Water Quality in Central Oregon

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Departmental Responsibilities

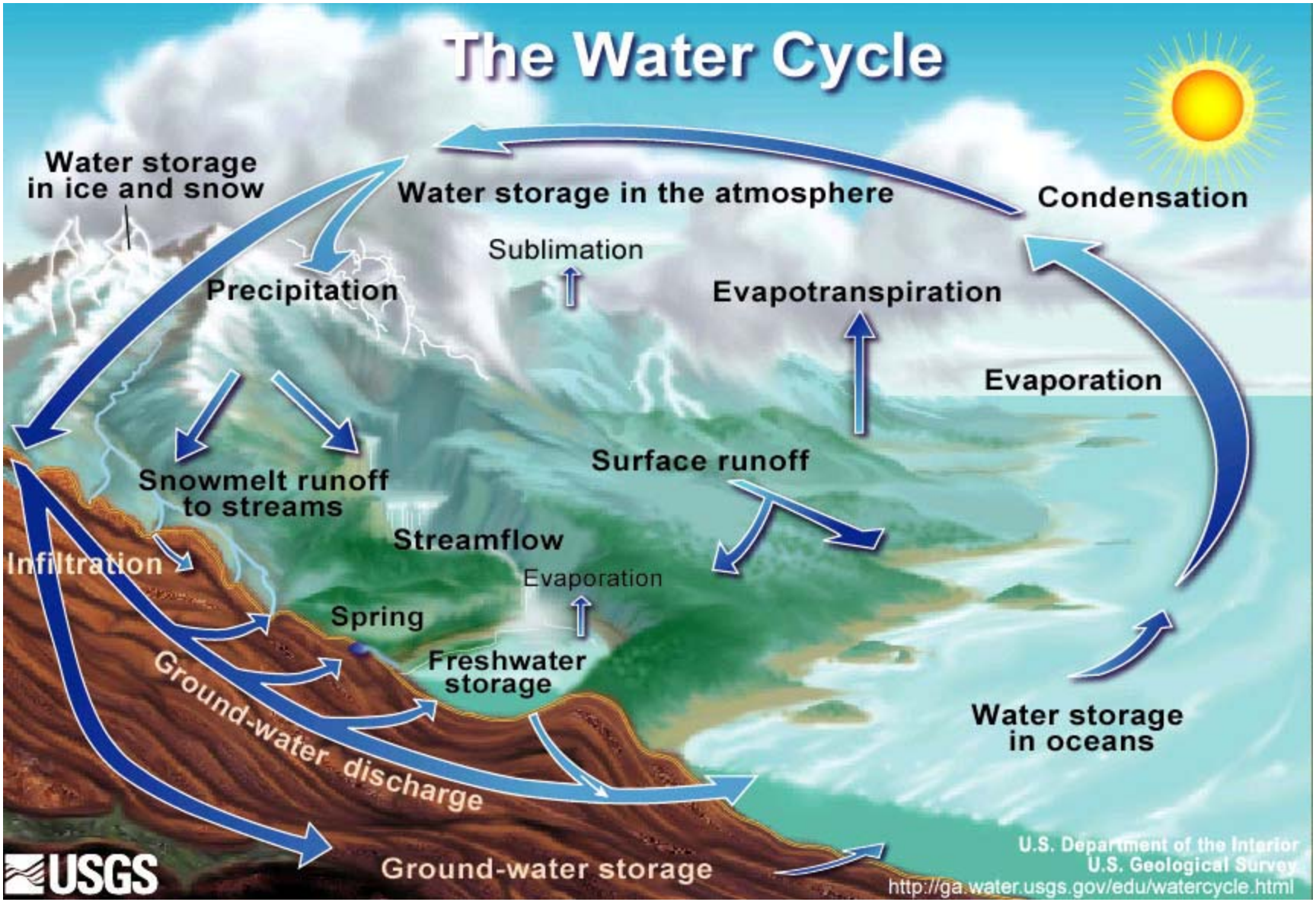
- Protect the chemical, physical and biological integrity (CPB) of Oregon's environment
- Adopt standards for water quality to protect CPB
- Determine pollutant limits for sources sufficient to protect water quality
- Implement through permits and watershed planning

