

# Deschutes River Watershed Community Workshop



Thurston County Resource Stewardship

June 30, 2016





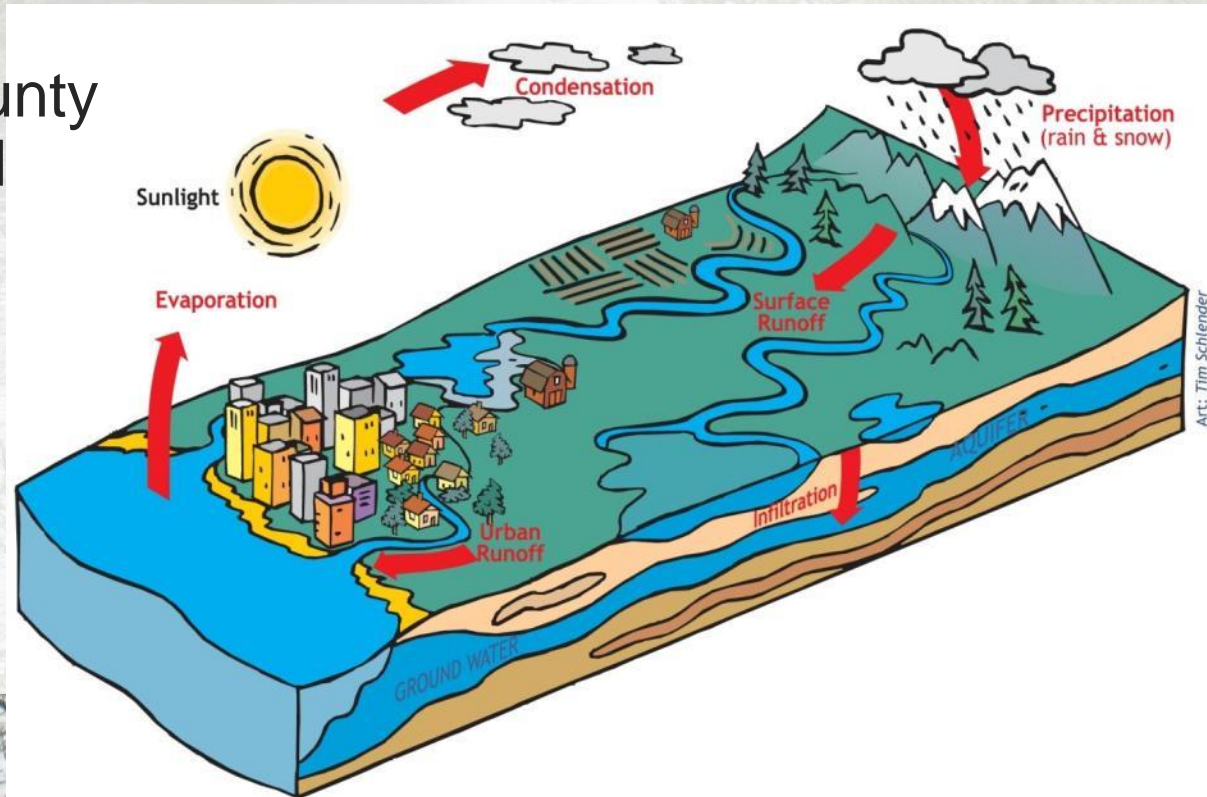
# Tonight's Agenda

- **Background**
  - **Project**
  - **Watershed Issues**
- **Management Options & Recommendations**
- **Q & A**
- **Table Stations**



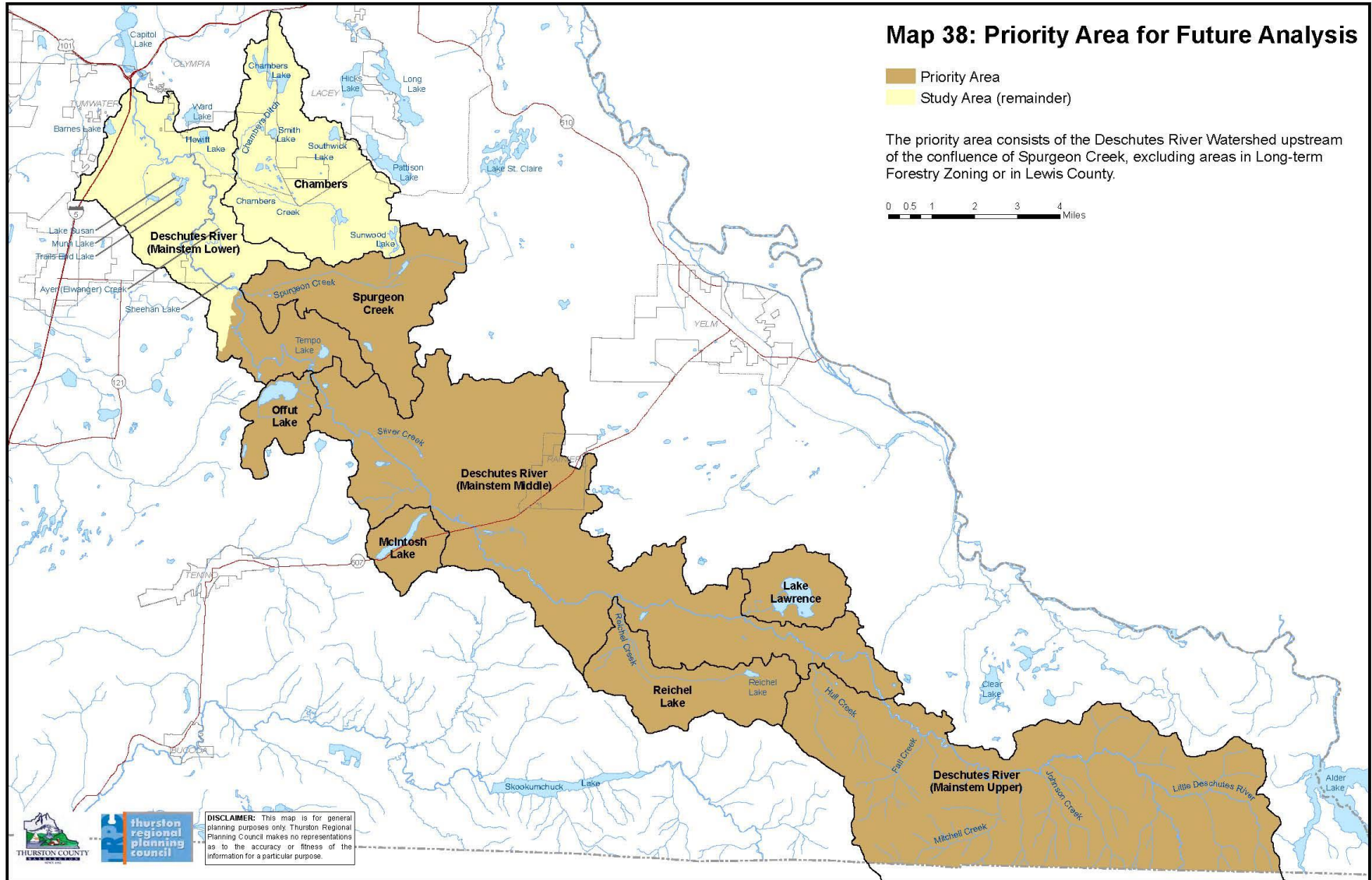
# Guiding Growth – Healthy Watersheds Project Background

