



## Deschutes Basin Quaternary-Late Tertiary Volcanic and Volcaniclastic Rock Aquifers: Proximal Lava Flows



Located in the high desert of Central Oregon, this aquifer extends throughout much of the Deschutes River Valley. It is characterized by relatively thin lava flows, deposited in close proximity to volcanic vents. The lava flows are separated in places by pyroclastic and sedimentary interbeds. Average aquifer parameters indicate this lava and tuff unit has 41% of ideal characteristics for artificial recharge. The rating table is included below, and interested parties may insert site-specific data to produce results that reflect localized aquifer conditions.

Positive characteristics for aquifer recharge:

- Depth to static water will allow water level rise during recharge.
- Aquifer thickness greater than 160 ft indicates significant storage potential.
- Moderate to high hydraulic conductivity may allow injection at significant rates.

Negative characteristics for aquifer recharge:

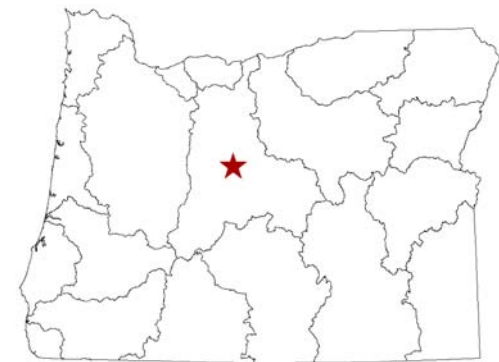
- This unit's connection to surface water and other aquifers may limit its ability to retain water in storage until recovery.
- High hydraulic conductivity may also allow stored water to escape.

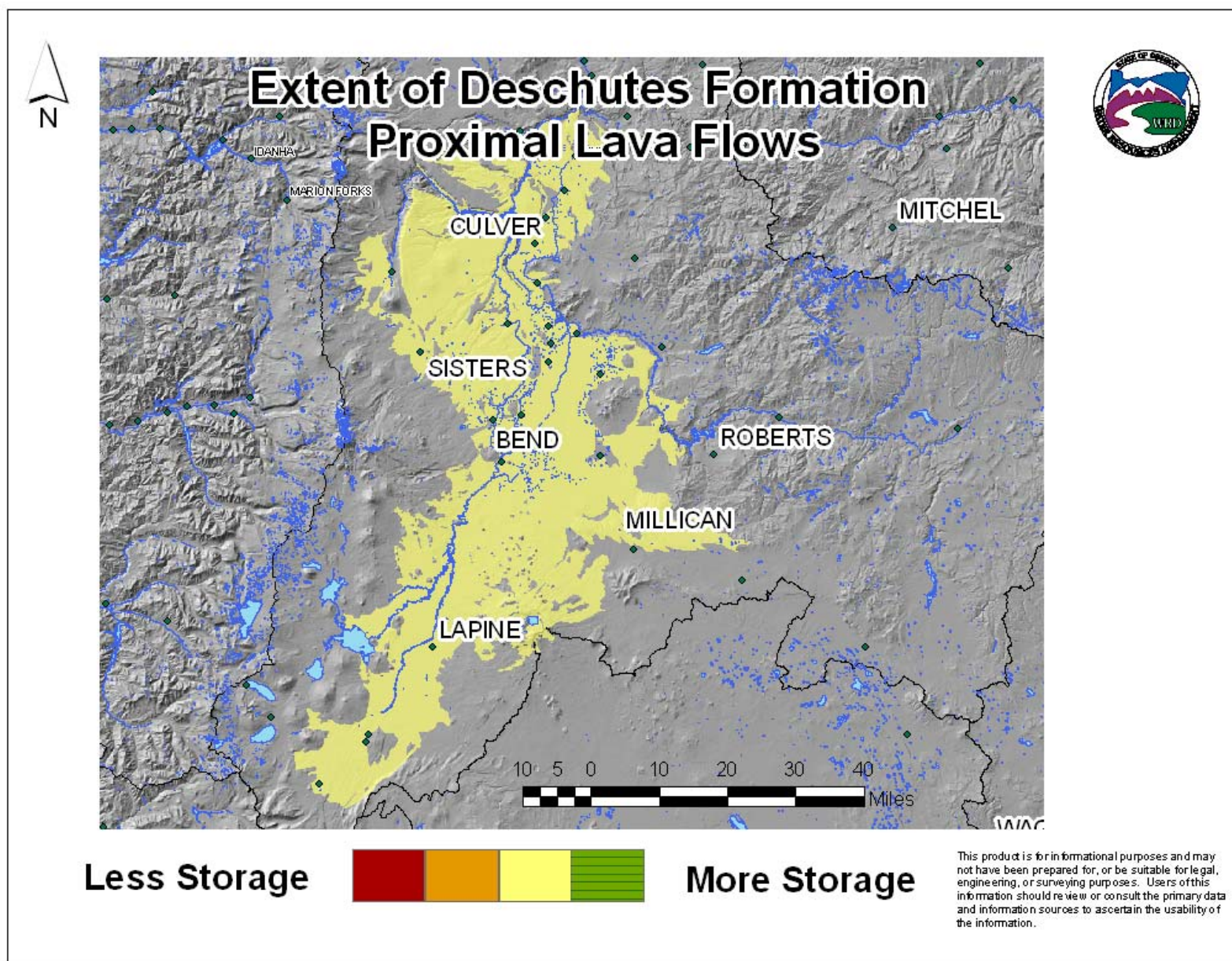
Injection is the most likely recharge method for this unit, because it is located at least 20 ft below the ground surface.

