# Why is Corvallis updating the Water Master Plan now?

**It's been nearly 20 years since the previous planning effort!**

## Project Approach

YOU ARE HERE

### Fiscal Year 2018/2019

- Customer Survey (Community Values)
- Community Engagement Plan
- Key Water Stakeholders Workshop
- Public Open House
- Kickoff
- Existing System
- Demographic/ Demand Projections
- Policies & Criteria Resiliency/Level of Service Goals
- WTP Existing Facilities Condition Related Improvements
- City Council & Planning Commission Updates

### Fiscal Year 2019/2020

- Water Supply Strategy
- Community Engagement (Project Updates: Public, Boards & Commission, Key Water Stakeholders)
- Distribution System Storage & Pumping Capacity/Seismic Improvements
- Rock Creek WTP Improvements Implementation Plan
- Taylor WTP Improvements Implementation Plan
- City Council & Planning Commission Updates

### Fiscal Year 2020/2021

- CIP
- Draft Master Plan
- Key Water Stakeholders Workshop
- Public Open House
- Council Workshop & Review
- Agency Draft Plan
- Final Draft Plan
- Adoption into Comprehensive Plan
- City Council & Planning Commission Updates

Project Management

## Objective #1

Establish a public outreach process that establishes and maintains key stakeholder support throughout the planning project.

## Objective #2

Establish the foundation for a long-term, seismically resilient water system for the City.

## Objective #3

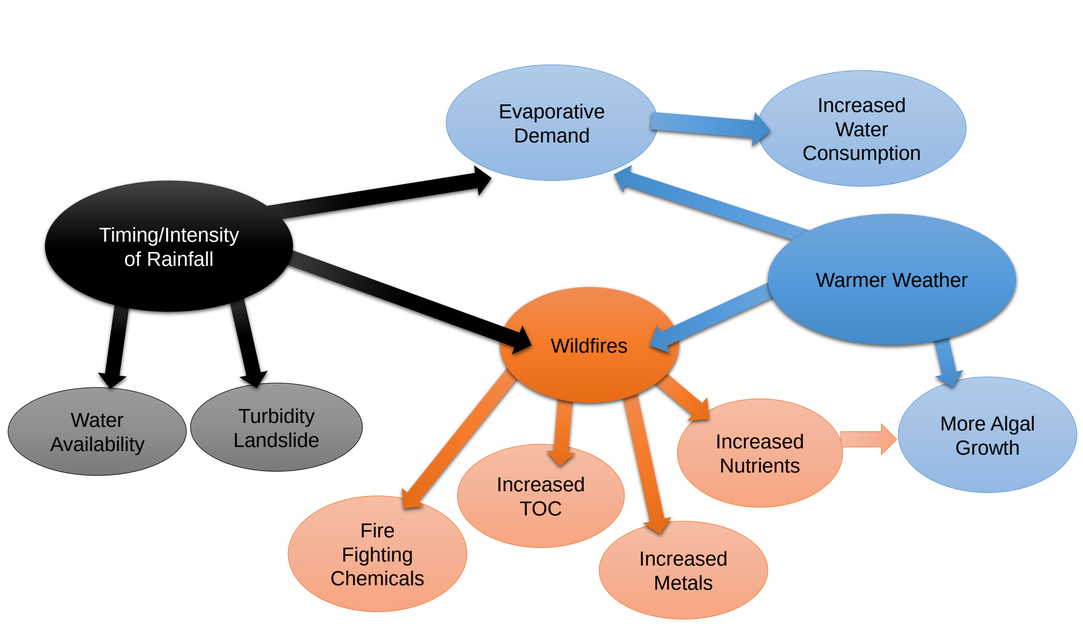
Planning for the future. Develop a water supply strategy and address future finished water demand and quality goals.

**Learn more**: *www.corvallisoregon.gov/publicworks/page/water-master-plan-update*

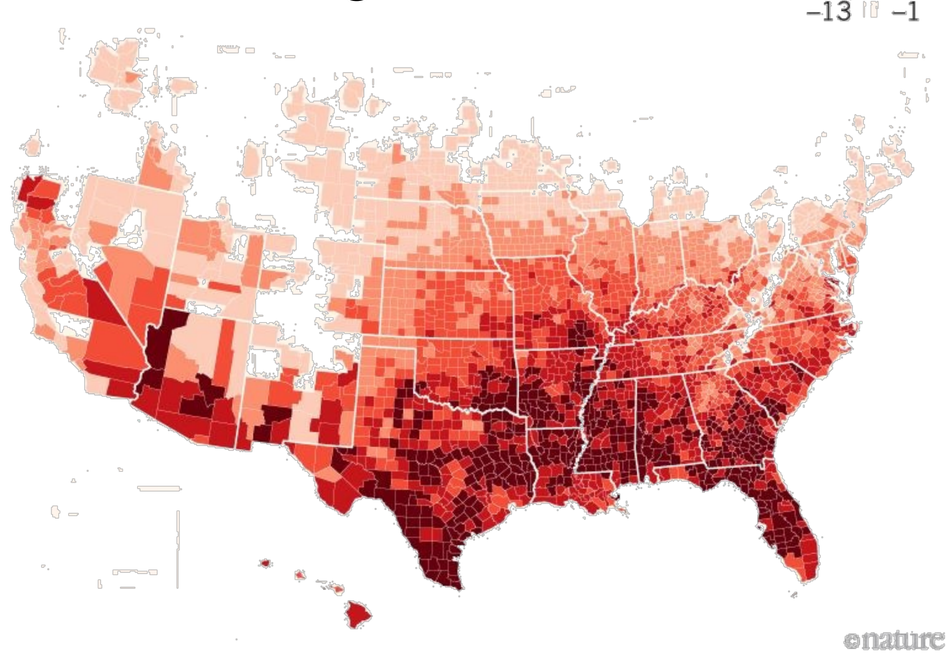
# Could climate change impact the quantity and quality of our drinking water supply?