- Thurston County is one of the fastest growing in Western Washington – How to best protect and improve water resources as our region grows?
- 2014: Thurston County and TRPC received a grant to conduct watershed-based planning in the Deschutes





# Where is the Deschutes Watershed?





# Water Resource Concerns

- Deschutes River and tributaries are listed as impaired under the Clean Water Act
- State clean-up plan released in 2015

## New Homes



↑ **84%**

increase in new homes 4,300 today... capacity for 8,000.

## Impervious Area



≈ **4%**

impervious area could increase to 4% from below 2%.

## Forest Cover

Vulnerable to Urbanization



↓ **44%**

decrease in forest cover amid Lake Lawrence basin, even with regrowth on resource lands.



# Impervious Surface and Forest Cover



## Intact

Impervious Surface: <2%  
Forest Cover: >80%

- Water is cool and clean
- Stream banks and bottom typically stable
- Many fish species (less tolerant coho salmon more prevalent than cutthroat)
- Many insect taxa

## Sensitive

Impervious Surface: 2-10%  
Forest Cover: 65-80%

- Water may be warmer and slightly polluted
- Erosion may be evident
- Many pollution tolerant fish
- Many insect taxa

## Impacted

Impervious Surface: 10-25%  
Forest Cover: 45-65%

- Water warmer
- Erosion usually obvious
- Fewer fish species (shift to more tolerant cutthroat salmon)
- Mostly tolerant insects

## Degraded

Impervious Surface: >25%  
Forest Cover: 45-65%

- Warm water and pollution usually evident
- Unstable habitat
- Only tolerant fish species



# Bacteria and Pathogens in Surface Water

## Potential sources of fecal coliform include:

- Farm animal wastes
- Stormwater runoff
- Improperly connected sewers
- Failing septic systems
- Pet wastes





