY201WA)
- **Hydric soil rating:** No

69—Logy silt loam, 0 to 2 percent slopes

Map Unit Setting

- **National map unit symbol:** 29v2
- **Mean annual precipitation:** 6 to 10 inches
- **Mean annual air temperature:** 50 degrees F
- **Frost-free period:** 130 to 180 days
- **Farmland classification:** Prime farmland if irrigated

Map Unit Composition

- **Logy and similar soils:** 95 percent
- **Minor components:** 5 percent
- **Estimates are based on observations, descriptions, and transects of the mapunit.**

Description of Logy

Setting

- **Landform:** Flood plains
- **Parent material:** Alluvium

Typical profile

- **H1 - 0 to 12 inches:** silt loam
- **H2 - 12 to 33 inches:** extremely gravelly loam
- **H3 - 33 to 60 inches:** extremely gravelly coarse sand, extremely cobbly coarse sand

Properties and qualities

- **Slope:** 0 to 2 percent
Depth to restrictive feature:  20 to 40 inches to strongly contrasting textural stratification
Natural drainage class:  Well drained
Capacity of the most limiting layer to transmit water (Ksat):  Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table:  More than 80 inches
Frequency of flooding:  Occasional
Frequency of ponding:  None
Available water storage in profile:  Low (about 4.2 inches)

Interpretive groups
Land capability classification (irrigated):  3w
Land capability classification (nonirrigated):  6w
Hydrologic Soil Group:  B
Hydric soil rating:  No

Minor Components
Weirman
Percent of map unit:  5 percent
Landform:  Flood plains
Hydric soil rating:  Yes

80—Mikkalo silt loam, 5 to 15 percent slopes

Map Unit Setting
National map unit symbol:  29vh
Elevation:  900 to 2,500 feet
Mean annual precipitation:  9 to 12 inches
Mean annual air temperature:  48 to 54 degrees F
Frost-free period:  130 to 180 days
Farmland classification:  Farmland of unique importance

Map Unit Composition
Mikkalo and similar soils:  100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mikkalo
Setting
Landform:  Ridges, hillslopes, plateaus
Parent material:  Loess over residuum weathered from basalt

Typical profile
H1 - 0 to 5 inches:  silt loam
H2 - 5 to 30 inches:  silt loam
H3 - 30 to 34 inches:  unweathered bedrock

Properties and qualities
Slope:  5 to 15 percent
Depth to restrictive feature:  20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

81—Mikkalo silt loam, 15 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29vj
Elevation: 900 to 2,500 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Mikkalo and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mikkalo
Setting
Landform: Hillslopes, plateaus, ridges
Parent material: Loess over residuum weathered from basalt

Typical profile
H1 - 0 to 5 inches: silt loam
H2 - 5 to 30 inches: silt loam
H3 - 30 to 34 inches: unweathered bedrock

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.7 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

83—Moxee silt loam, 2 to 15 percent slopes

Map Unit Setting
National map unit symbol: 29vl
Elevation: 900 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition
Moxee and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moxee

Setting
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 11 inches: silt loam
H3 - 11 to 18 inches: gravelly silt loam
H4 - 18 to 22 inches: cemented material

Properties and qualities
Slope: 2 to 15 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)
Interpretive groups

- Land capability classification (irrigated): 6s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: D
- Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
- Hydric soil rating: No

Minor Components

Riverwash

- Percent of map unit: 5 percent
- Landform: Alluvial cones
- Hydric soil rating: Yes

84—Moxee silt loam, 15 to 30 percent slopes

Map Unit Setting

- National map unit symbol: 29vm
- Elevation: 900 to 2,000 feet
- Mean annual precipitation: 8 to 12 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 125 to 160 days
- Farmland classification: Farmland of unique importance

Map Unit Composition

- Moxee and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Moxee

Setting

- Parent material: Loess

Typical profile

- H1 - 0 to 7 inches: silt loam
- H2 - 7 to 11 inches: silt loam
- H3 - 11 to 18 inches: gravelly silt loam
- H4 - 18 to 22 inches: cemented material

Properties and qualities

- Slope: 15 to 30 percent
- Depth to restrictive feature: 10 to 20 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups
Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
Hydric soil rating: No

85—Moxee cobbly silt loam, 0 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29vn
Elevation: 900 to 2,000 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 160 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Moxee, cobbly, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Moxee, Cobbly

Setting
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: cobbly silt loam
H2 - 7 to 11 inches: silt loam
H3 - 11 to 18 inches: gravelly silt loam
H4 - 18 to 22 inches: cemented material

Properties and qualities
Slope: 0 to 30 percent
Depth to restrictive feature: 10 to 20 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 3.2 inches)

Interpretive groups
Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Ecological site: DRY STONY 10-16 PZ (R008XY201WA)
Hydric soil rating: No

86—Naches loam

Map Unit Setting
National map unit symbol: 29vp
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Naches and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Naches

Setting
Landform: Terraces
Parent material: Alluvium

Typical profile
H1 - 0 to 9 inches: loam
H2 - 9 to 21 inches: loam
H3 - 21 to 34 inches: gravelly loam
H4 - 34 to 60 inches: extremely gravelly sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mhos/cm)
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups
Land capability classification (irrigated): 2s
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Hydric soil rating: No
92—Outlook silt loam

Map Unit Setting
- National map unit symbol: 29vx
- Elevation: 300 to 2,000 feet
- Mean annual precipitation: 6 to 12 inches
- Mean annual air temperature: 50 to 52 degrees F
- Frost-free period: 130 to 160 days
- Farmland classification: Not prime farmland

Map Unit Composition
- Outlook, drained, and similar soils: 90 percent
- Minor components: 10 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Outlook, Drained

Setting
- Landform: Flood plains
- Parent material: Alluvium

Typical profile
- H1 - 0 to 8 inches: fine sandy loam
- H2 - 8 to 60 inches: silt loam