The City is partnering with the Oregon Climate Change Research Institute (OCCRI) to evaluate climate change in the Willamette Valley.

## Climate Change could Impact Water Consumption, Water Quantity, and Water Quality

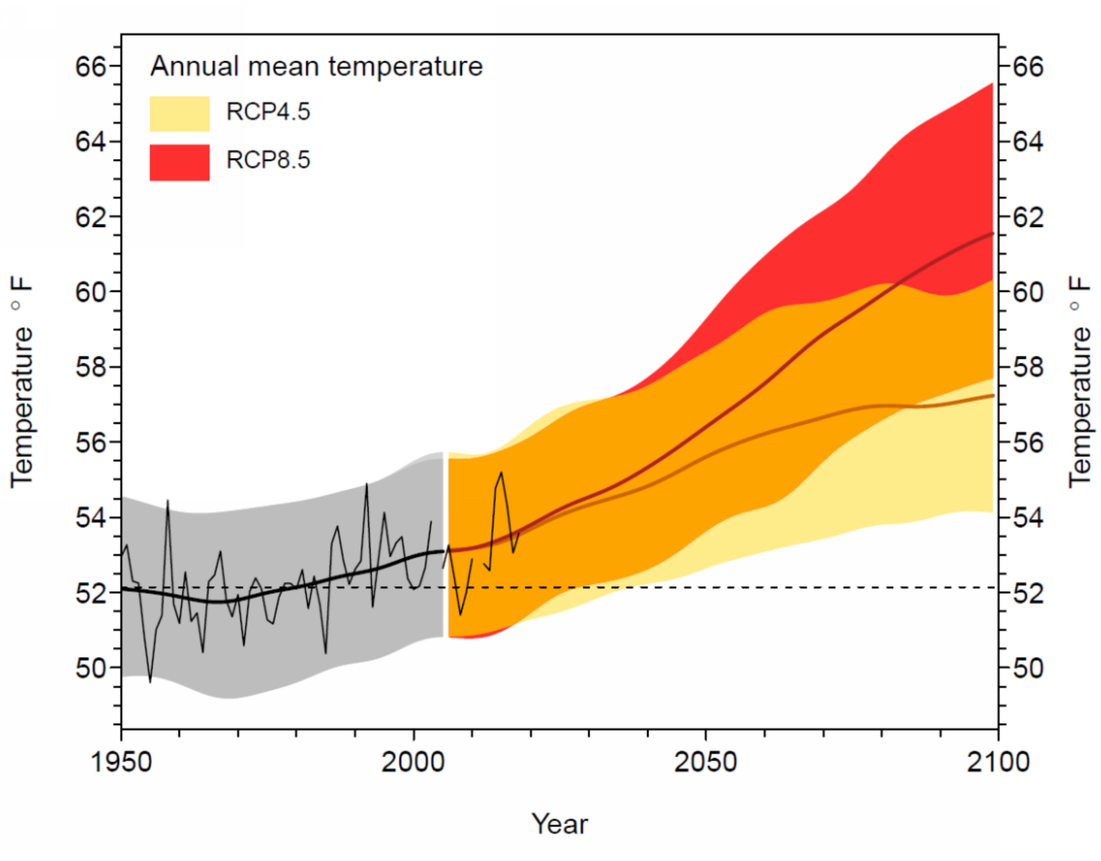



## The PNW Expected to Experience Less Impact from Climate Change

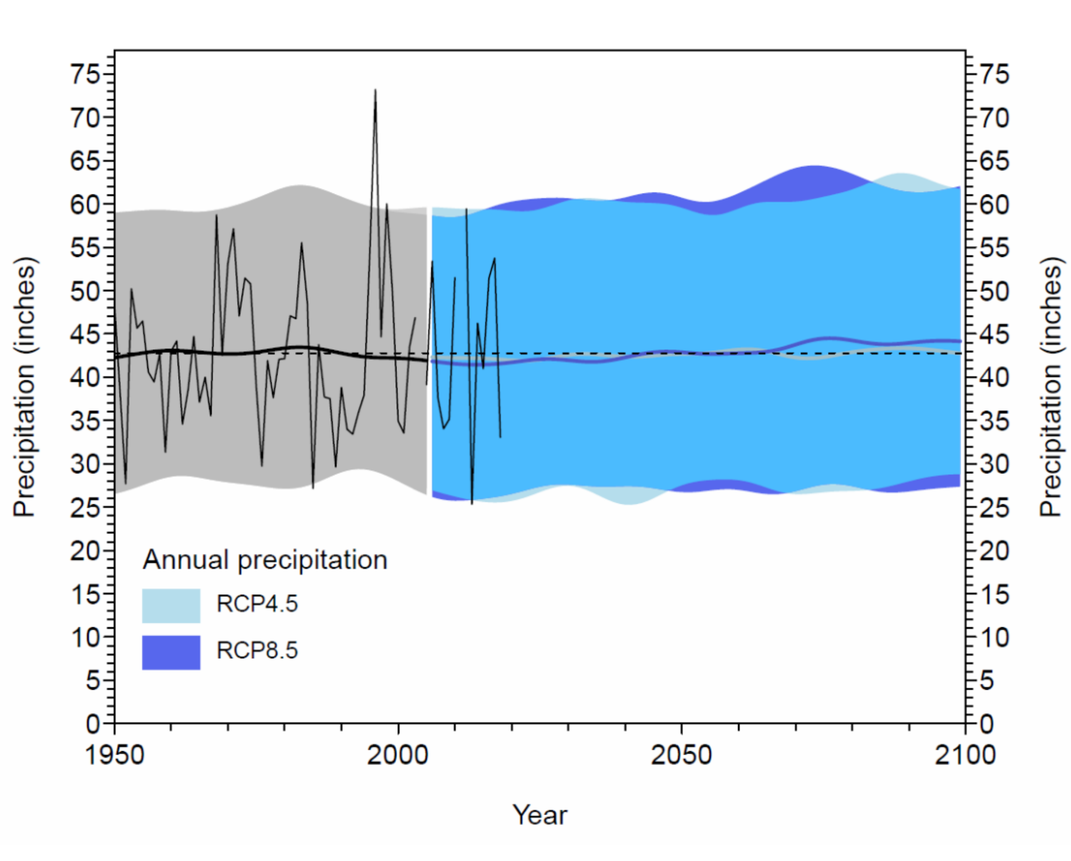



Courtesy of Nature: https://www.nature.com/articles/d41586-019-00327-2

## Annual Average Temperature for Corvallis

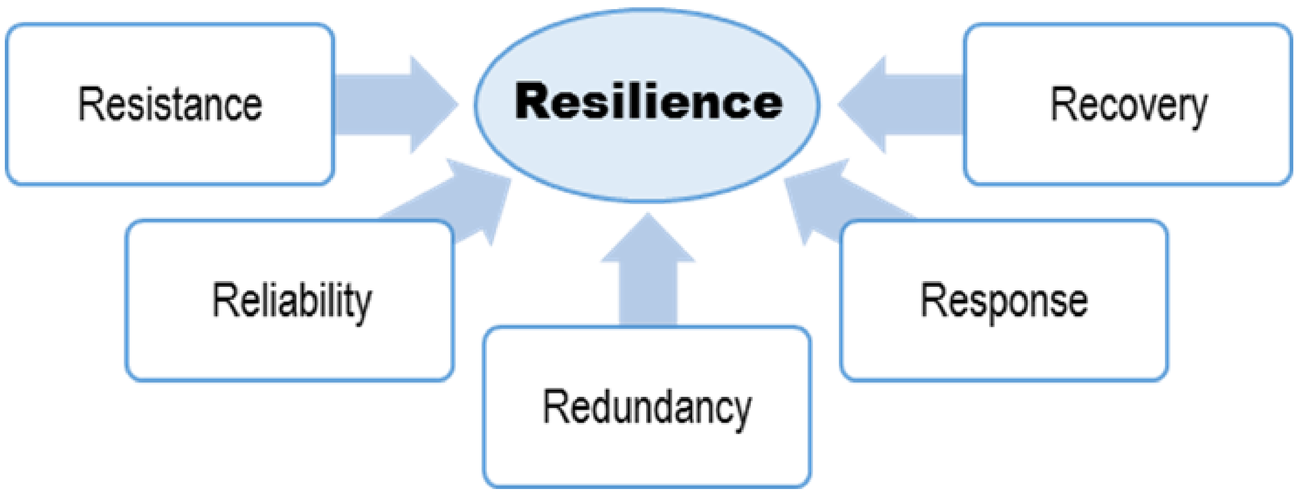


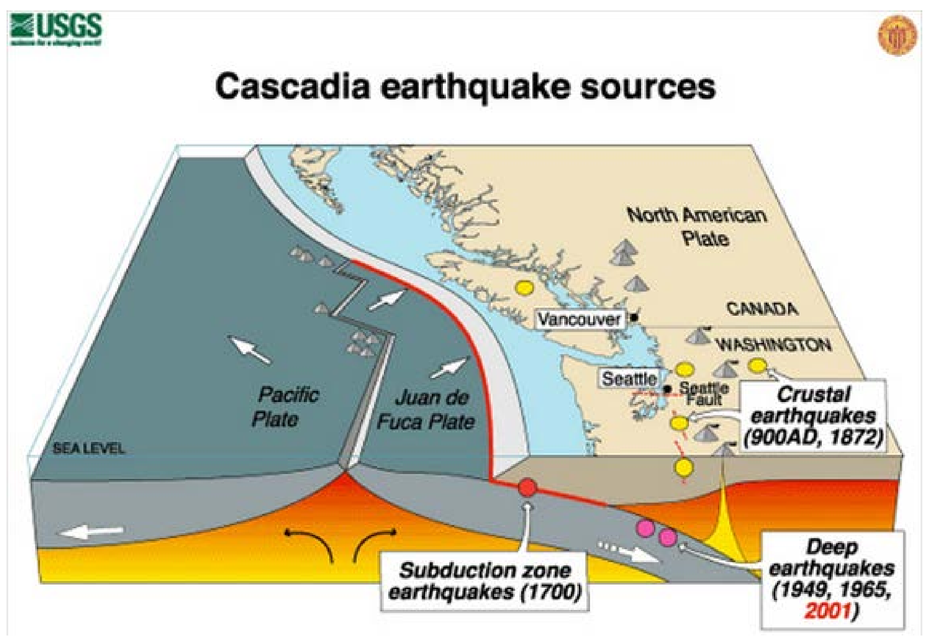

## Total Annual Precipitation for Corvallis



# How prepared is the Corvallis water utility for a seismic event?

**This Water Master Plan will provide the roadmap for meeting the City's seismic resilience goals over the next 50 years.**




## Oregon Leads the Nation in Comprehensive, Proactive Earthquake Preparedness

- Oregon Resilience Plan published February 2013 at the request of the Governor
- Focus on determining the impact of a Japan-magnitude earthquake and tsunami on the State of Oregon
- Outlines a 50-year mitigation strategy