Sources of Pollutants

- Wastewater Treatment Plants
- Onsite Wastewater Disposal
- Stormwater (UIC)
- Livestock and other Agriculture
- Dams
- Riparian Degradation
- Water Diversions

Water Quality Impacts

- Elevated Temperature (riparian disturbance, livestock, forestry legacies, water diversion)
- Depressed Dissolved Oxygen/ pH excursions (nutrients, temperature, organic loading)
- Sediment (development, livestock, forestry)
- Bacteria (septic systems, livestock, pets)


The Water Cycle
Water storage in ice and snow
Water storage in the atmosphere
Condensation
Sublimation
Precipitation
Evapotranspiration
Evaporation
Surface runoff
Snowmelt runoff to streams
Streamflow
Infiltration
Evaporation
Spring
Freshwater storage
Ground-water discharge
Water storage in oceans
Ground-water storage
USGS
U.S. Department of the Interior
U.S. Geological Survey
http://ga.water.usgs.gov/edu/watercycle.html

303d List of Impaired Waterbodies

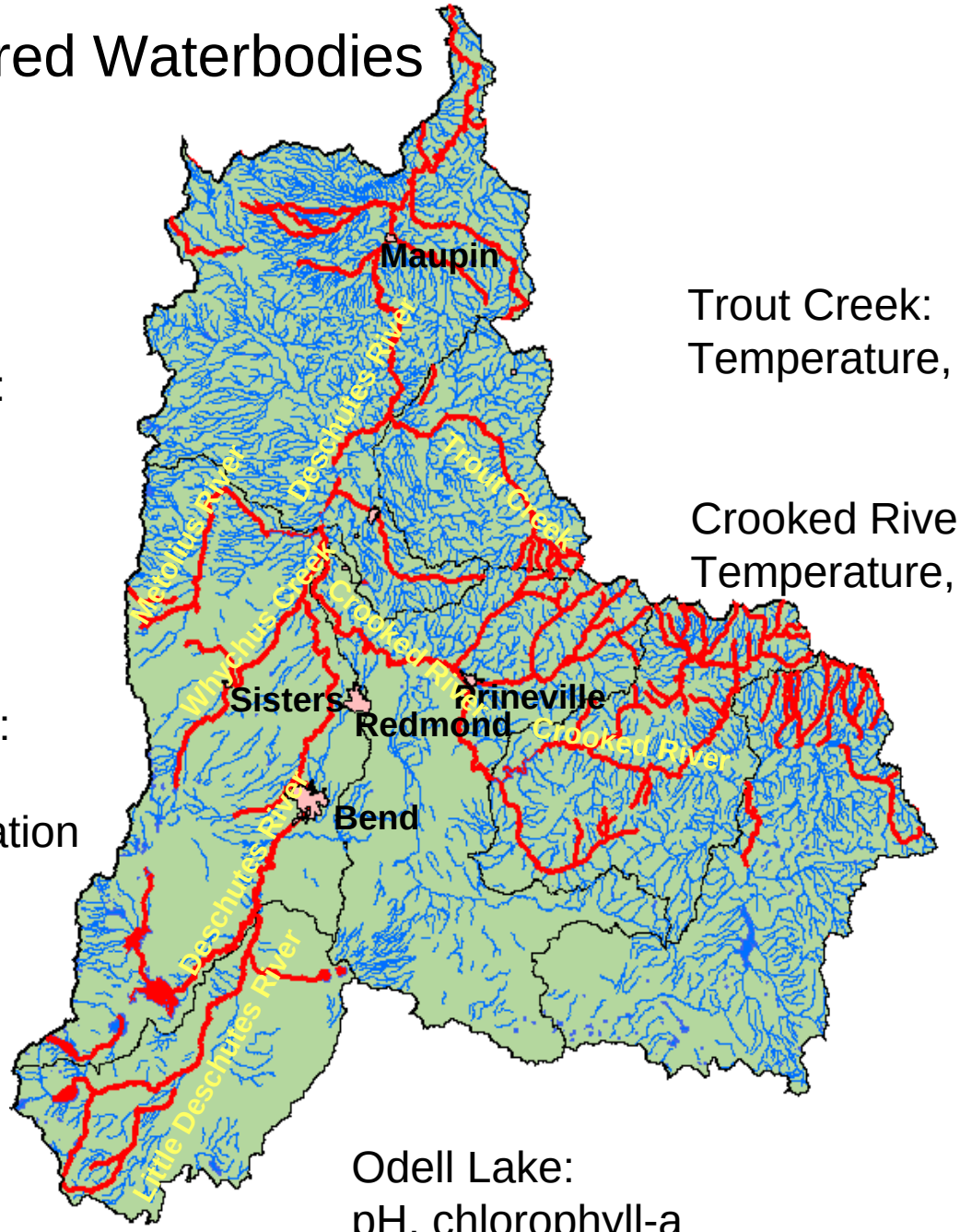
Temperature:
throughout basin

Lower Deschutes River:
Temperature, pH

Lake Billychinook:
pH, Chlorophyll-a

Upper Deschutes River:
Temperature, pH, DO,
chlorophyll-a,sedimentation

Little Deschutes:
Temperature,
Dissolved Oxygen



Trout Creek:
Temperature, sedimentation

Crooked River:
Temperature, pH, *Bacteria*

Odell Lake:
pH, chlorophyll-a

Oregon Water Quality Index

Deschutes R. @ Mouth
RM 1.0 82: Fair

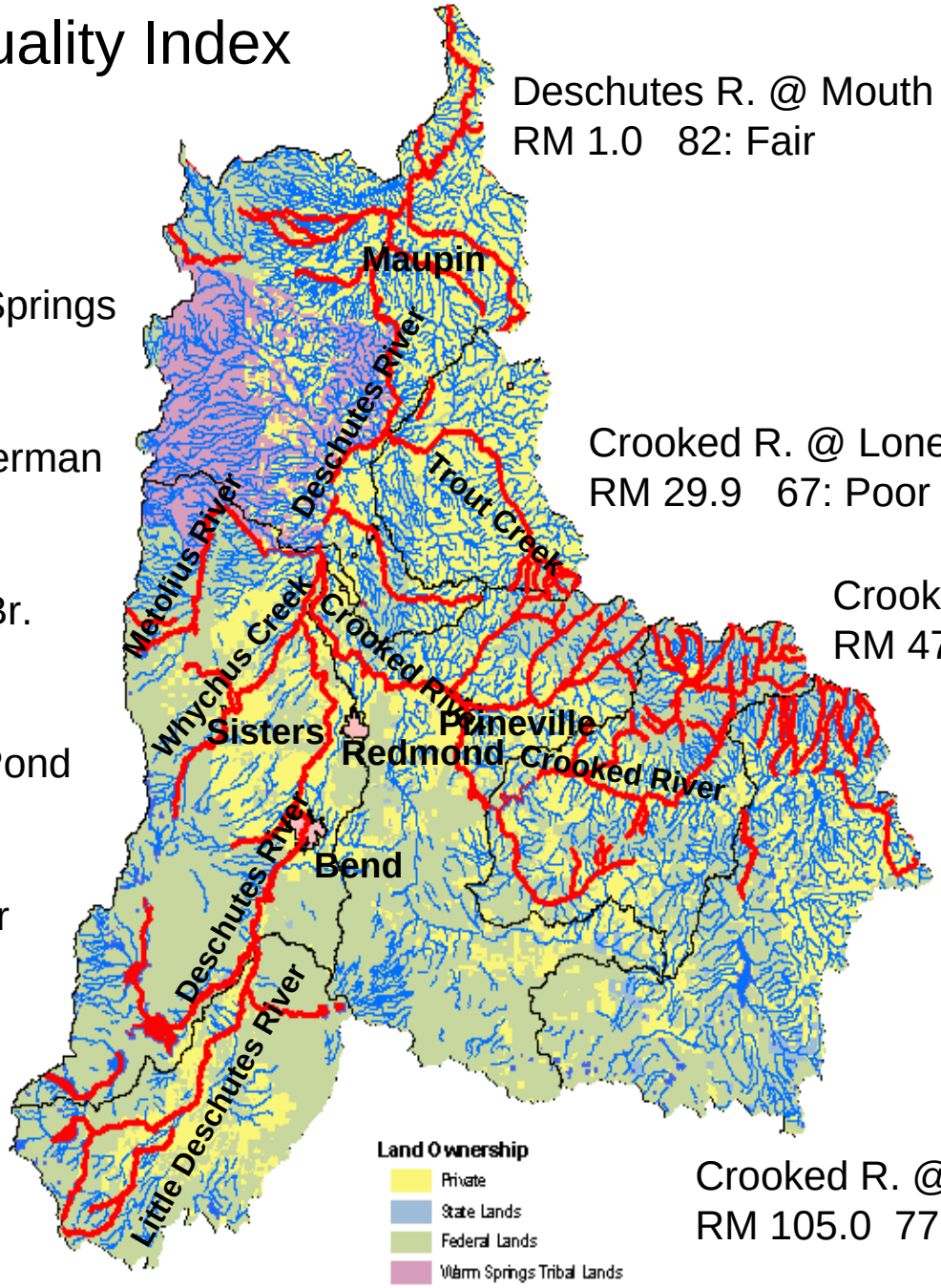
Deschutes R. @ Warm Springs
RM 96.8 86:Good