Properties and qualities
- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 12 to 48 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 25 percent
- Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmmhos/cm)
- Sodium adsorption ratio, maximum in profile: 5.0
- Available water storage in profile: High (about 10.5 inches)

Interpretive groups
- Land capability classification (irrigated): 3w
- Land capability classification (nonirrigated): 4s
- Hydrologic Soil Group: C
- Hydric soil rating: Yes

Minor Components

Sinloc
- Percent of map unit: 5 percent
- Landform: Depressions
- Hydric soil rating: Yes
Outlook, undrained
Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

93—Pits

Map Unit Composition
Pits: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pits
Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

95—Quincy loamy fine sand, 0 to 10 percent slopes

Map Unit Setting
National map unit symbol: 29w0
Elevation: 200 to 4,500 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 100 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Quincy and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Quincy
Setting
Landform: Terraces
Parent material: Eolian sands

Typical profile
H1 - 0 to 20 inches: loamy fine sand
H2 - 20 to 60 inches: sand

Properties and qualities
Slope: 0 to 10 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 3 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.2 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Hydric soil rating: No

99—Ritzville silt loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 29w4
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 37 inches: silt loam
H3 - 37 to 60 inches: silt loam

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)
Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

100—Ritzville silt loam, 5 to 8 percent slopes

Map Unit Setting
National map unit symbol: 29p0
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 37 inches: silt loam
H3 - 37 to 60 inches: silt loam

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
101—Ritzville silt loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 29p1
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting
Landform: Hillslopes
Parent material: Loess

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 37 inches: silt loam
H3 - 37 to 60 inches: silt loam

Properties and qualities
Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
102—Ritzville silt loam, 15 to 30 percent slopes

Map Unit Setting

National map unit symbol: 29p2
Elevation: 800 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Ritzville and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ritzville

Setting

Landform: Hillslopes
Parent material: Loess

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 37 inches: silt loam
H3 - 37 to 60 inches: silt loam

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 12.0 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
103—Ritzville silt loam, 30 to 60 percent slopes

Map Unit Setting
- National map unit symbol: 29p3
- Elevation: 800 to 3,000 feet
- Mean annual precipitation: 9 to 12 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 100 to 180 days
- Farmland classification: Not prime farmland

Map Unit Composition
- Ritzville and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Ritzville

Setting
- Landform: Hillslopes
- Parent material: Loess

Typical profile
- H1 - 0 to 7 inches: silt loam
- H2 - 7 to 37 inches: silt loam
- H3 - 37 to 60 inches: silt loam

Properties and qualities
- Slope: 30 to 60 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: High (about 12.0 inches)

Interpretive groups
- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 7e
- Hydrologic Soil Group: B
- Ecological site: LOAMY 10-16 PZ (R008XY102WA)
- Hydric soil rating: No
109—Rock Creek very stony silt loam, 0 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29p9
Elevation: 1,400 to 4,200 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition
Rock creek and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Creek
Setting
Landform: Ridges, plateaus
Parent material: Loess and residuum weathered from basalt

Typical profile
H1 - 0 to 2 inches: very stony silt loam
H2 - 2 to 10 inches: very cobbly clay
H3 - 10 to 14 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 30 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)
Hydric soil rating: No

110—Rock Creek-Clint-Simcoe complex, 0 to 45 percent slopes

Map Unit Setting
National map unit symbol: 29pc
Elevation: 1,400 to 4,200 feet
Mean annual precipitation: 8 to 18 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 110 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition
Rock creek and similar soils: 40 percent
Clint and similar soils: 20 percent
Simcoe and similar soils: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Creek
Setting
Landform: Plateaus, ridges
Parent material: Loess and residuum weathered from basalt

Typical profile
H1 - 0 to 2 inches: very stony silt loam
H2 - 2 to 10 inches: very cobbly clay
H3 - 10 to 14 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 45 percent
Depth to restrictive feature: 8 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.6 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: VERY SHALLOW 10-16 PZ (R008XY301WA)
Hydric soil rating: No

Description of Clint
Setting
Landform: Hillslopes

Typical profile
H1 - 0 to 10 inches: very stony loam
H2 - 10 to 19 inches: very gravelly loam
H3 - 19 to 28 inches: extremely gravelly loam
H4 - 28 to 32 inches: unweathered bedrock

Properties and qualities
Slope: 5 to 45 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Ecological site: STONY 16-24 PZ (R006XY202WA)
Hydric soil rating: No

Description of Simcoe
Setting
Parent material: Loess and small amount volcanic ash and residuum weathered from basalt

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 37 inches: silty clay loam
H3 - 37 to 41 inches: unweathered bedrock

Properties and qualities
Slope: 0 to 45 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups
Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

112—Roza clay loam, 8 to 15 percent slopes

Map Unit Setting
National map unit symbol: 29pf
Elevation: 1,100 to 4,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 110 to 165 days
Farmland classification: Farmland of unique importance
Map Unit Composition

*Roza and similar soils*: 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Roza

**Setting**

*Parent material:* Alluvium and/or residuum derived from fine textured sediments

**Typical profile**

- *H1 - 0 to 2 inches:* clay loam
- *H2 - 2 to 19 inches:* silty clay
- *H3 - 19 to 60 inches:* clay loam

**Properties and qualities**

- *Slope:* 8 to 15 percent
- *Depth to restrictive feature:* More than 80 inches
- *Natural drainage class:* Well drained
- *Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)
- *Depth to water table:* More than 80 inches
- *Frequency of flooding:* None
- *Frequency of ponding:* None
- *Calcium carbonate, maximum in profile:* 20 percent
- *Available water storage in profile:* High (about 9.7 inches)

**Interpretive groups**

- *Land capability classification (irrigated):* 4e
- *Land capability classification (nonirrigated):* 3e
- *Hydrologic Soil Group:* C
- *Ecological site:* CALCAREOUS LOAM 10-16" pz (R008XY701WA)
- *Hydric soil rating:* No