**Current State of Oregon's Infrastructure Compared to ORP Goals**

Desired time to restore component to 80-90% operational ◆
Desired time to restore component to 50-60% operational ●
Desired time to restore component to 20-30% operational ▲
Current state (90% operational) X

| System Function | Event Occurs | 0-24 hours | 1-3 days | 3-7 days | 1-2 weeks | 2-4 weeks | 1-3 months | 3-6 months | 6-12 months |
|---|---|---|---|---|---|---|---|---|---|
| Potable water availalble at supply source | | ▲ | ● | | ◆ | | | X | |
| Main transmission faciliites, pipes, pump stations and reservoirs operational | | ◆ | | | | | X | | |
| Water supply to critical facilities available | | ● | ◆ | | | | X | | |
| Water for fire suppression at key supply points | | ◆ | | X | | | | | |
| Water for fire suppression at fire hydrants | | | | ▲ | ● | ◆ | | | X |
| Water available at community distribution centers/points | | | ● | ◆ | X | | | | |
| Distribution system operational | | | ▲ | ● | ◆ | | | | X |

***How prepared should Corvallis be?***

# What is the City doing to improve the resilience of the water system?

## Marys River Water Main Crossing

Two cast iron water mains carry water from Taylor Plant to north Corvallis - 15th Street and 4th Street. Both pipes are currently mounted on bridges and are earthquake vulnerable.

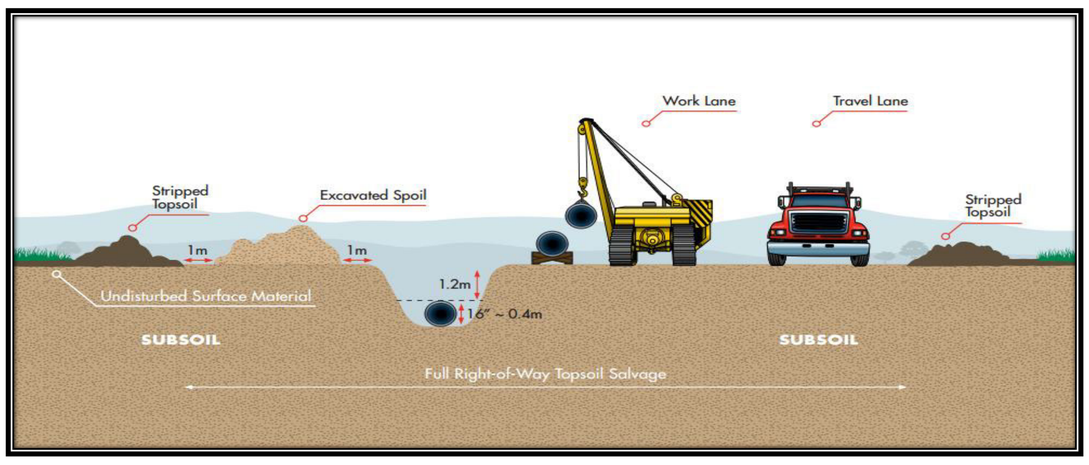
### Schedule

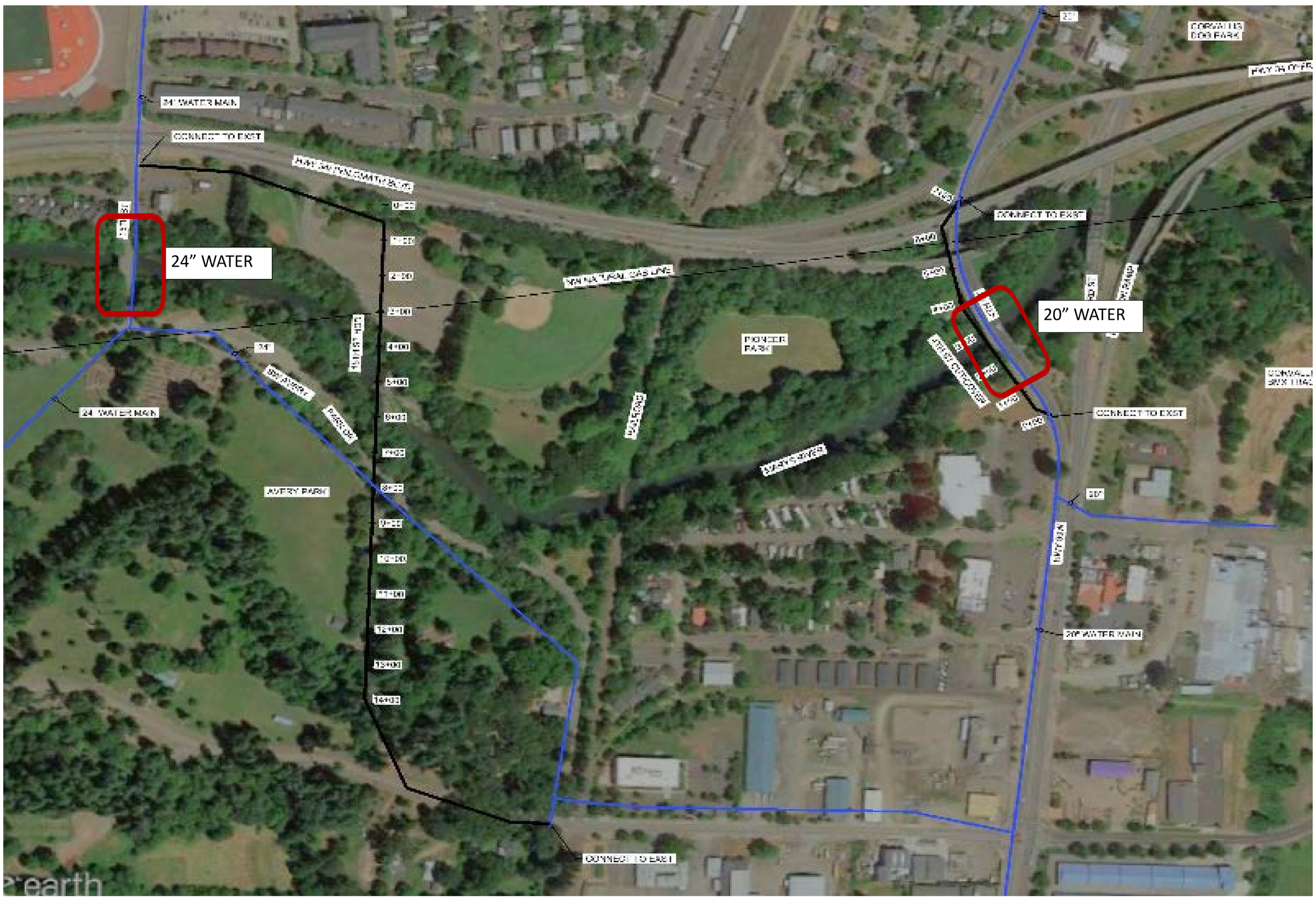
Construction of 15th St
July 2019 - Nov 2019