# Bacteria and Pathogens in Surface Water

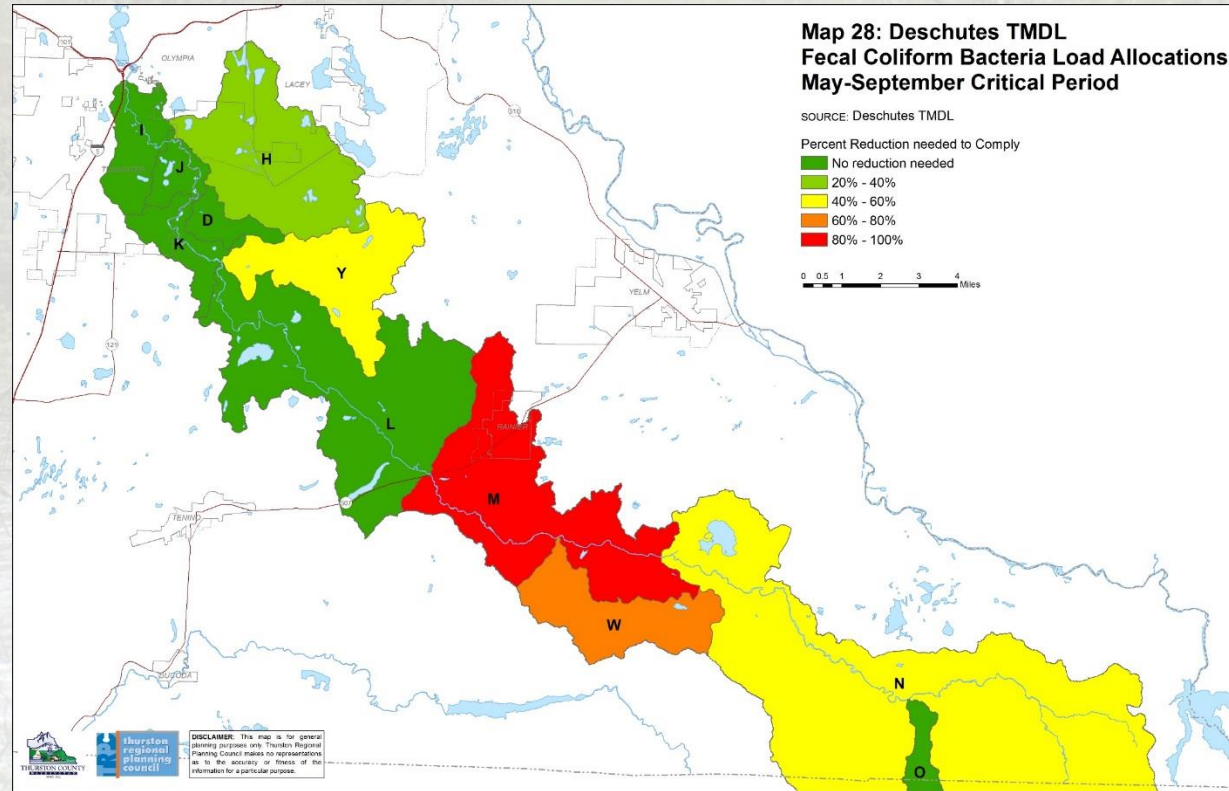
## Current Concerns

- Spurgeon Creek
- Reichel Creek

## Future Concerns



171% increase in septic systems on non-porous soils near waterbodies

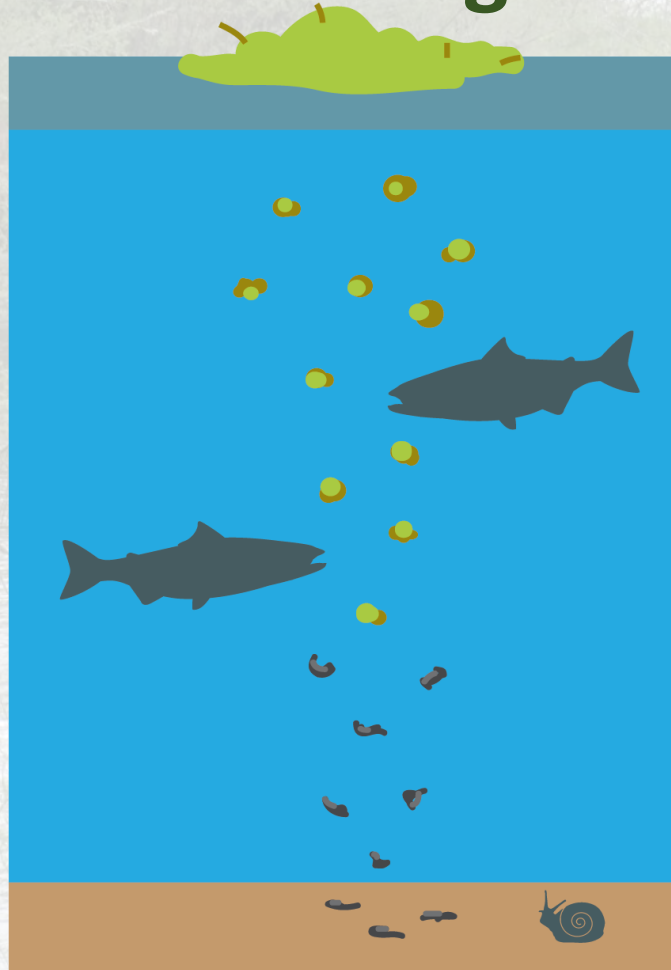




# Increased Nutrients and Algae Blooms

## Primary cause of algae blooms:

- **Phosphorous from septic systems**
- **Stormwater runoff and fertilizers**
- **Erosion**



Nutrients from runoff and shallow groundwater fuel algae blooms in lakes.



Algae cells die and decompose.



Decomposition lowers dissolved oxygen concentrations in bottom waters.



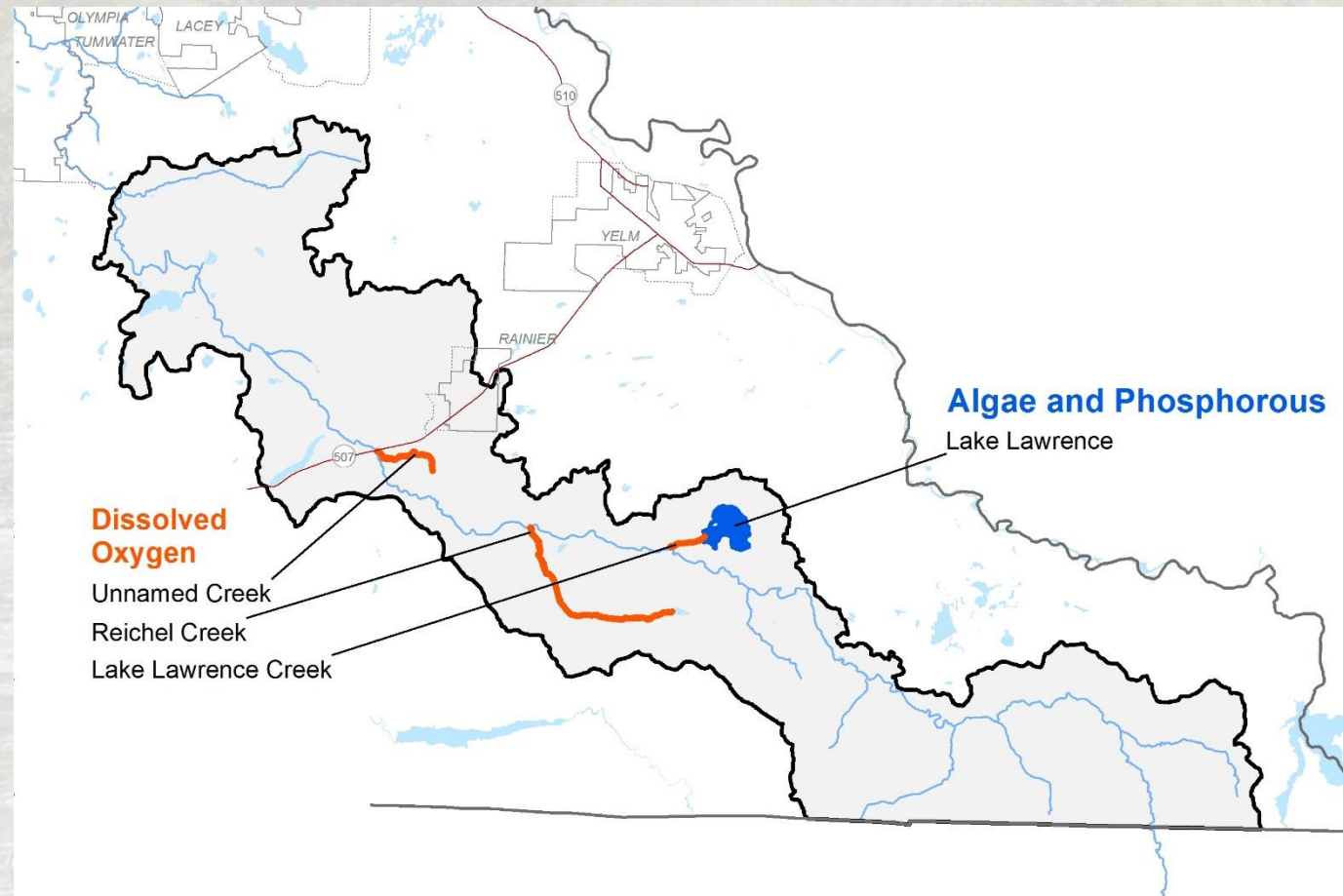
Low dissolved oxygen stresses fish and other aquatic organisms.



