

EXPLANATION

Qa

Alluvium
Sand, gravel, and silt deposited by rivers and streams, including the Rogue and Applegate Rivers and Loose Creek. Thickness as much as 100-150 feet in places near the Rogue River. Some local occurrences in addition to those shown on map. Permeable zones serve as aquifers for most wells near the Rogue River, where thickness is sufficient. Generally capable of yielding 5 to 50 gpm to wells. Shallow wells may be subject to pollution if improperly constructed. (See current well-drilling regulations of the Oregon State Engineer)

QTg

Conglomerate
Gravel, sand, and some silt, slightly to moderately indurated. Gravel as large as cobble size, subangular to subrounded; comprises metavolcanic and granitic rocks from Loose Creek drainage. Thickness as much as 165 feet east of Merlin. Yields to wells mostly less than 8 gpm. Excessive iron concentrations may be common. Many wells penetrating this unit have been drilled deep and completed so as to yield water only from underlying granitic rocks

KJI

Granitic intrusive rocks
Diorite, quartz diorite, granite, and granodiorite, occurring as irregular masses. Many exposures partly decomposed. In places thoroughly weathered to saprolite. Capable of yielding as much as 50 gpm to wells where rocks are deeply weathered; wells completed only in unweathered zones typically yield less than 5 gpm. Problems with excessive iron concentrations in water not uncommon.

Jul

Ultramafic intrusive rocks
Serpentine, peridotite, and associated greenstones. Few if any wells. Ground-water potential probably poor. Apparent source of high magnesium content in water from some wells tapping adjacent units

Jg

Galice Formation
Conglomerate, slate, tuffaceous sandstone, and shale. Altered volcanic rocks in vicinity of sec. 26, T. 25 S., R. 7 W. Gneissic rocks in vicinity of sec. 30, T. 28 S., R. 6 W., and sec. 3, T. 27 S., R. 4 W. Yields to most wells generally less than 10 gpm. Yields fairly unpredictable because of complex lithologies and irregular terrain

Tv

Metavolcanic rocks of Applegate Group
Greenstones—altered lava flows, flow breccias, and tuffs, with some intrusive rocks. Yields to wells generally less than 10 gpm; fairly unpredictable due to typically rugged terrain

Tg

Gneiss and schist from Applegate Group
Gneiss and schistose rocks occurring mainly in zones of contact metamorphism along granitic intrusives. Yields of wells in or near this unit highly unpredictable, and range from quantities inadequate for domestic use to more than 60 gpm. Ground-water quality is highly variable

Contact, approximately located

Fault
Dashed where approximately located

Inferred direction of ground-water movement

Well and number for which water analysis is listed in table

60 Reported yield, in gallons per minute

23 Depth to water, in feet; F, flows

100 Total depth of well, in feet

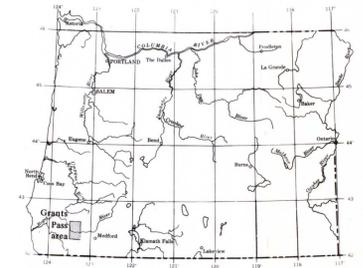
Well and characteristics

See well-characteristics map for summary by sections

INTRODUCTION

This atlas presents ground-water information in a form that will enable water users, potential water users, and planners to estimate the likelihood of obtaining ground water in adequate quantity and suitable quality at desired locations.

The Grants Pass area is located in southwestern Oregon and has an area of about 270 square miles entirely within the Rogue River drainage basin, and Josephine County.



INDEX MAP OF OREGON SHOWING STUDY AREA

The 1970 census showed about 29,000 people living in the area, 12,500 of whom were in the city of Grants Pass. The economy was formerly based on gold mining—placer mining having begun in the 1850's and lode mining in the late 1800's; now it is based on timber and wood products, tourism and recreation, and light manufacturing.

The city of Grants Pass obtains its municipal supply from the Rogue River. Outside the area served by that system, domestic water supplies are derived mostly from privately owned wells, although a local district was formed to manage individual wells in at least one area.

An irrigation district serves an area near the Rogue River, and water rights have been issued for irrigation along the Applegate River as well as along a number of smaller streams. A dam and reservoir on Jumpoff Joe Creek, authorized for construction by the Bureau of Reclamation, will supply irrigation water for 40,000 acres in the Merlin area.

GEOHYDROLOGY

The surficial distribution of the geologic units is shown on the geohydrologic map. Some details of the geology that are important to the development of ground water are obscured locally or are not mappable at the published scale. Although alluvium is more widespread than shown, it is mostly thin, and little or none is saturated where it is not mapped.