Construction of 4th St
July 2019 – Sep 2019

## Horizontal Directional Drilling at 15th Street


## Standard Cut and Cover at 4th Street



# How would you rate your water quality?

**Both treatment plants meet or exceed all water quality regulations.**

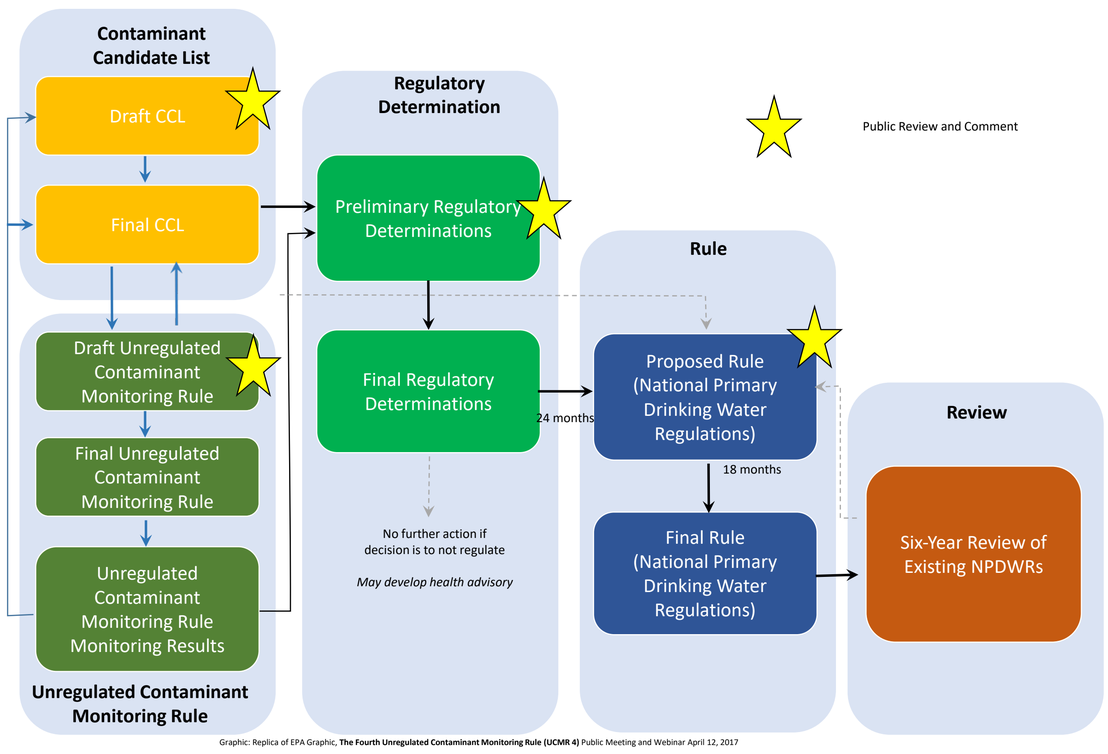
The finished water quality from both treatment plants is very similar.

## Water Quality Regulations:

- Regulated Contaminants – OAR Chapter 333 Division 061
- Oregon Drinking Water Quality Act – ORS 448.119 – 448.285, 454.235, 454.255

## We are creating a plan to meet future water quality regulations

### Drinking Water Rule Adoption Process




Graphic: Replica of EPA Graphic, **The Fourth Unregulated Contaminant Monitoring Rule (UCMR 4)** Public Meeting and Webinar April 12, 2017