# Increased Nutrients and Algae Blooms

## Current Concerns

- Lake Lawrence
- Reichel Creek, Lake Lawrence Creek, and an unnamed tributary





# Increased Nutrients and Algae Blooms

## Future Concerns



**171% increase in septic systems on non-porous soils near water bodies**



**Impervious area in Offutt Lake basin: 3.4% to 6.8% at buildout**



**Loss of forest cover in Offutt Lake basin – 55% today to 47% - similar to Lake Lawrence today**



# Sediment and Erosion

**Risk of landslides increases with removal of vegetation and road building**

**Erosion adds fine sediments to stream, degrading salmon spawning habitat**





# Sediment and Erosion

## Current Concerns

- Erosion along stream banks
- Risk of landslides

## Future Concerns

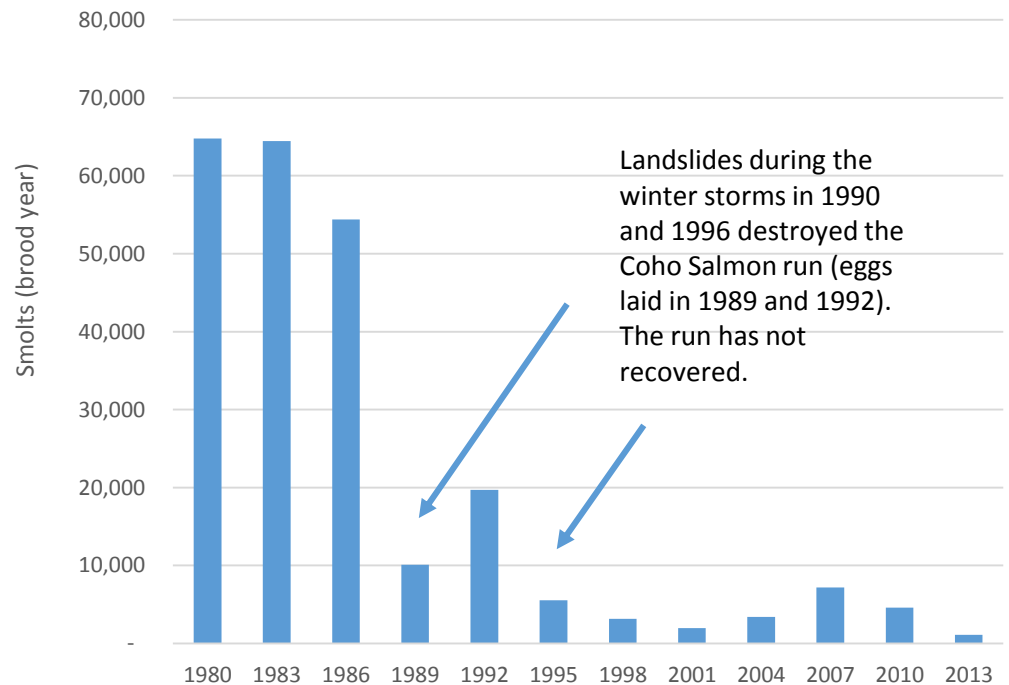


**Need for stream bank restoration**



**Up to 6% loss of forest lands on steep slopes**

Deschutes River Coho Salmon Smolts - Cohort B





## Map 32: Deschutes TMDL Fine Sediment Reduction Allocations

SOURCE: Deschutes TMDL

Fine Sediment Reduction Allocations

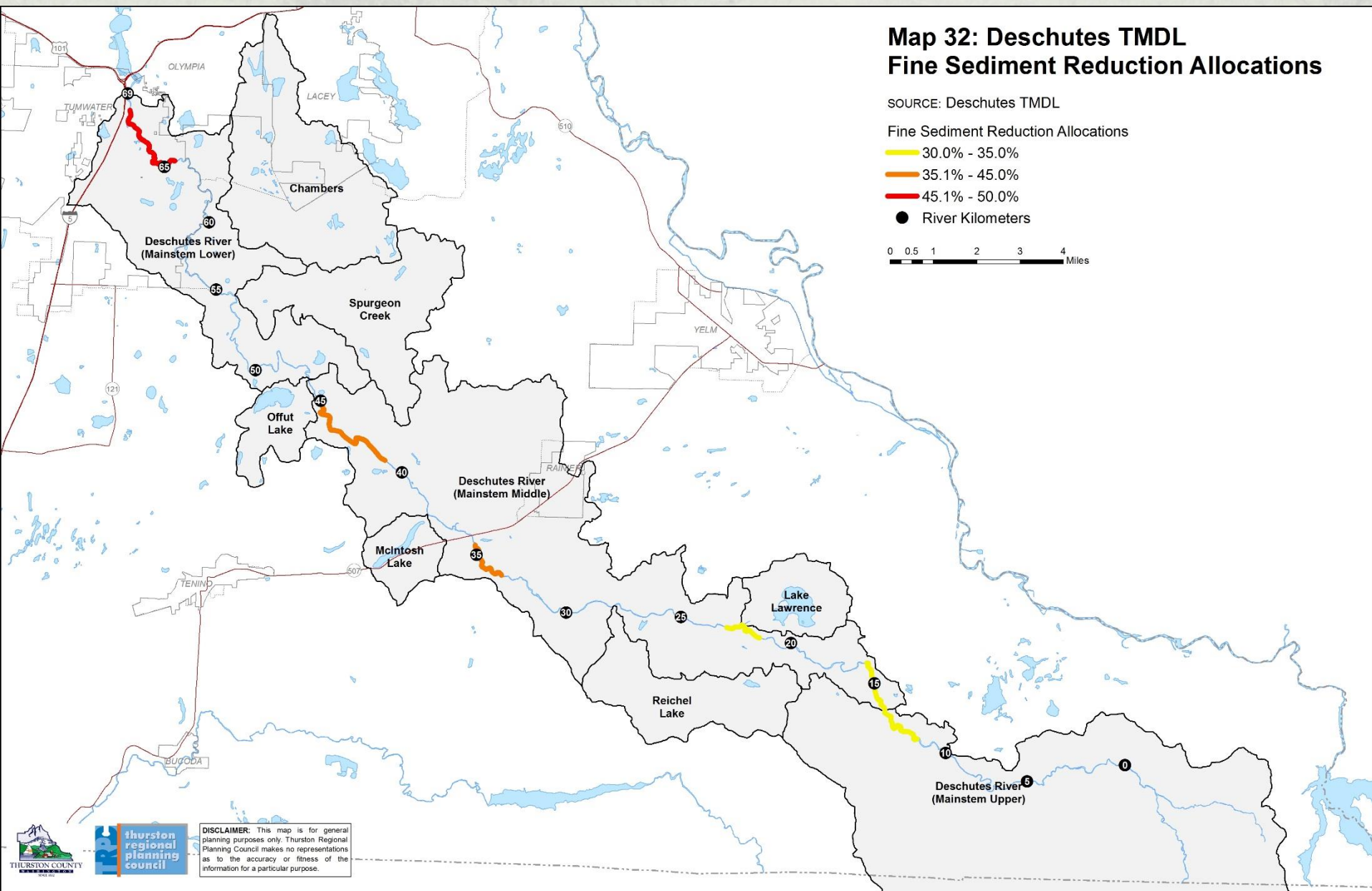
30.0% - 35.0%

35.1% - 45.0%

45.1% - 50.0%

● River Kilometers

0 0.5 1 2 3 4 Miles



**DISCLAIMER:** This map is for general planning purposes only. Thurston Regional Planning Council makes no representations as to the accuracy or fitness of the information for a particular purpose.