113—Roza clay loam, 15 to 30 percent slopes

**Map Unit Setting**

*National map unit symbol:* 29pg

- *Elevation:* 1,100 to 4,600 feet
- *Mean annual precipitation:* 8 to 12 inches
- *Mean annual air temperature:* 48 to 52 degrees F
- *Frost-free period:* 110 to 165 days
- *Farmland classification:* Farmland of unique importance

**Map Unit Composition**

*Roza and similar soils:* 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Roza**

**Setting**

*Parent material:* Alluvium and/or residuum derived from fine textured sediments
Typical profile

- **H1 - 0 to 2 inches:** clay loam
- **H2 - 2 to 19 inches:** silty clay
- **H3 - 19 to 60 inches:** clay loam

Properties and qualities

- **Slope:** 15 to 30 percent
- **Depth to restrictive feature:** More than 80 inches
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately low to moderately high (0.06 to 0.20 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 20 percent
- **Available water storage in profile:** High (about 9.7 inches)

Interpretive groups

- **Land capability classification (irrigated):** 6e
- **Land capability classification (nonirrigated):** 4e
- **Hydrologic Soil Group:** C
- **Ecological site:** CALCAREOUS LOAM 10-16" pz (R008XY701WA)
- **Hydric soil rating:** No

128—Selah silt loam, 2 to 5 percent slopes

Map Unit Setting

- **National map unit symbol:** 29pz
- **Elevation:** 1,100 to 2,900 feet
- **Mean annual precipitation:** 8 to 15 inches
- **Mean annual air temperature:** 48 to 55 degrees F
- **Frost-free period:** 130 to 180 days
- **Farmland classification:** Prime farmland if irrigated

Map Unit Composition

- **Selah and similar soils:** 100 percent
- **Estimates are based on observations, descriptions, and transects of the mapunit.**

Description of Selah

Setting

- **Landform:** Terraces
- **Parent material:** Loess and old alluvium

Typical profile

- **H1 - 0 to 7 inches:** silt loam
- **H2 - 7 to 29 inches:** silt loam
- **H3 - 29 to 34 inches:** clay loam
- **H4 - 34 to 38 inches:** cemented material

Properties and qualities

- **Slope:** 2 to 5 percent
Custom Soil Resource Report

Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

129—Selah silt loam, 5 to 8 percent slopes

Map Unit Setting
National map unit symbol: 29q0
Elevation: 1,100 to 2,900 feet
Mean annual precipitation: 8 to 15 inches
Mean annual air temperature: 48 to 55 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Selah and similar soils: 100 percent
_estimates are based on observations, descriptions, and transects of the mapunit._

Description of Selah

Setting
Landform: Terraces
Parent material: Loess and old alluvium

Typical profile
H1 - 0 to 7 inches: silt loam
H2 - 7 to 29 inches: silt loam
H3 - 29 to 34 inches: clay loam
H4 - 34 to 38 inches: cemented material

Properties and qualities
Slope: 5 to 8 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

130—Selah silt loam, 8 to 15 percent slopes

Map Unit Setting
  National map unit symbol: 29q2
  Elevation: 1,100 to 2,900 feet
  Mean annual precipitation: 8 to 15 inches
  Mean annual air temperature: 48 to 55 degrees F
  Frost-free period: 130 to 180 days
  Farmland classification: Farmland of unique importance

Map Unit Composition
Selah and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Selah

Setting
  Landform: Terraces
  Parent material: Loess and old alluvium

Typical profile
  H1 - 0 to 7 inches: silt loam
  H2 - 7 to 29 inches: silt loam
  H3 - 29 to 34 inches: clay loam
  H4 - 34 to 38 inches: cemented material

Properties and qualities
  Slope: 8 to 15 percent
  Depth to restrictive feature: 20 to 40 inches to duripan
  Natural drainage class: Well drained
  Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
  Depth to water table: More than 80 inches
  Frequency of flooding: None
  Frequency of ponding: None
  Calcium carbonate, maximum in profile: 15 percent
  Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups
- Land capability classification (irrigated): 4e
- Land capability classification (nonirrigated): 3e
- Hydrologic Soil Group: C
- Ecological site: LOAMY 10-16 PZ (R008XY102WA)
- Hydric soil rating: No

131—Selah silt loam, 15 to 30 percent slopes

Map Unit Setting
- National map unit symbol: 29q3
- Elevation: 1,100 to 2,900 feet
- Mean annual precipitation: 8 to 15 inches
- Mean annual air temperature: 48 to 55 degrees F
- Frost-free period: 130 to 180 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Selah and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Selah

Setting
- Landform: Terraces
- Parent material: Loess and old alluvium

Typical profile
- H1 - 0 to 7 inches: silt loam
- H2 - 7 to 29 inches: silt loam
- H3 - 29 to 34 inches: clay loam
- H4 - 34 to 38 inches: cemented material

Properties and qualities
- Slope: 15 to 30 percent
- Depth to restrictive feature: 20 to 40 inches to duripan
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 15 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: Moderate (about 6.5 inches)

Interpretive groups
- Land capability classification (irrigated): 6e
- Land capability classification (nonirrigated): 4e
- Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

136—Simcoe silt loam, 5 to 15 percent slopes

Map Unit Setting
   National map unit symbol: 29q8
   Mean annual precipitation: 8 to 12 inches
   Mean annual air temperature: 48 degrees F
   Frost-free period: 120 to 170 days
   Farmland classification: Farmland of unique importance

Map Unit Composition
   Simcoe and similar soils: 100 percent
   Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simcoe
   Setting
      Parent material: Loess and small amount volcanic ash and residuum weathered from basalt
   Typical profile
      H1 - 0 to 8 inches: silt loam
      H2 - 8 to 37 inches: silty clay loam
      H3 - 37 to 41 inches: unweathered bedrock
   Properties and qualities
      Slope: 5 to 15 percent
      Depth to restrictive feature: 20 to 40 inches to lithic bedrock
      Natural drainage class: Well drained
      Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
      Depth to water table: More than 80 inches
      Frequency of flooding: None
      Frequency of ponding: None
      Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups
   Land capability classification (irrigated): 4e
   Land capability classification (nonirrigated): 3e
   Hydrologic Soil Group: C
   Ecological site: LOAMY 10-16 PZ (R008XY102WA)
   Hydric soil rating: No
137—Simcoe silt loam, 15 to 30 percent slopes