## Categories of Regulated Contaminants:

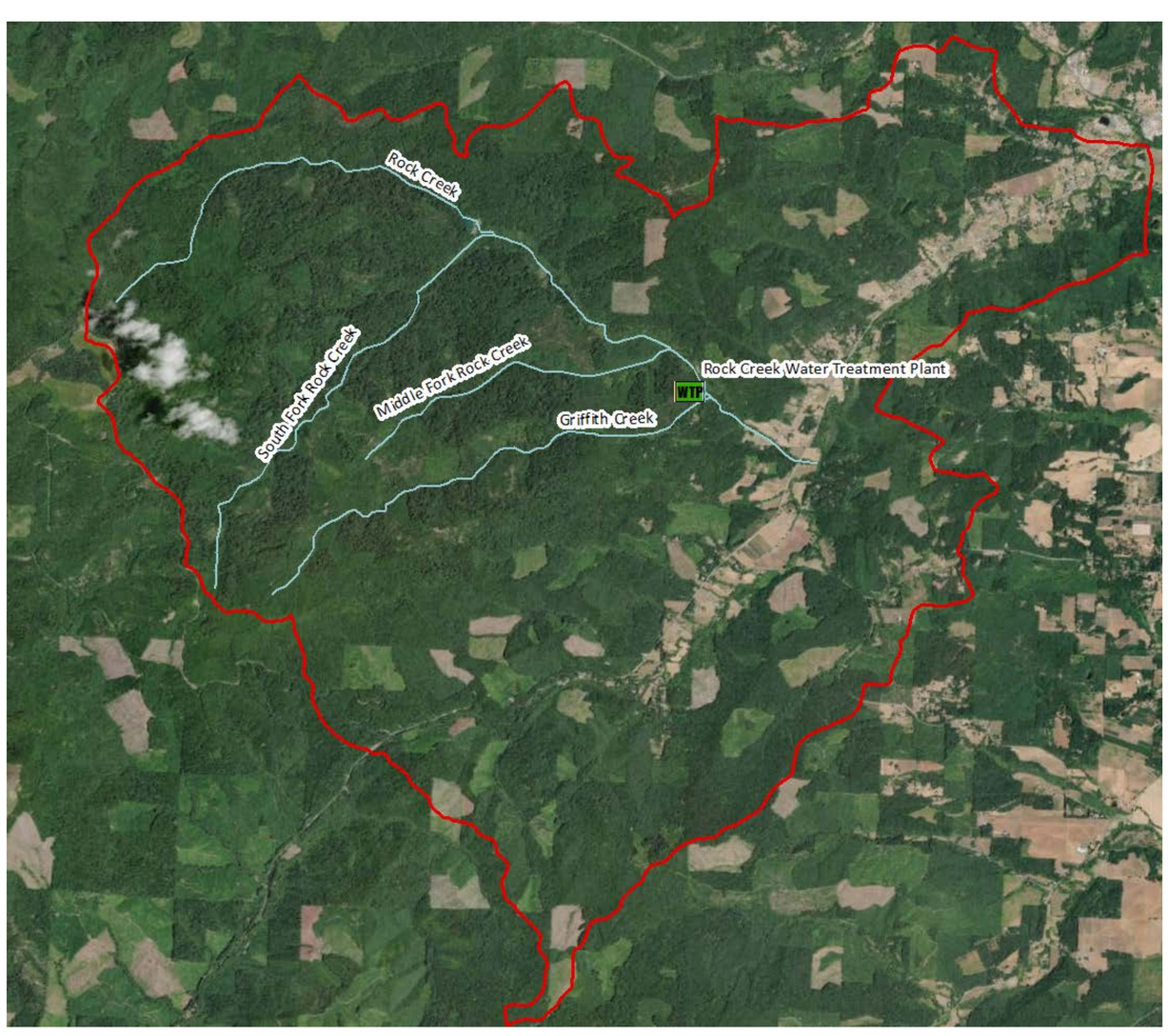
- Turbidity
- Total Organic Carbon
- Alkalinity
- Inorganic Contaminants
- Volatile Organic Contaminants
- Synthetic Organic Contaminants
- Radionuclides
- Microbial Contaminants
- Disinfection Byproducts
- Lead and Copper

***Would you make investments today to protect your water quality in the future?***

# Where does our drinking water come from?

**The City has two water treatment plants with two independent water sources.**

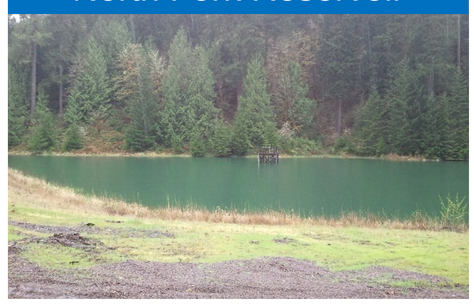
## Rock Creek Water Treatment Plant
## Watershed in Corvallis Forest



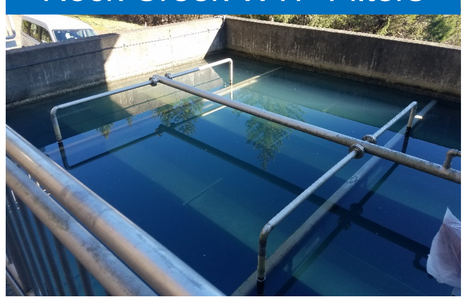

### Rock Creek Treatment Plant

### South Fork Intake

### North Fork Reservoir



### Rock Creek WTP Filters



Rock Creek supply operates by gravity from the three raw water sources through the plant and to the City of Corvallis

The North Fork Reservoir provides water supply and flood control. Creek flows diminish and may dry up completely in the summer and fall. This leaves the reservoir as the main supply for Rock Creek WTP and must be managed carefully.