# Indicators

## Landslide Hazards

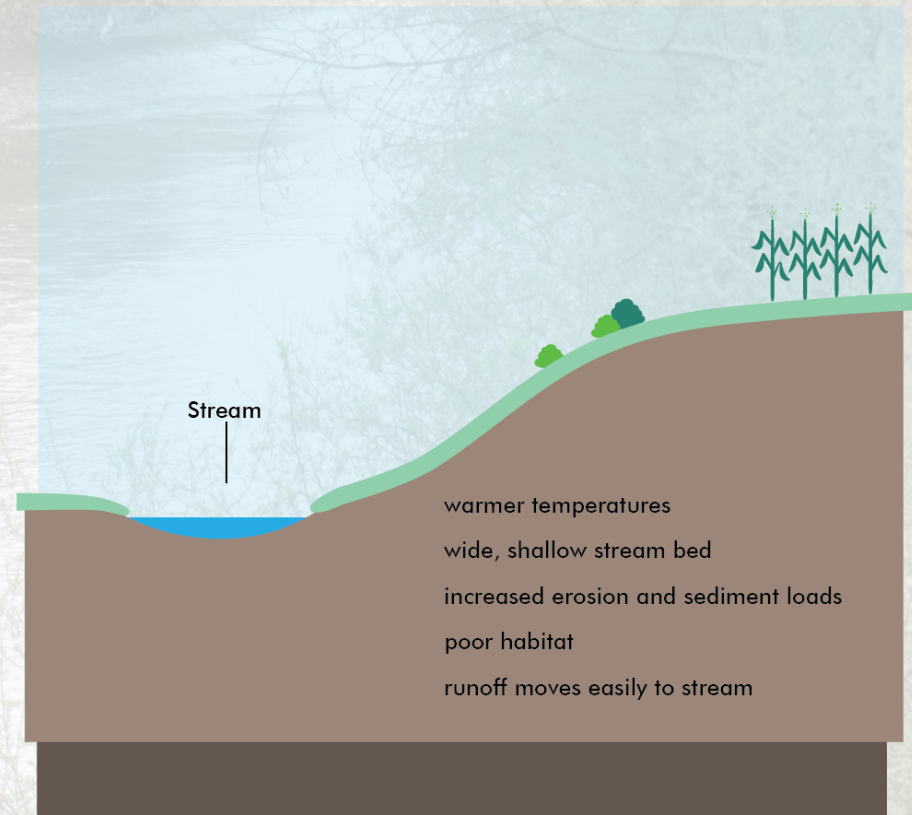
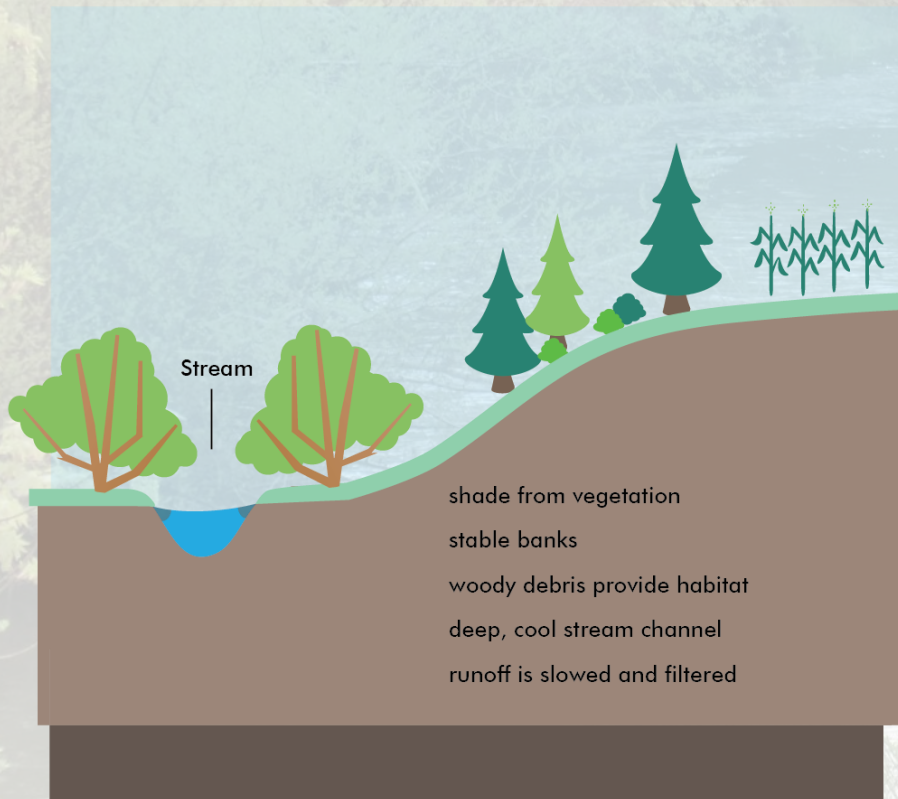