Map Unit Setting
National map unit symbol: 29q9
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 degrees F
Frost-free period: 120 to 170 days
Farmland classification: Farmland of unique importance

Map Unit Composition
Simcoe and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simcoe

Setting
Parent material: Loess and small amount volcanic ash and residuum weathered from basalt

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 37 inches: silty clay loam
H3 - 37 to 41 inches: unweathered bedrock

Properties and qualities
Slope: 15 to 30 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups
Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No

140—Sinloc silt loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 29qf
Elevation: 500 to 1,200 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 136 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
- Sinloc, drained, and similar soils: 90 percent
- Minor components: 10 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Sinloc, Drained

Setting
- Landform: Terraces
- Parent material: Lacustrine deposits with a mantle of loess

Typical profile
- H1 - 0 to 3 inches: silt loam
- H2 - 3 to 15 inches: silt loam
- H3 - 15 to 45 inches: silt loam
- H4 - 45 to 60 inches: loamy fine sand

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 12 to 42 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 20 percent
- Gypsum, maximum in profile: 5 percent
- Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 10.0
- Available water storage in profile: High (about 9.7 inches)

Interpretive groups
- Land capability classification (irrigated): 3w
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: C
- Hydric soil rating: Yes

Minor Components

Outlook
- Percent of map unit: 5 percent
- Landform: Alluvial cones
- Hydric soil rating: Yes

Sinloc, undrained
- Percent of map unit: 5 percent
- Landform: Depressions
- Hydric soil rating: Yes
141—Sinloc silt loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 29qg
Elevation: 500 to 1,200 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 136 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Sinloc, drained, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sinloc, Drained

Setting

Landform: Terraces
Parent material: Lacustrine deposits with a mantle of loess

Typical profile

H1 - 0 to 3 inches: silt loam
H2 - 3 to 15 inches: silt loam
H3 - 15 to 45 inches: silt loam
H4 - 45 to 60 inches: loamy fine sand

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 12 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 20 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6w
Hydric Soil Group: C
Hydric soil rating: Yes
Minor Components

**Sinloc, undrained**
- **Percent of map unit**: 5 percent
- **Landform**: Depressions
- **Hydric soil rating**: Yes

142—Starbuck silt loam, 2 to 15 percent slopes

Map Unit Setting
- **National map unit symbol**: 29qh
- **Elevation**: 400 to 2,700 feet
- **Mean annual precipitation**: 6 to 12 inches
- **Mean annual air temperature**: 48 to 50 degrees F
- **Frost-free period**: 115 to 210 days
- **Farmland classification**: Not prime farmland

Map Unit Composition
- **Starbuck and similar soils**: 100 percent
- **Estimates are based on observations, descriptions, and transects of the mapunit.**

Description of Starbuck

Setting
- **Landform**: Hillslopes, structural benches
- **Parent material**: Loess and residuum derived from basalt

Typical profile
- **H1 - 0 to 9 inches**: silt loam
- **H2 - 9 to 16 inches**: gravelly silt loam
- **H3 - 16 to 20 inches**: unweathered bedrock

Properties and qualities
- **Slope**: 2 to 15 percent
- **Depth to restrictive feature**: 12 to 20 inches to lithic bedrock
- **Natural drainage class**: Well drained
- **Capacity of the most limiting layer to transmit water (Ksat)**: Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table**: More than 80 inches
- **Frequency of flooding**: None
- **Frequency of ponding**: None
- **Available water storage in profile**: Very low (about 2.8 inches)

Interpretive groups
- **Land capability classification (irrigated)**: 6s
- **Land capability classification (nonirrigated)**: 6s
- **Hydrologic Soil Group**: D
- **Ecological site**: STONY 6-10 PZ (R007XY202WA)
- **Hydric soil rating**: No
**143—Starbuck-Rock outcrop complex, 0 to 45 percent slopes**

**Map Unit Setting**
- National map unit symbol: 29qj
- Elevation: 400 to 2,700 feet
- Mean annual precipitation: 6 to 12 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 115 to 210 days
- Farmland classification: Not prime farmland

**Map Unit Composition**
- Starbuck and similar soils: 50 percent
- Rock outcrop: 25 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

**Description of Starbuck**

**Setting**
- Landform: Hillslopes, structural benches
- Parent material: Loess and residuum derived from basalt

**Typical profile**
- H1 - 0 to 9 inches: silt loam
- H2 - 9 to 16 inches: gravelly silt loam
- H3 - 16 to 20 inches: unweathered bedrock

**Properties and qualities**
- Slope: 0 to 45 percent
- Depth to restrictive feature: 12 to 20 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water storage in profile: Very low (about 2.8 inches)

**Interpretive groups**
- Land capability classification (irrigated): 7e
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: D
- Ecological site: STONY 6-10 PZ (R007XY202WA)
- Hydric soil rating: No

**Description of Rock Outcrop**

**Properties and qualities**
- Slope: 0 to 45 percent
- Depth to restrictive feature: 0 inches to lithic bedrock

**Interpretive groups**
- Land capability classification (irrigated): None specified
144—Starbuck-Rock outcrop complex, 45 to 60 percent slopes

Map Unit Setting
- National map unit symbol: 29qk
- Elevation: 400 to 2,700 feet
- Mean annual precipitation: 6 to 12 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 115 to 210 days
- Farmland classification: Not prime farmland

Map Unit Composition
- Starbuck and similar soils: 45 percent
- Rock outcrop: 35 percent

Description of Starbuck

Setting
- Landform: Hillslopes, structural benches
- Parent material: Loess and residuum derived from basalt