Alluvium is the major aquifer near the city of Grants Pass and along the Rogue River. Where 50 feet or more of alluvium occurs below the water table, most wells obtain their supply from the alluvium. Few wells are less than 5 gpm (gallons per minute) with 50 feet of drawdown; yields of 40 gpm with less than 40 feet of drawdown are not uncommon.

A conglomerate that overlies granite and underlies a terrace in the vicinity of the Grants Pass airport may be part of an old alluvial fan. Yields to wells drilled into the conglomerate appear to average somewhat less than yields from granitic rocks in the area.

Granitic intrusive rocks of the Grants Pass batholith serve as aquifers in areas underlain by these rocks; a substantial part of the recent residential development has been in granitic areas. Well yields depend largely on the depth and degree of weathering and the extent of fracturing of the rocks—characteristics that have wide local variation. Well yields range from less than 1 gpm with several hundred feet of drawdown in some wells completed in "tombstone granite" to at least 60 gpm with 50 feet of drawdown in a few wells where weathered or fractured zones are exceptionally well developed.

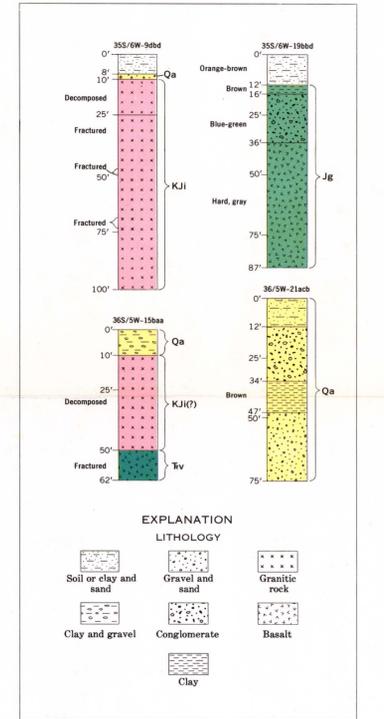
A continuous water-level recorder installed on an unused well completed in granite (355/GW-9b4d) showed weekly fluctuations of 0.3–0.4 foot over a period of 2 months, and an overall range of 0.85 foot during this period.

The ultramafic intrusive rocks probably yield only small quantities of ground water. They crop out in areas of rugged terrain where there has been no demand for water.

Lithology of the Galice Formation is diverse, and most of the rocks have undergone some metamorphism. Well yields are highly variable and in places are inadequate for domestic use. The formation underlies areas where total demand for water is small.

Well yields from metavolcanic rocks of the Applegate Group are variable, but quantities adequate for domestic use can be obtained at most places. Depth to water and total depth of well required may be substantial in some of the more rugged areas.

Gneiss and schistose zones were caused by metamorphism of the Applegate Group along contacts of the Grants Pass batholith when the pluton intruded the central part of the area in Late Jurassic time. Well yields are highly variable, as is water quality.



SELECTED WELL LOGS

SELECTED LIST OF TERMS USED BY LOCAL DRILLERS TO DESCRIBE GEOLOGIC UNITS PENETRATED IN WELLS

- Alluvium: Rocks and gravel; sand and boulders; gravel, coarse; conglomerate; clay.
- Conglomerate: Conglomerate, cemented gravel, clay and gravel, clay and boulders.
- Intrusive rocks: Granite, decomposed, tombstone, or fractured; rock, gray; clay and boulders.
- Note: Red, yellow, and green clay commonly reported above the granitic rocks to depths of 50 feet or more, depending on weathering.
- Galice Formation: Claystone, blue; conglomerate, blue-green; basalt, gray.
- Metavolcanic rocks of Applegate Group: Conglomerate; claystone, brown; basalt, gray; boulders; rock, gray; granite; serpentine; shale.
- Gneiss and schist from Applegate Group: Clay, red, and boulders.

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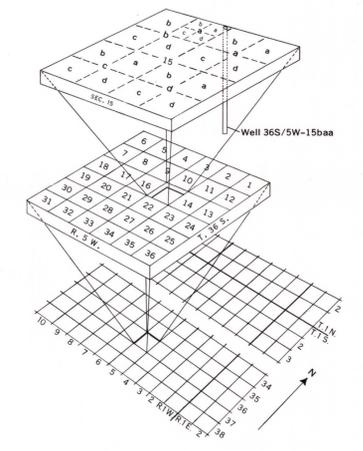


DIAGRAM OF WELL-NUMBERING SYSTEM

AVAILABILITY OF GROUND WATER IN THE GRANTS PASS AREA, JOSEPHINE COUNTY, OREGON

By
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1973