**1,800**

acres of forest  
lands on steep  
slopes vulnerable  
to development



# Stream Temperature





## Map 27: Deschutes TMDL Effective Shade Improvement Allocations

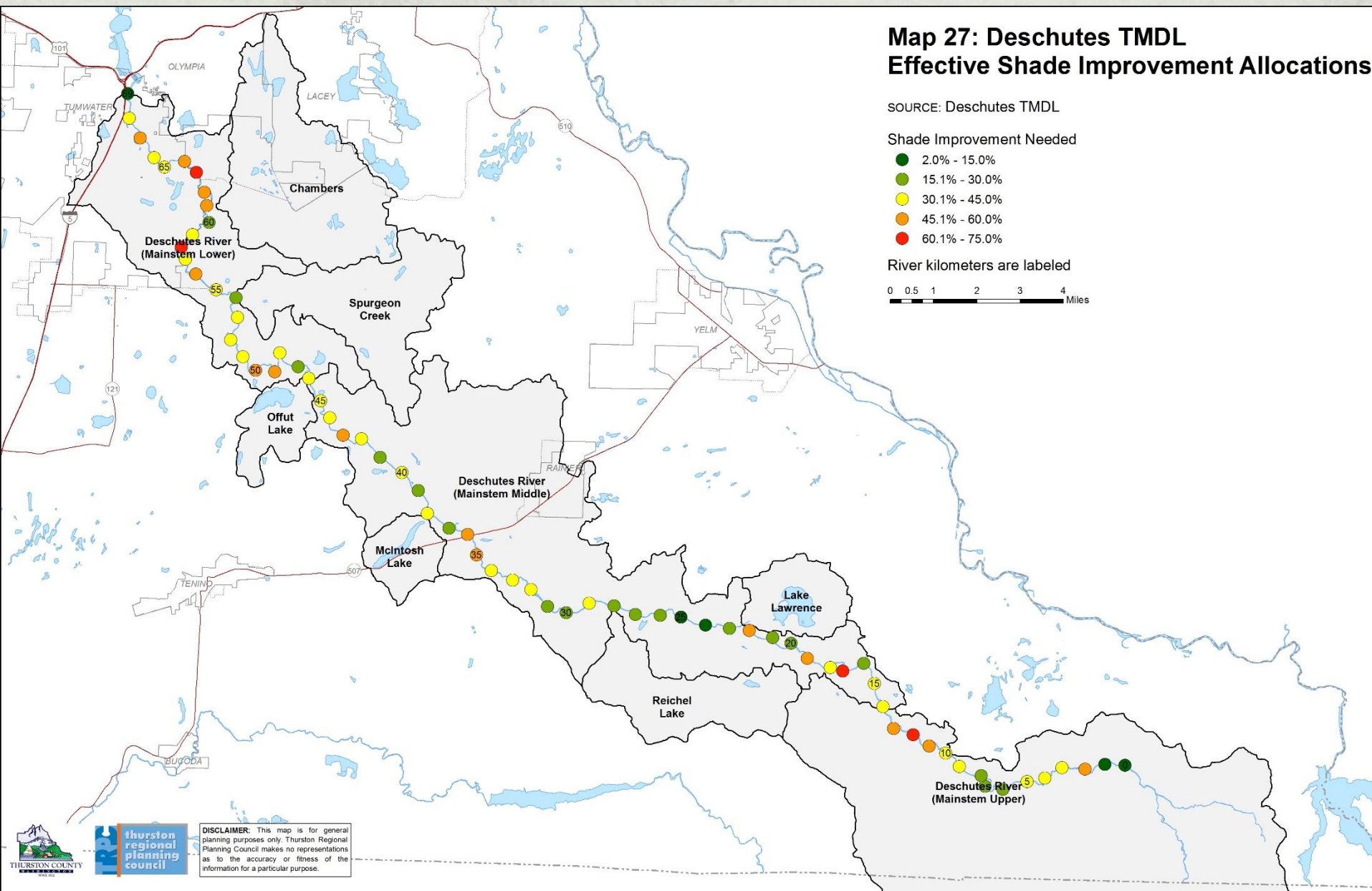
SOURCE: Deschutes TMDL

Shade Improvement Needed

- 2.0% - 15.0%
- 15.1% - 30.0%
- 30.1% - 45.0%
- 45.1% - 60.0%
- 60.1% - 75.0%

River kilometers are labeled

0 0.5 1 2 3 4 Miles





# Indicators

**Riparian Habitat  
Restored**



**56  
Years**

to restore stream shade.