Typical profile
- H1 - 0 to 9 inches: silt loam
- H2 - 9 to 16 inches: gravelly silt loam
- H3 - 16 to 20 inches: unweathered bedrock

Properties and qualities
- Slope: 45 to 60 percent
- Depth to restrictive feature: 12 to 20 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Available water storage in profile: Very low (about 2.8 inches)

Interpretive groups
- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 7e
- Hydrologic Soil Group: D
- Ecological site: STONY 6-10 PZ (R007XY202WA)
- Hydric soil rating: No

Description of Rock Outcrop

Properties and qualities
- Slope: 45 to 60 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups
- Land capability classification (irrigated): None specified
- Land capability classification (nonirrigated): 8
- Hydric soil rating: No

158—Tieton loam, 2 to 5 percent slopes

Map Unit Setting
- National map unit symbol: 29r1
- Elevation: 1,200 to 2,500 feet
- Mean annual precipitation: 11 to 15 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 110 to 160 days
- Farmland classification: Prime farmland if irrigated

Map Unit Composition
- Tieton and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tieton

Setting
- Landform: Hillslopes, plateaus
- Parent material: Loess and residuum weathered from andesite

Typical profile
- H1 - 0 to 9 inches: loam
- H2 - 9 to 15 inches: loam
- H3 - 15 to 44 inches: silty clay loam
- H4 - 44 to 50 inches: loam
- H5 - 50 to 54 inches: unweathered bedrock

Properties and qualities
- Slope: 2 to 5 percent
- Depth to restrictive feature: 40 to 60 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups
- Land capability classification (irrigated): 2e
- Land capability classification (nonirrigated): 2e
- Hydrologic Soil Group: C
- Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
Hydric soil rating: No

159—Tieton loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 29r2
Elevation: 1,200 to 2,500 feet
Mean annual precipitation: 11 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 110 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tieton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tieton

Setting

Landform: Hillslopes, plateaus
Parent material: Loess and residuum weathered from andesite

Typical profile

H1 - 0 to 9 inches: loam
H2 - 9 to 15 inches: loam
H3 - 15 to 44 inches: silty clay loam
H4 - 44 to 50 inches: loam
H5 - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
Hydric soil rating: No
160—Tieton loam, 8 to 15 percent slopes

Map Unit Setting
- **National map unit symbol:** 29r4
- **Elevation:** 1,200 to 2,500 feet
- **Mean annual precipitation:** 11 to 15 inches
- **Mean annual air temperature:** 48 to 50 degrees F
- **Frost-free period:** 110 to 160 days
- **Farmland classification:** Farmland of unique importance

Map Unit Composition
- **Tieton and similar soils:** 100 percent

Estimates are based on observations, descriptions, and transects of the map unit.

Description of Tieton

Setting
- **Landform:** Plateaus, hillslopes
- **Parent material:** Loess and residuum weathered from andesite

Typical profile
- **H1 - 0 to 9 inches:** loam
- **H2 - 9 to 15 inches:** loam
- **H3 - 15 to 44 inches:** silty clay loam
- **H4 - 44 to 50 inches:** loam
- **H5 - 50 to 54 inches:** unweathered bedrock

Properties and qualities
- **Slope:** 8 to 15 percent
- **Depth to restrictive feature:** 40 to 60 inches to lithic bedrock
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high (0.20 to 0.57 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 5 percent
- **Available water storage in profile:** Moderate (about 8.8 inches)

Interpretive groups
- **Land capability classification (irrigated):** 4e
- **Land capability classification (nonirrigated):** 3e
- **Hydrologic Soil Group:** C
- **Ecological site:** COOL LOAMY 10-16 PZ (R008XY103WA)
- **Hydric soil rating:** No
161—Tieton loam, 15 to 30 percent slopes

Map Unit Setting
- National map unit symbol: 29r5
- Elevation: 1,200 to 2,500 feet
- Mean annual precipitation: 11 to 15 inches
- Mean annual air temperature: 48 to 50 degrees F
- Frost-free period: 110 to 160 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Tieton and similar soils: 100 percent
- Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tieton

Setting
- Landform: Hillslopes, plateaus
- Parent material: Loess and residuum weathered from andesite

Typical profile
- H1 - 0 to 9 inches: loam
- H2 - 9 to 15 inches: loam
- H3 - 15 to 44 inches: silty clay loam
- H4 - 44 to 50 inches: loam
- H5 - 50 to 54 inches: unweathered bedrock

Properties and qualities
- Slope: 15 to 30 percent
- Depth to restrictive feature: 40 to 60 inches to lithic bedrock
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups
- Land capability classification (irrigated): 6e
- Land capability classification (nonirrigated): 4e
- Hydrologic Soil Group: C
- Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
- Hydric soil rating: No
162—Tieton-Rock outcrop complex, 0 to 30 percent slopes

Map Unit Setting

National map unit symbol: 29r6
Elevation: 1,200 to 2,500 feet
Mean annual precipitation: 11 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 110 to 160 days
Farmland classification: Not prime farmland

Map Unit Composition

Tieton and similar soils: 60 percent
Rock outcrop: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tieton

Setting

Landform: Hillslopes, plateaus
Parent material: Loess and residuum weathered from andesite

Typical profile

$H_1$ - 0 to 9 inches: loam
$H_2$ - 9 to 15 inches: loam
$H_3$ - 15 to 44 inches: silty clay loam
$H_4$ - 44 to 50 inches: loam
$H_5$ - 50 to 54 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 30 percent
Depth to restrictive feature: 40 to 60 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: COOL LOAMY 10-16 PZ (R008XY103WA)
Hydric soil rating: No

Description of Rock Outcrop

Properties and qualities

Depth to restrictive feature: 0 inches to lithic bedrock
Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8
Hydric soil rating: No

163—Toppenish silt loam

Map Unit Setting
National map unit symbol: 29r7
Elevation: 700 to 1,800 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if protected from flooding or not frequently
flooded during the growing season