Surface water availability will strongly affect underground storage potential. This requires site-specific knowledge of water rights quantity and timing.

Data Sources:

- USGS Water-Resources Investigation Report 02-4015
- USGS Water-Resources Investigation Reports 00-4162
- USGS Water-Resources Investigation Reports 03-4195



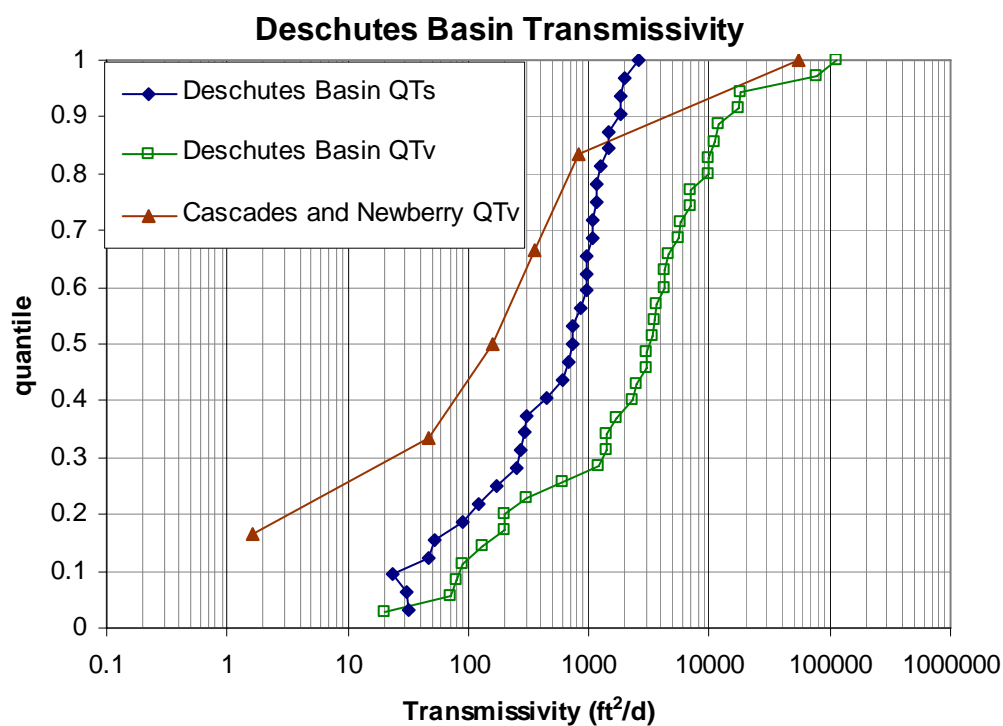
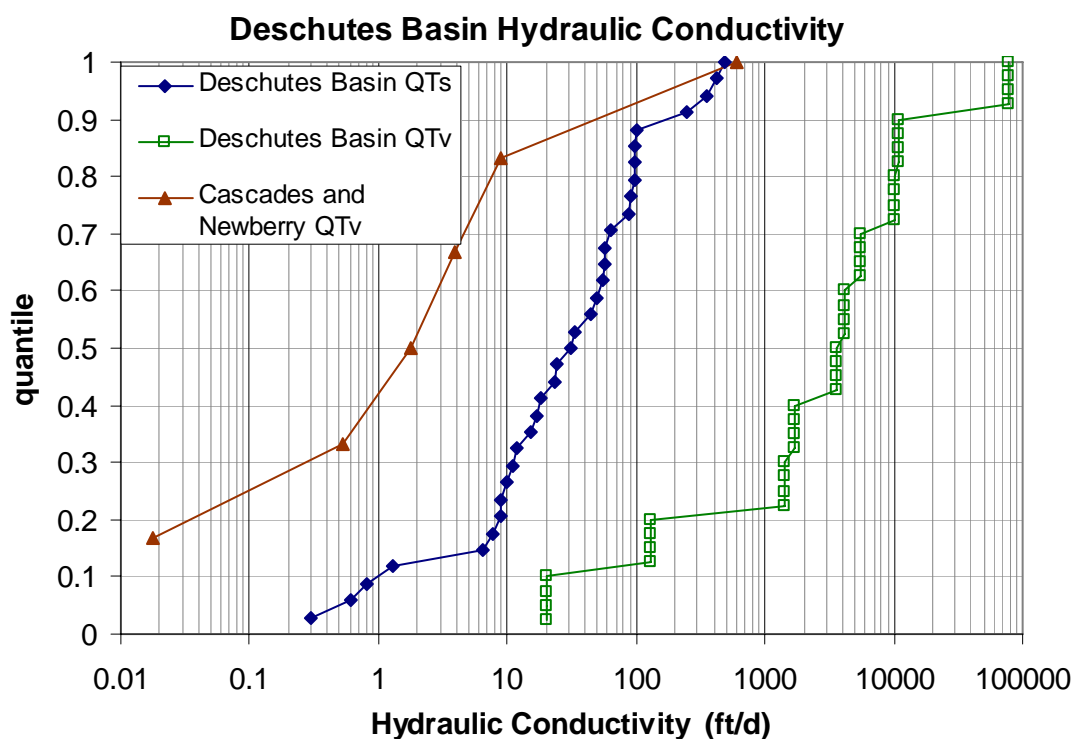


### Unconsolidated Unit: Deschutes Formation: Proximal Lava Flows

	Range of Reported Values	Value for Calculation	Find the “value range” where the “value for calculation” falls, and select the corresponding rating										Selected Rating	Data Quality
			Value Range	Rating	Value Range	Rating	Value Range	Rating	Value Range	Rating	Value Range	Rating		
Depth to Formation (ft)	20-45	35	0-4	20	5-9	15	10-24	10	25-49	3	>50	1	3	3
Saturated Thickness (ft)	50-800	400	0-19	1	20-39	2	40-79	4	80-159	8	>160	10	10	3
Head Freeboard (ft)	300-600	450	0-4	1	5-9	2	10-19	4	20-29	8	>30	50	50	3
Storage Coefficient	0.00003-0.28	0.00001	0-0.09	1	0.1-0.14	5	0.15-0.19	10	0.2-0.24	25	>0.25	50	1	1
Hydraulic Conductivity (ft/d)	30-150	90	0-0.9	1	1-9	5	10-99	10	100-999	25	>1000	50	10	4
Totals =													74	14

Sum of Selected Ratings/Perfect Rating = 74/180 = 41%

**Data Quality:** 1=based on general values for this aquifer lithology  
 2=based on 8 or less well logs  
 3=based on more than 8 well logs  
 4=based on published information and data specific to this aquifer



Abbreviations: QTs = Quaternary-Late Tertiary Sediment Aquifers

QTv = Quaternary-Late Tertiary Volcanic and Volcaniclastic Rock Aquifers

All aquifer data from the Deschutes Formation facies are combined in this figure as QTv.