# Water Levels During Drought Periods

## Current Concerns

- Low summer stream flows in Deschutes River and effect on Coho salmon

## Futures Concerns

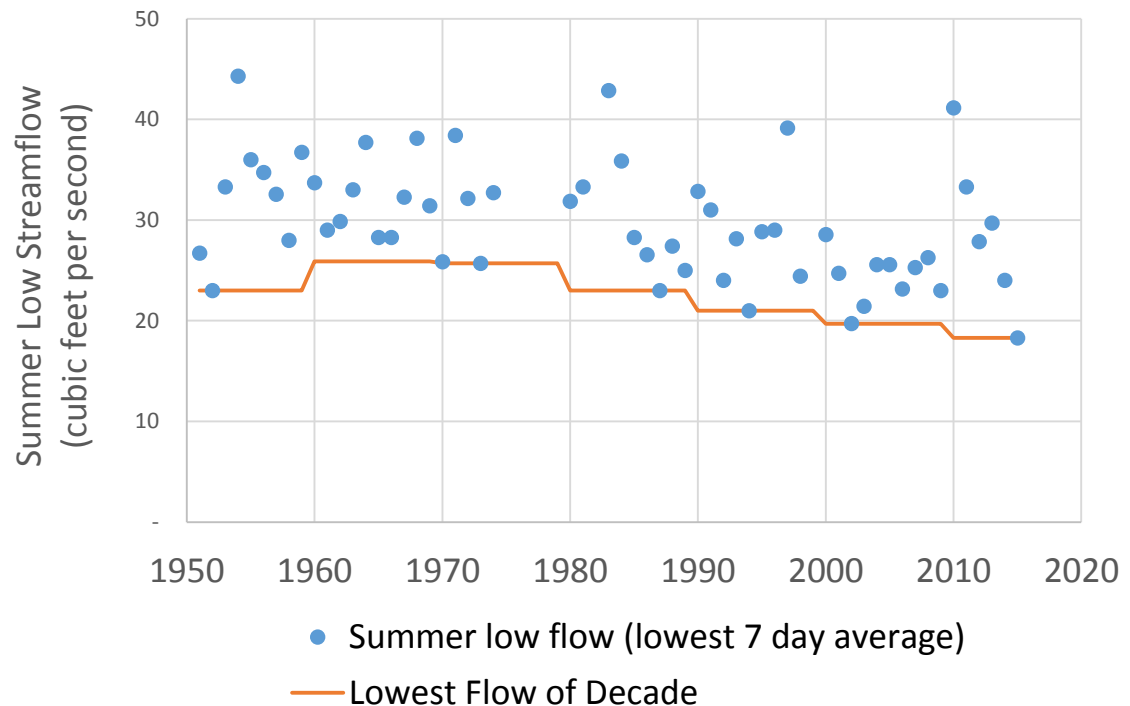


Potential for over 3,000 new homes in study area



Up to a 96% increase in water consumption

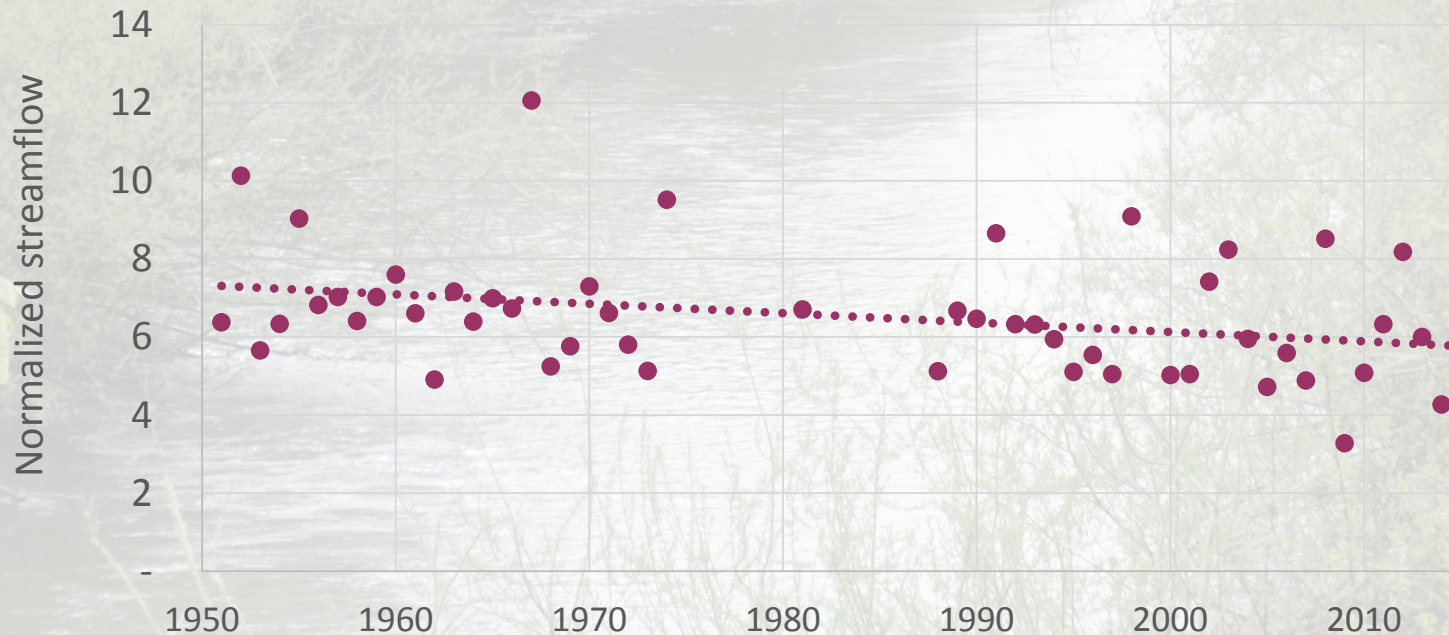
Rainier Gage Summer Low Flow  
(lowest 7 day average)





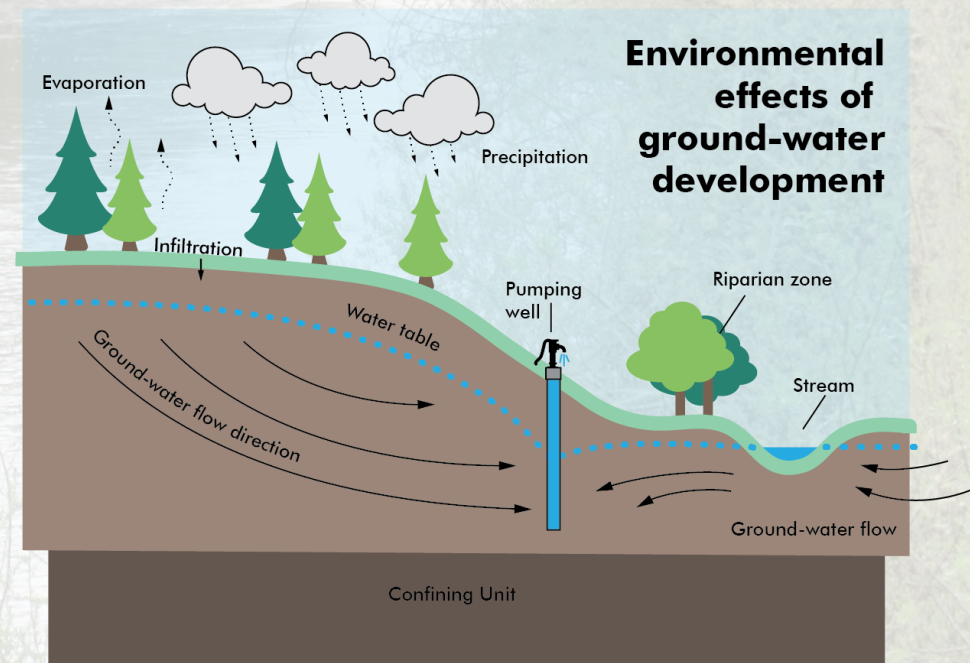
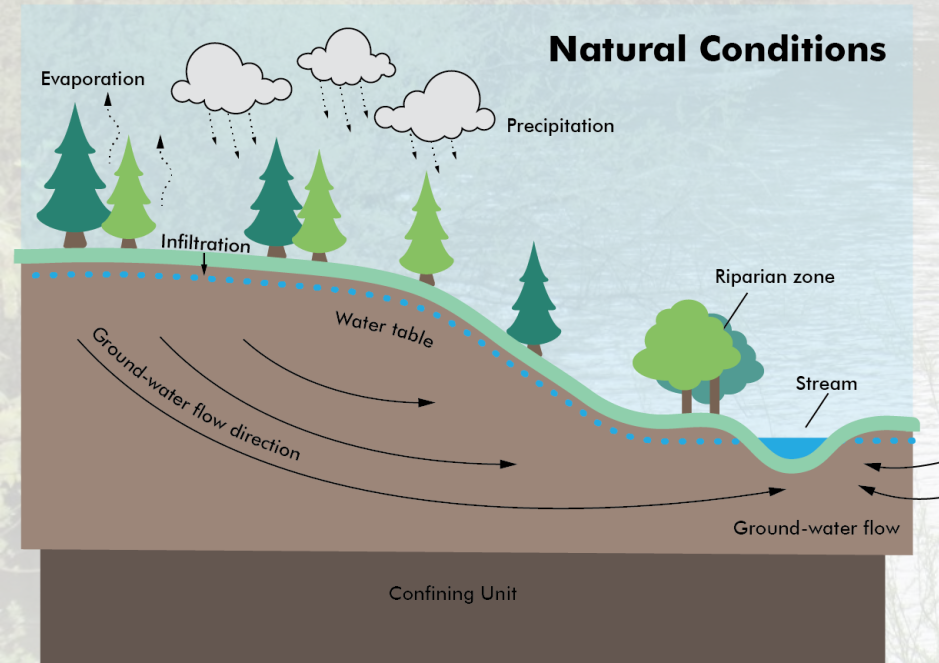
# Water Levels During Drought Periods