Map Unit Composition
Toppenish, drained, and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Toppenish, Drained
Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 4 inches: silt loam
H2 - 4 to 50 inches: silt loam, silty clay loam
H2 - 4 to 50 inches: extremely gravelly sand
H3 - 50 to 60 inches:

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural
stratification
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20
to 0.57 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: Very high (about 12.8 inches)

Interpretive groups
Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: Yes

Minor Components

Wenas
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Track
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Fiander
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Kittitas
Percent of map unit: 3 percent
Landform: Flood plains
Hydric soil rating: Yes

Toppenish, undrained
Percent of map unit: 2 percent
Landform: Depressions
Hydric soil rating: Yes

164—Torriorthents, steep

Map Unit Setting
National map unit symbol: 29r8
Elevation: 350 to 1,000 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 50 to 54 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Torriorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Torriorthents

Setting
Landform: Hillslopes
Parent material: Loess, and residuum and colluvium derived from soft tuffaceous sandstone and/or old gravelly alluvium and/or lacustrine deposits
Typical profile

H1 - 0 to 4 inches: gravelly sandy loam
H2 - 4 to 31 inches: stratified very gravelly sand to clay loam
H3 - 31 to 35 inches: weathered bedrock

Properties and qualities

Slope: 30 to 60 percent
Depth to restrictive feature: 10 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

165—Track loam

Map Unit Setting

National map unit symbol: 29r9
Elevation: 700 to 1,500 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Track, drained, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Track, Drained

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 14 inches: loam
H2 - 14 to 26 inches: very gravelly loam
H3 - 26 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: Very low (about 3.0 inches)

Interpretive groups
Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: Yes

Minor Components
Toppenish
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Track, undrained
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Weirman
Percent of map unit: 3 percent
Landform: Alluvial cones
Hydric soil rating: No

Zillah
Percent of map unit: 2 percent
Landform: Alluvial cones
Hydric soil rating: No

169—Umapine silt loam, drained, 0 to 2 percent slopes

Map Unit Setting
National map unit symbol: 29rf
Elevation: 250 to 3,500 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 195 days
Farmland classification: Not prime farmland
Map Unit Composition

Umapine, drained, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Umapine, Drained

Setting
- Landform: Flood plains, terraces
- Parent material: Alluvium

Typical profile
- H1 - 0 to 7 inches: silt loam
- H2 - 7 to 60 inches: silt loam

Properties and qualities
- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Somewhat poorly drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: About 24 to 48 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 30 percent
- Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
- Sodium adsorption ratio, maximum in profile: 20.0
- Available water storage in profile: High (about 11.9 inches)

Interpretive groups
- Land capability classification (irrigated): 4s
- Land capability classification (nonirrigated): 6s
- Hydrologic Soil Group: C
- Hydric soil rating: No

Minor Components

Toppenish
- Percent of map unit: 5 percent
- Landform: Depressions
- Hydric soil rating: Yes

Kittitas
- Percent of map unit: 5 percent
- Landform: Flood plains
- Hydric soil rating: Yes
170—Umapine silt loam, drained, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 29rh
Elevation: 250 to 3,500 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Umapine, drained, and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Umapine, Drained

Setting

Landform: Flood plains, terraces
Parent material: Alluvium

Typical profile

H1 - 0 to 7 inches: silt loam
H2 - 7 to 60 inches: silt loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 20.0
Available water storage in profile: High (about 11.9 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Toppenish

Percent of map unit: 5 percent
**Landform:** Depressions

**Hydric soil rating:** Yes

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### 176—Warden silt loam, 0 to 2 percent slopes

**Map Unit Setting**
- National map unit symbol: 29rp
- Elevation: 600 to 1,300 feet
- Mean annual precipitation: 6 to 9 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 135 to 200 days
- Farmland classification: Prime farmland if irrigated

**Map Unit Composition**
- Warden and similar soils: 100 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Warden**

**Setting**
- Landform: Terraces
- Parent material: Loess over lacustrine deposits

**Typical profile**
- H1 - 0 to 5 inches: silt loam
- H2 - 5 to 19 inches: silt loam
- H3 - 19 to 60 inches: stratified very fine sandy loam to silt loam

**Properties and qualities**
- Slope: 0 to 2 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmmhos/cm)
- Available water storage in profile: High (about 11.7 inches)

**Interpretive groups**
- Land capability classification (irrigated): 2c
- Land capability classification (nonirrigated): 6c
- Hydrologic Soil Group: B
- Ecological site: LOAMY 6-10 PZ (R007XY102WA)
- Hydric soil rating: No
177—Warden silt loam, 2 to 5 percent slopes

Map Unit Setting
- **National map unit symbol:** 29rq
- **Elevation:** 600 to 1,300 feet
- **Mean annual precipitation:** 6 to 9 inches
- **Mean annual air temperature:** 48 to 52 degrees F
- **Frost-free period:** 135 to 200 days
- **Farmland classification:** Farmland of statewide importance

Map Unit Composition
- **Warden and similar soils:** 100 percent
- Estimates are based on observations, descriptions, and transects of the map unit.