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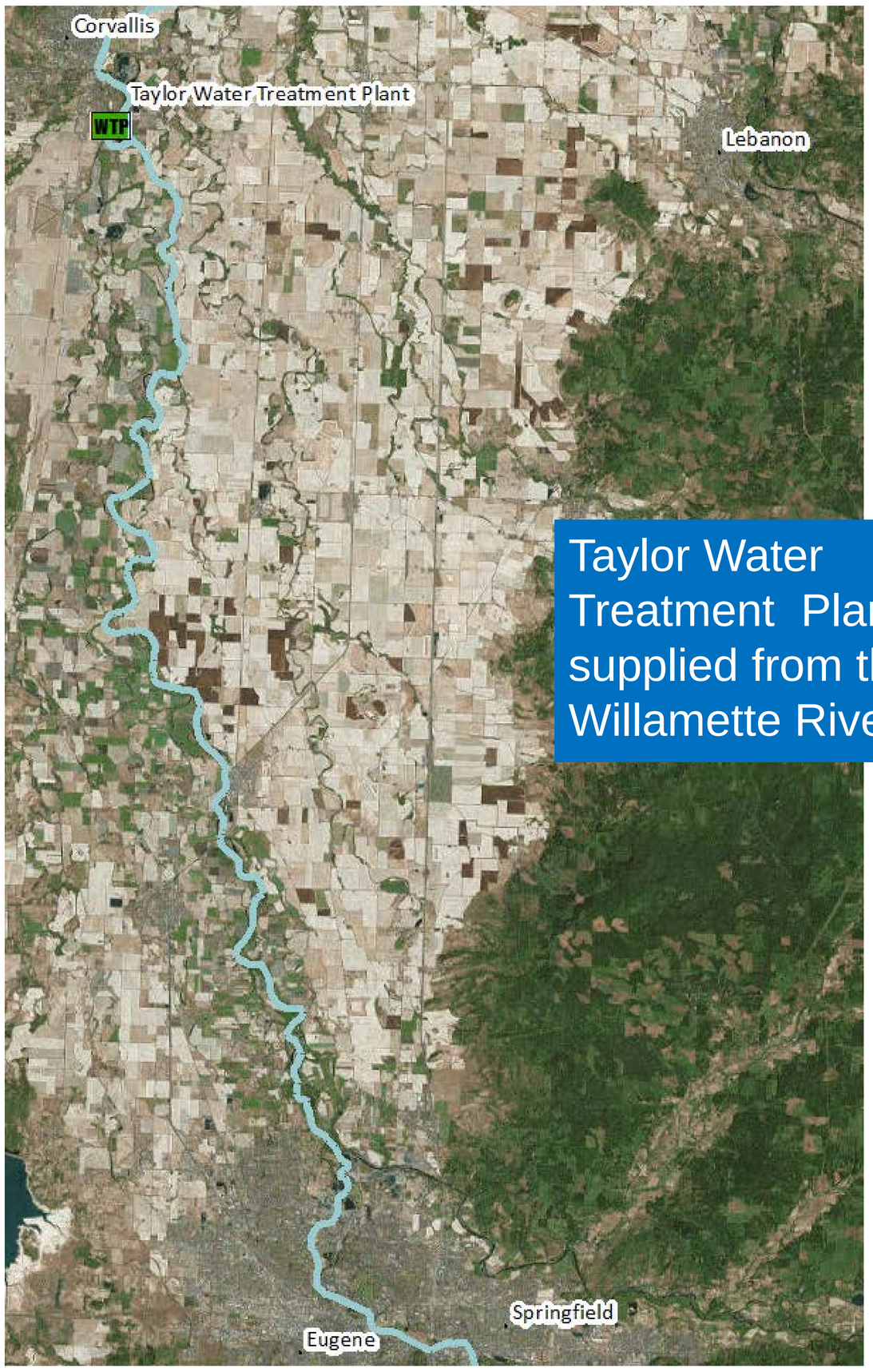
### Rock Creek WTP Factoids:

- Located on the east slope of Marys Peak, Siuslaw National Forest, Benton County
- Rock Creek watershed is 10,000 acres, 2,400 acres owned by City of Corvallis
- South Fork Intake, Griffith Creek Intake and Rock Creek Transmission Main built in 1906
- Rock Creek WTP built in 1954
- North Fork Dam built in 1959
- Upgrades: 1984, 2002
- Supplied by North Fork Rock Creek, South Fork Rock Creek, and Griffith Creek
- North Fork Reservoir Capacity: 84 MG (90.8 MG with flash boards)
- Average annual production:  2.4 MGD (over the last decade)
- Maximum daily capacity: 3 MGD
- Annual Electrical Usage: 226,000 kWh
- Water temperatures: 6 deg C in winter to 16 deg C in summer.

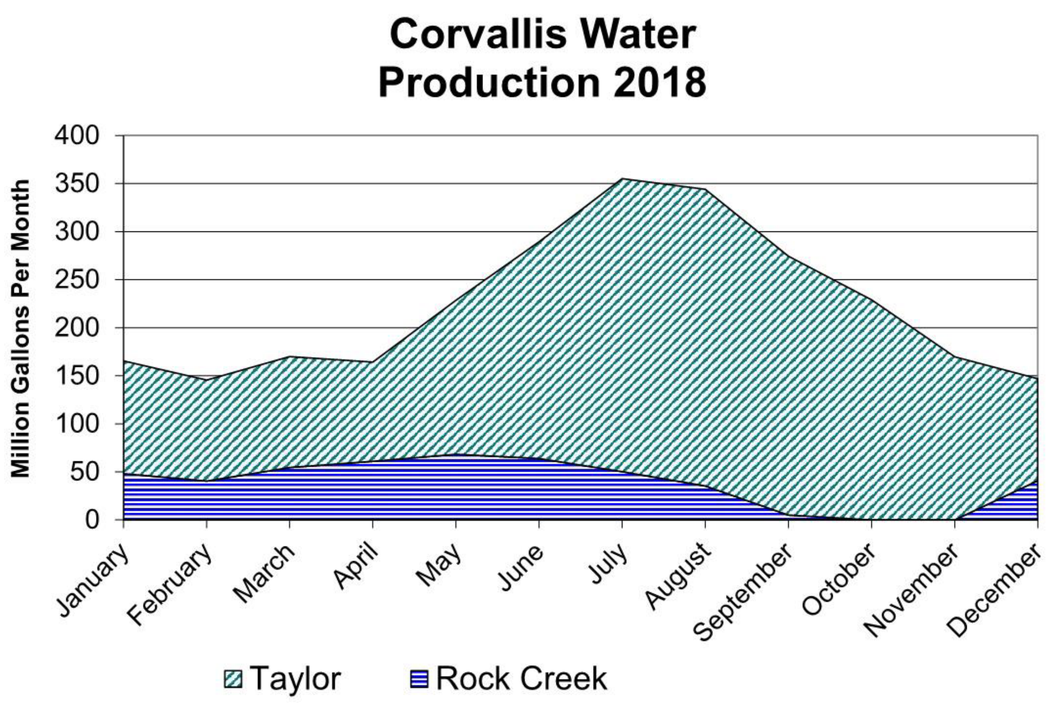
# Why does Corvallis have two drinking water treatment plants?