Metolius R. @ Camp Sherman
RM 30.3 92:Very Good

Deschutes R. @ Lower Br.
RM 133.4 81: Good

Deschutes R. @ Mirror Pond
RM 164.9 88: Good

Deschutes R. @ Sunriver
RM 191.7 89: Good



Crooked R. @ Lone Pine Rd.
RM 29.9 67: Poor

Crooked R. @ Prineville
RM 47.9 72: Poor

Crooked R. @ Conant Basin Rd.
RM 105.0 77: Poor

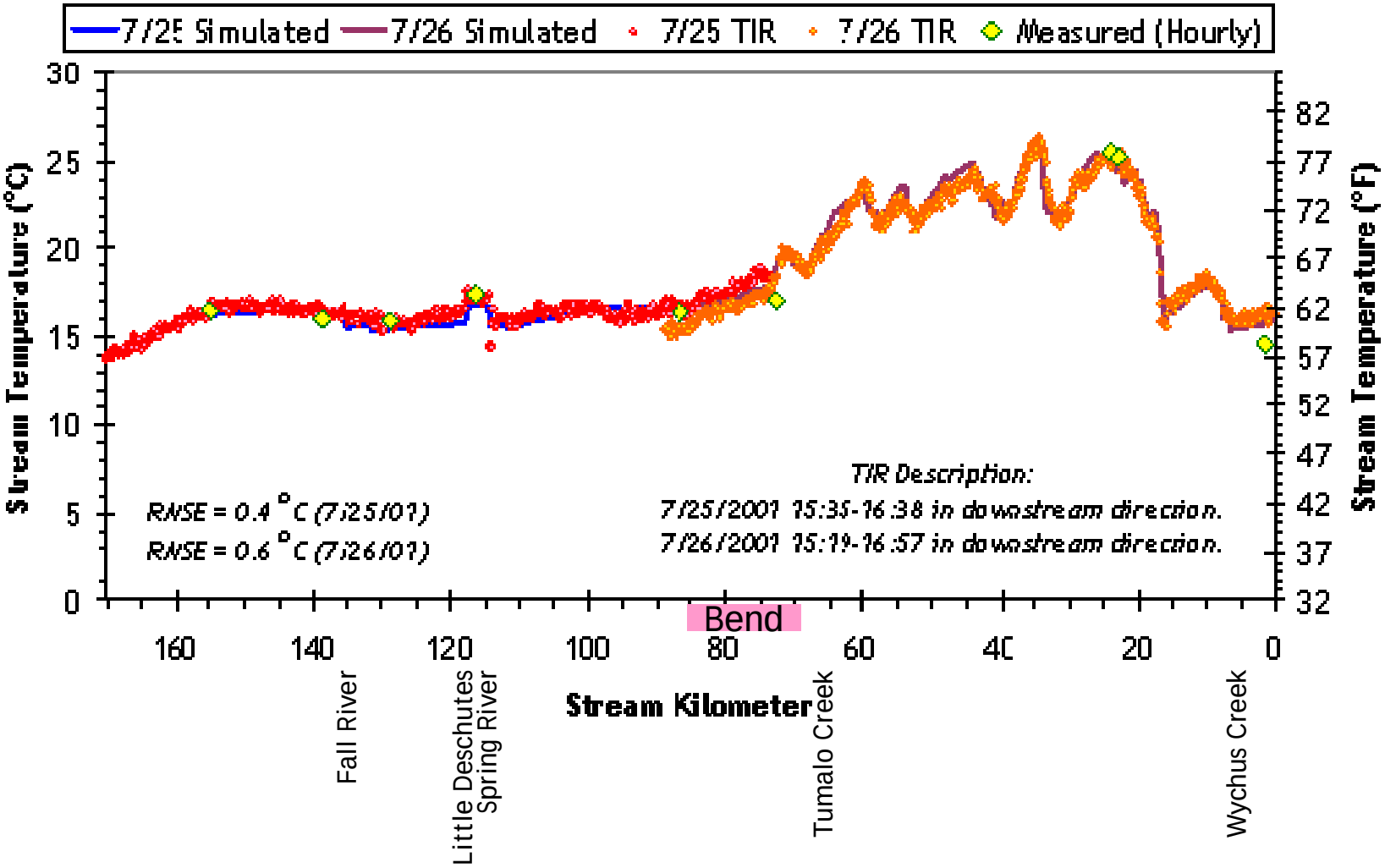
Scores - Very Poor: 0-59, Poor: 60-79, Fair: 80-84, Good: 85-89, Excellent: 90-100