Description of Warden

**Setting**
- **Landform:** Terraces
- **Parent material:** Loess over lacustrine deposits

**Typical profile**
- **H1 - 0 to 5 inches:** silt loam
- **H2 - 5 to 19 inches:** silt loam
- **H3 - 19 to 60 inches:** stratified very fine sandy loam to silt loam

**Properties and qualities**
- **Slope:** 2 to 5 percent
- **Depth to restrictive feature:** More than 80 inches
- **Natural drainage class:** Well drained
- **Capacity of the most limiting layer to transmit water (Ksat):** Moderately high to high (0.57 to 1.98 in/hr)
- **Depth to water table:** More than 80 inches
- **Frequency of flooding:** None
- **Frequency of ponding:** None
- **Calcium carbonate, maximum in profile:** 5 percent
- **Salinity, maximum in profile:** Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- **Available water storage in profile:** High (about 11.7 inches)

**Interpretive groups**
- **Land capability classification (irrigated):** 2e
- **Land capability classification (nonirrigated):** 6e
- **Hydrologic Soil Group:** B
- **Ecological site:** LOAMY 6-10 PZ (R007XY102WA)
- **Hydric soil rating:** No
178—Warden silt loam, 5 to 8 percent slopes

Map Unit Setting

National map unit symbol: 29rr
Elevation: 600 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Warden and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Warden

Setting

Landform: Terraces
Parent material: Loess over lacustrine deposits

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 19 inches: silt loam
H3 - 19 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities

Slope: 5 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No
179—Warden silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29rs
Elevation: 600 to 1,300 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 135 to 200 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Warden and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Warden

Setting

Landform: Terraces
Parent material: Loess over lacustrine deposits

Typical profile

H1 - 0 to 5 inches: silt loam
H2 - 5 to 19 inches: silt loam
H3 - 19 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: LOAMY 6-10 PZ (R007XY102WA)
Hydric soil rating: No
180—Warden silt loam, 15 to 30 percent slopes

Map Unit Setting
- National map unit symbol: 29rv
- Elevation: 600 to 1,300 feet
- Mean annual precipitation: 6 to 9 inches
- Mean annual air temperature: 48 to 52 degrees F
- Frost-free period: 135 to 200 days
- Farmland classification: Farmland of unique importance

Map Unit Composition
- Warden and similar soils: 100 percent
  Estimates are based on observations, descriptions, and transects of the map unit.

Description of Warden

Setting
- Landform: Terraces
- Parent material: Loess over lacustrine deposits

Typical profile
- H1 - 0 to 5 inches: silt loam
- H2 - 5 to 19 inches: silt loam
- H3 - 19 to 60 inches: stratified very fine sandy loam to silt loam

Properties and qualities
- Slope: 15 to 30 percent
- Depth to restrictive feature: More than 80 inches
- Natural drainage class: Well drained
- Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
- Depth to water table: More than 80 inches
- Frequency of flooding: None
- Frequency of ponding: None
- Calcium carbonate, maximum in profile: 5 percent
- Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
- Available water storage in profile: High (about 11.7 inches)

Interpretive groups
- Land capability classification (irrigated): 6e
- Land capability classification (nonirrigated): 6e
- Hydrologic Soil Group: B
- Ecological site: LOAMY 6-10 PZ (R007XY102WA)
- Hydric soil rating: No
181—Weirman sandy loam, channeled

Map Unit Setting

National map unit symbol: 29rw
Elevation: 400 to 2,200 feet
Mean annual precipitation: 6 to 14 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Weirman and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weirman

Setting

Landform: Terraces, flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 8 inches: sandy loam
H2 - 8 to 21 inches: loamy fine sand
H3 - 21 to 60 inches: very gravelly loamy sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 36 to 60 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A
Ecological site: LOAMY BOTTOM 6-10 PZ (R007XY402WA)
Hydric soil rating: Yes

182—Weirman fine sandy loam

Map Unit Setting

National map unit symbol: 29rx
Custom Soil Resource Report

*Elevation:* 400 to 2,500 feet  
*Mean annual precipitation:* 7 to 14 inches  
*Mean annual air temperature:* 48 to 50 degrees F  
*Frost-free period:* 130 to 180 days  
*Farmland classification:* Not prime farmland

**Map Unit Composition**  
*Weirman and similar soils:* 95 percent  
*Minor components:* 5 percent  
*Estimates are based on observations, descriptions, and transects of the map unit.*

**Description of Weirman**

**Setting**  
*Landform:* Flood plains, terraces  
*Parent material:* Alluvium

**Typical profile**  
*H1 - 0 to 8 inches:* fine sandy loam  
*H2 - 8 to 21 inches:* loamy fine sand  
*H3 - 21 to 60 inches:* very gravelly loamy sand

**Properties and qualities**  
*Slope:* 0 to 2 percent  
*Depth to restrictive feature:* More than 80 inches  
*Natural drainage class:* Somewhat excessively drained  
*Capacity of the most limiting layer to transmit water (Ksat):* High (1.98 to 5.95 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water storage in profile:* Very low (about 2.9 inches)

**Interpretive groups**  
*Land capability classification (irrigated):* 4s  
*Land capability classification (nonirrigated):* 4s  
*Hydrologic Soil Group:* A  
*Hydric soil rating:* No

**Minor Components**

*Zillah*  
*Percent of map unit:* 5 percent  
*Landform:* Alluvial cones  
*Hydric soil rating:* Yes

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183—Weirman gravelly fine sandy loam

**Map Unit Setting**

*National map unit symbol:* 29ry  
*Elevation:* 400 to 2,500 feet
Mean annual precipitation: 7 to 14 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Weirman and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Weirman
Setting
Landform: Flood plains, terraces
Parent material: Alluvium

Typical profile
H1 - 0 to 8 inches: gravelly fine sandy loam
H2 - 8 to 21 inches: loamy fine sand
H3 - 21 to 60 inches: very gravelly loamy sand

Properties and qualities
Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 4s
Hydric Soil Group: A
Hydric soil rating: No

Minor Components
Zillah
Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

184—Weirman fine sandy loam, wet

Map Unit Setting
National map unit symbol: 29rz
Elevation: 400 to 2,500 feet
Mean annual precipitation: 7 to 14 inches
Mean annual air temperature: 50 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Weirman and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Weirman
Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 8 inches: fine sandy loam
H2 - 8 to 21 inches: loamy fine sand
H3 - 21 to 60 inches: very gravelly loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 0 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Very low (about 2.9 inches)

Interpretive groups
Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: A/D
Hydric soil rating: No

Minor Components
Zillah
Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

185—Wenas silt loam

Map Unit Setting
National map unit symbol: 29s0
Elevation: 1,100 to 1,800 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if drained

Map Unit Composition
Wenas, drained, and similar soils: 85 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wenas, Drained

Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 8 inches: silt loam
H2 - 8 to 28 inches: silt loam
H3 - 28 to 37 inches: silty clay loam
H4 - 37 to 47 inches: sandy loam
H5 - 47 to 60 inches: gravelly loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: About 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Very slightly saline to slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 10.0
Available water storage in profile: High (about 10.0 inches)

Interpretive groups
Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: C
Hydric soil rating: Yes

Minor Components
Kittitas
Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

Toppenish
Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wenas
Percent of map unit: 3 percent
Landform: Depressions
Hydric soil rating: Yes
187—Willis silt loam, 2 to 5 percent slopes

Map Unit Setting
National map unit symbol: 29s2
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Willis and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting
Parent material: Loess

Typical profile
H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silt loam
H3 - 22 to 34 inches: silt loam
H4 - 34 to 38 inches: cemented material

Properties and qualities
Slope: 2 to 5 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mhmhos/cm)
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
188—Willis silt loam, 5 to 8 percent slopes

Map Unit Setting
   National map unit symbol: 29s3
   Elevation: 1,000 to 3,000 feet
   Mean annual precipitation: 9 to 12 inches
   Mean annual air temperature: 48 to 50 degrees F
   Frost-free period: 125 to 180 days
   Farmland classification: Farmland of statewide importance

Map Unit Composition
   Willis and similar soils: 100 percent
   Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting
   Parent material: Loess

Typical profile
   H1 - 0 to 6 inches: silt loam
   H2 - 6 to 22 inches: silt loam
   H3 - 22 to 34 inches: silt loam
   H4 - 34 to 38 inches: cemented material

Properties and qualities
   Slope: 5 to 8 percent
   Depth to restrictive feature: 20 to 40 inches to duripan
   Natural drainage class: Well drained
   Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
   Depth to water table: More than 80 inches
   Frequency of flooding: None
   Frequency of ponding: None
   Calcium carbonate, maximum in profile: 10 percent
   Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
   Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups
   Land capability classification (irrigated): 3e
   Land capability classification (nonirrigated): 3e
   Hydrologic Soil Group: C
   Ecological site: LOAMY 10-16 PZ (R008XY102WA)
   Hydric soil rating: No
189—Willis silt loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 29s4
Elevation: 1,000 to 3,000 feet
Mean annual precipitation: 9 to 12 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 125 to 180 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Willis and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Willis

Setting

Parent material: Loess

Typical profile

H1 - 0 to 6 inches: silt loam
H2 - 6 to 22 inches: silt loam
H3 - 22 to 34 inches: silt loam
H4 - 34 to 38 inches: cemented material

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to duripan
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.7 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: LOAMY 10-16 PZ (R008XY102WA)
Hydric soil rating: No
190—Yakima silt loam

Map Unit Setting

National map unit symbol: 29s6
Elevation: 500 to 1,600 feet
Mean annual precipitation: 9 to 14 inches
Mean annual air temperature: 54 to 55 degrees F
Frost-free period: 120 to 195 days
Farmland classification: Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition

Yakima and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Yakima

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 30 inches: gravelly very fine sandy loam
H3 - 30 to 60 inches: extremely gravelly coarse sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 20 to 40 inches to strongly contrasting textural stratification
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: B
Hydric soil rating: No
192—Zillah silt loam

Map Unit Setting
National map unit symbol: 29s8
Elevation: 600 to 1,000 feet
Mean annual precipitation: 6 to 9 inches
Mean annual air temperature: 46 to 50 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season

Map Unit Composition
Zillah and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zillah
Setting
Landform: Flood plains
Parent material: Alluvium

Typical profile
H1 - 0 to 12 inches: silt loam
H2 - 12 to 42 inches: silt loam
H3 - 42 to 60 inches: loamy sand

Properties and qualities
Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups
Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components
Toppenish
Percent of map unit:
Landform: Depressions
Hydric soil rating: Yes
Weirman

Percent of map unit: Landform: Alluvial cones
Hydric soil rating: Yes

193—Zillah silt loam, channeled

Map Unit Setting

National map unit symbol: 29s9
Elevation: 600 to 1,500 feet
Mean annual precipitation: 6 to 12 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Zillah and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the map unit.

Description of Zillah

Setting

Landform: Flood plains
Parent material: Alluvium

Typical profile

H1 - 0 to 12 inches: silt loam
H2 - 12 to 42 inches: silt loam
H3 - 42 to 60 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: 40 to 60 inches to strongly contrasting textural stratification
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: B/D
Ecological site: LOAMY BOTTOM 10-16 PZ (R008XY402WA)
Hydric soil rating: Yes

Minor Components

Weirman

Percent of map unit: 5 percent
Landform: Alluvial cones
Hydric soil rating: Yes

197—Water

Map Unit Composition

Water: 100 percent
Estimates are based on observations, descriptions, and transects of the map unit.
Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties (Yakima Area of Interest)

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.scegov.usda.gov/OpenNonWebContent.aspx?content=17757.wba).

Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued.

Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission.
rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

**Group A.** Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

**Group B.** Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

**Group C.** Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

**Group D.** Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

*Depth* to the upper and lower boundaries of each layer is indicated.

*Texture* is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

*Classification* of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group
index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

*Percentage of rock fragments* larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

*Percentage (of soil particles) passing designated sieves* is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

*Liquid limit and plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:


Absence of an entry indicates that the data were not estimated. The asterisk (*) denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007 (http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

<table>
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<td>21—Cleman very fine sandy loam, 8 to 15 percent slopes</td>
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### Engineering Properties–Yakima County Area, Washington

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**Custom Soil Resource Report**
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<td>69—Logy silt loam, 0 to 2 percent slopes</td>
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<td>83—Moxee silt loam, 2 to 15 percent slopes</td>
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### Engineering Properties—Yakima County Area, Washington

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### Engineering Properties—Yakima County Area, Washington

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# Engineering Properties—Yakima County Area, Washington

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