**Normalized Summer Streamflow**  
Summer streamflow (July to September) divided by  
Summer Precipitation (May to September)  
Deschutes River – Rainier Gage





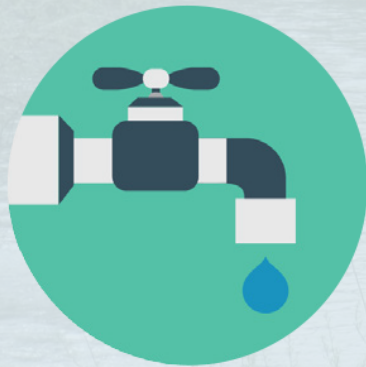
# Water Levels During Drought Periods





# Indicators

## Residential Water Consumption



↑ 2x

almost double the  
amount of water  
consumed for  
residential uses alone.



# Loss of Farmland

## Current Concerns

- Over 700 acres lost between 2000 and 2011

## Futures Concerns



Over 3,000 acres  
vulnerable to  
urbanization





# Loss of Farmland – 2000 & 2015





# Groundwater Quality

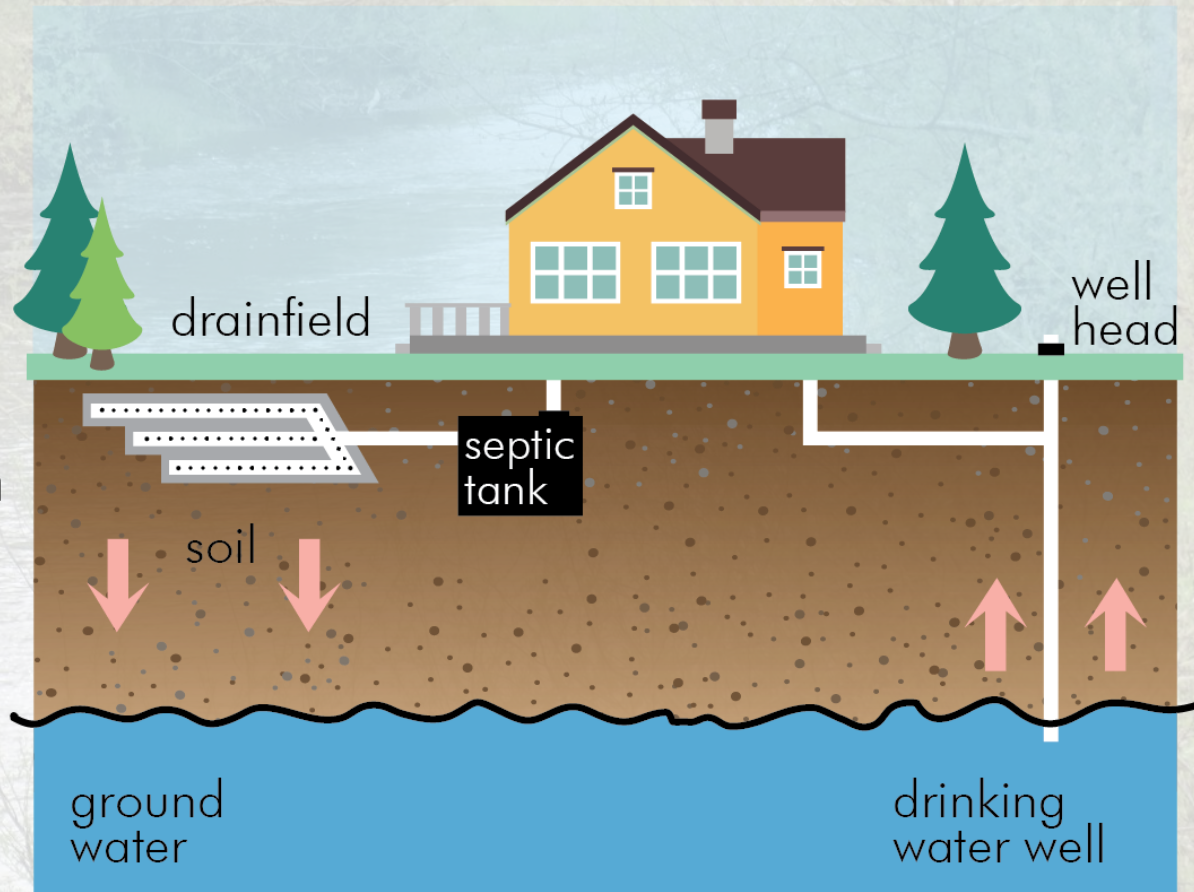
## Current Concerns

- Failing septic systems contribute nitrates to ground water

## Future Concerns



Up to 59% increase in homes on septic systems on porous soils; 20% increase if Rainier is converted to sewer.





# Community Workgroup

- Diverse members
- Considered and evaluated different land use management options
- Direction on future scenarios
- Provided a suite of recommended land use policies





# Solutions

- **Baseline**
  - Current Regulations → Buildout
- **Education & Outreach**
  - ✓ Voluntary restoration program
  - ✓ More farm plans
  - ✓ Voluntary septic O&M program
  - ✓ Water conservation outreach
- **Restoration & Conservation**
  - ✓ Funded conservation/restoration programs
  - ✓ Stormwater retrofits
- **Zoning → Downzone parcels**
  - ✓ Nonporous soils near waterbodies
  - ✓ Steep slopes
  - ✓ Lake basins
- **Regulations & Monitoring**
  - ✓ Impervious surface limits, lake basins
  - ✓ Mandatory septic O&M program
  - ✓ Required water metering



# Solutions

- **Education & Outreach**

Low to Moderate effectiveness for most water quality concerns

- **Restoration & Conservation**

Most effective for reducing stream temperatures, nutrients, and sediment

- **Zoning → Downzone parcels**

Low to moderate effectiveness at reducing sources of nutrients, bacteria, sediment, impacts to groundwater

- **Regulations & Monitoring**

Most effective for reducing impacts to groundwater quality and bacteria sources



# Next Steps

- **Public feedback on management options**
- **Final results shared with Board of County Commissioners and used in future planning projects**



# Questions?

## Staff Contacts

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