Upper and Lower Crooked River Subbasins

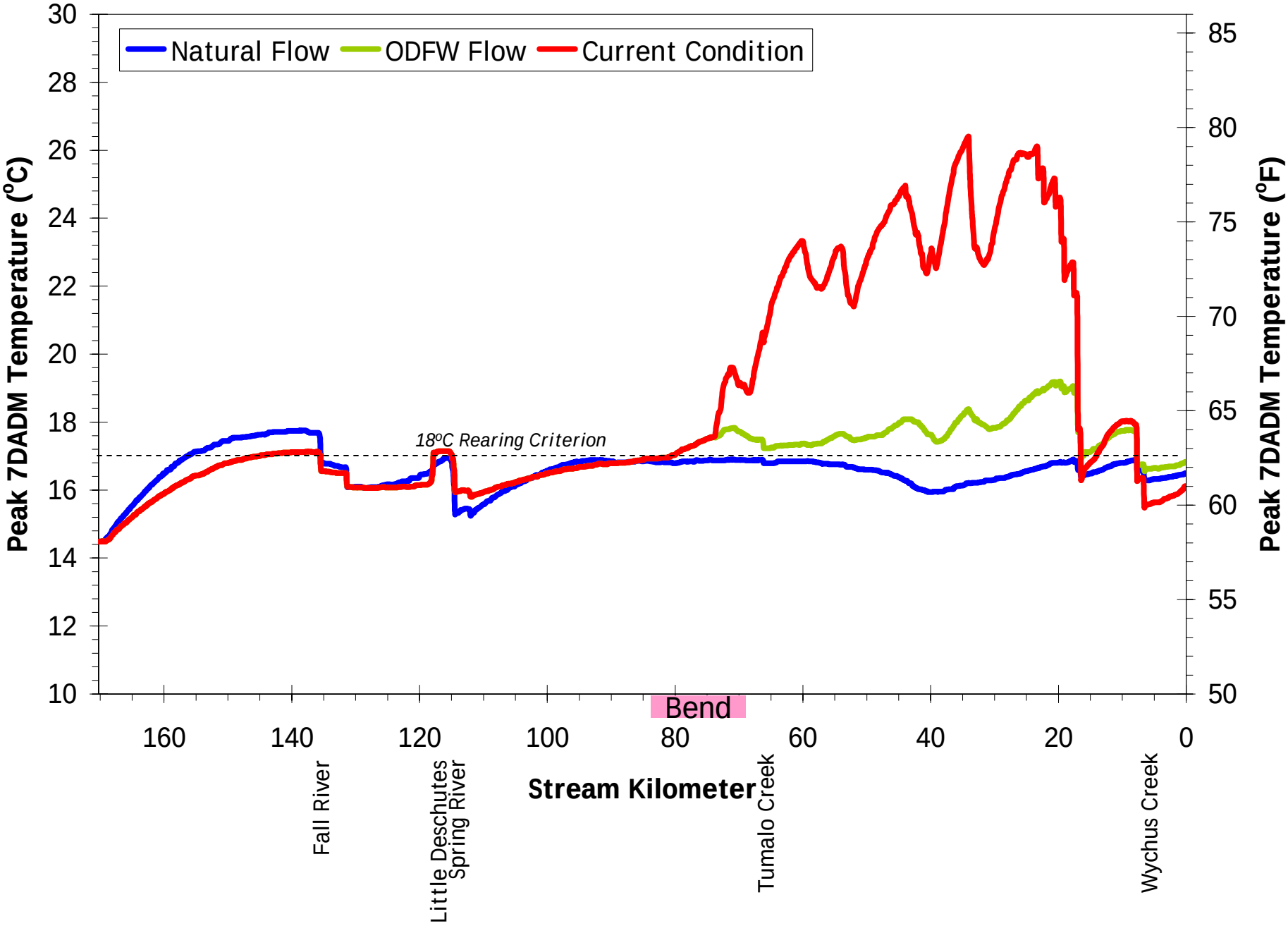
- High levels of pH, dissolved oxygen, temperature, and total phosphorus and low flows contribute to active eutrophication during the summer
- High concentrations of BOD and total solids detected year-round

- **Conant Basin Rd**: *pH standard exceeded year-round, temperature standard exceeded in the summer*
- **Lone Pine Rd**: elevated bacteria, nitrate & ammonia nitrogen observed; *temperature standard exceeded in the summer, pH standard exceeded year-round*
- *Total dissolved gas standard exceeded below Bowman Dam*

Upper Deschutes River



Upper Deschutes River 7DADM



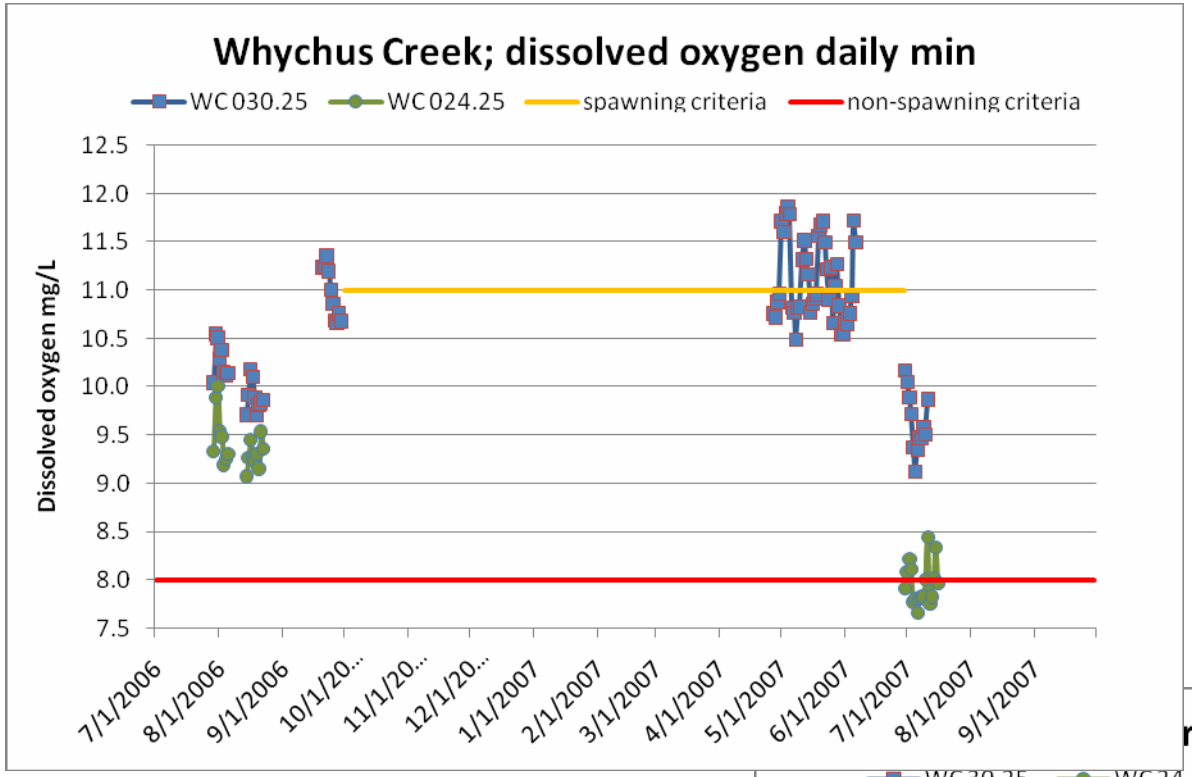


Figure 1. Whychus Creek; daily minimum dissolved oxygen concentrations

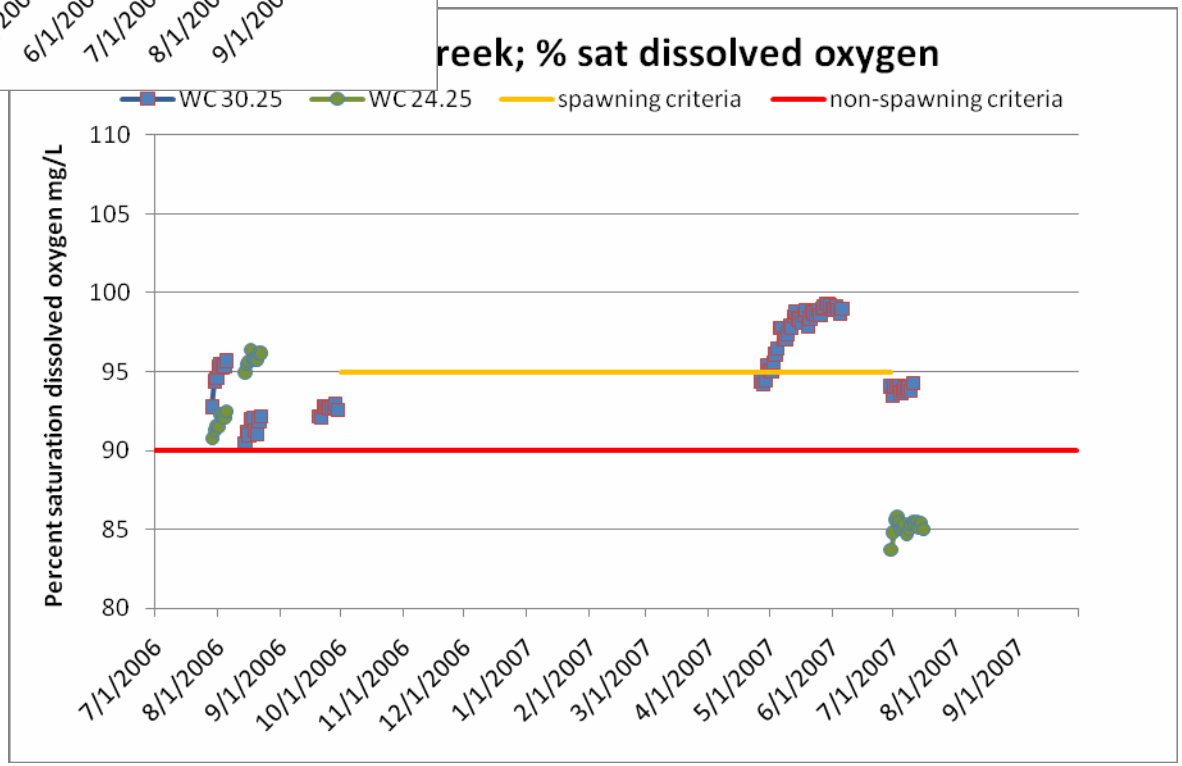


Figure 2. Whychus Creek; daily minimum percent saturation of dissolved oxygen

Sources of Bacteria