**Two water treatment plants with two independent surface water sources provides redundancy that mitigates the risk of impacts to one water supply.**




Taylor Water Treatment Plant is supplied from the Willamette River


Taylor Treatment Plant




## Taylor WTP Factoids:

- Built in 1949
- Upgrades: 1960, 1968, 1971, 1980, and 1995
- Supplied by Willamette River
- Average daily production: 4.9 MGD (over the last decade)
- Maximum daily capacity: 22 MGD
- Annual Electrical Usage: 3,035,000 kWh
- Water Temperatures: 4 deg C in winter to 21 deg C in summer.

# Which reservoir provides reliable water pressure to your home?

## THE CITY HAS:

**3 Service Levels – Level 1 is the lowest and largest service level**
**8 finished water reservoirs that store 22 MG of water**

North Hills East, West Reservoirs
Service Level 1
5 MG each
Constructed in 1959, 1969

**Timberhill III Reservoir**
Service Level 3
1 MG
Constructed in 1982

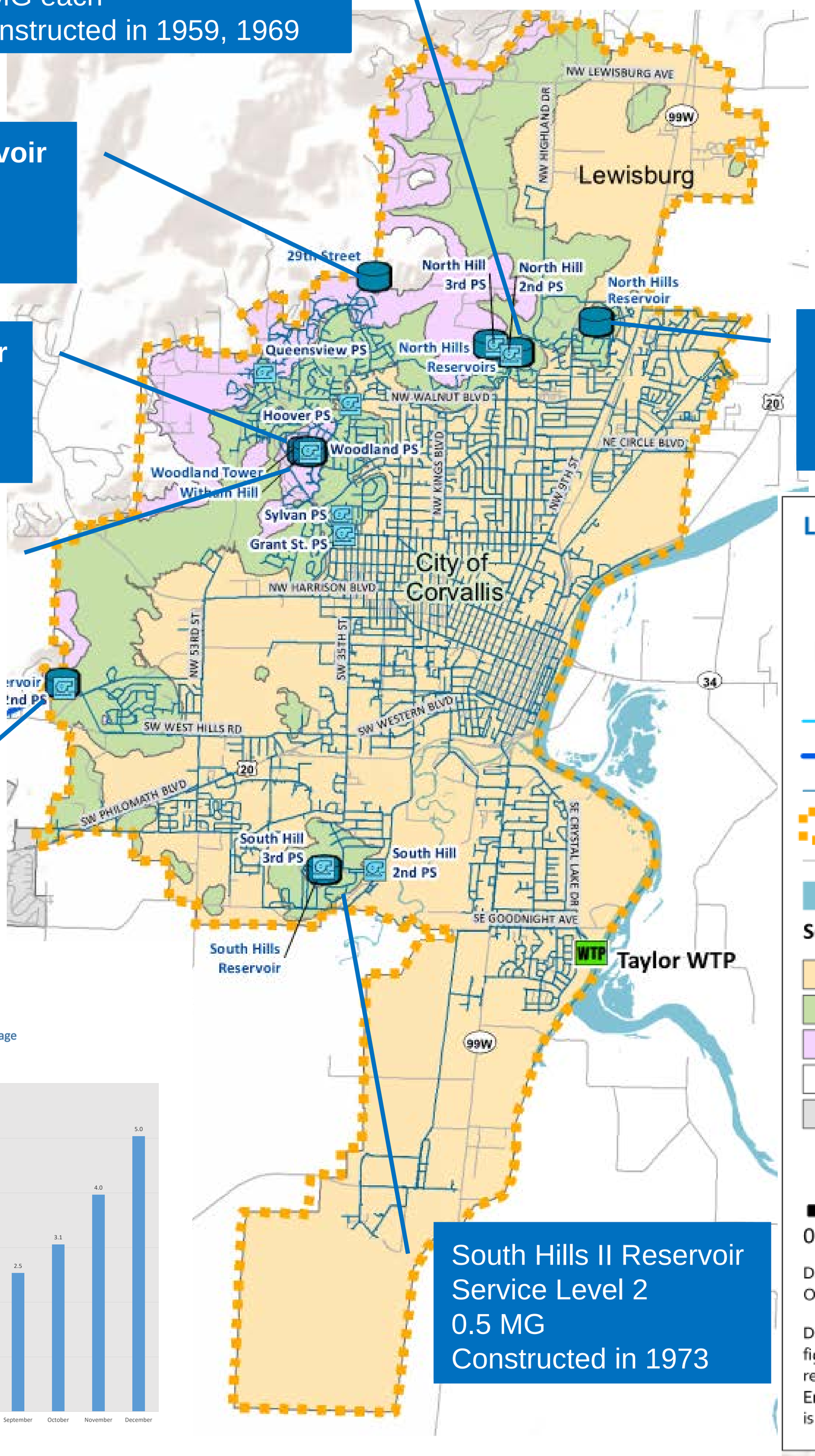
**Woodland III Reservoir**
Service Level 3
0.125 MG
Constructed in 1969

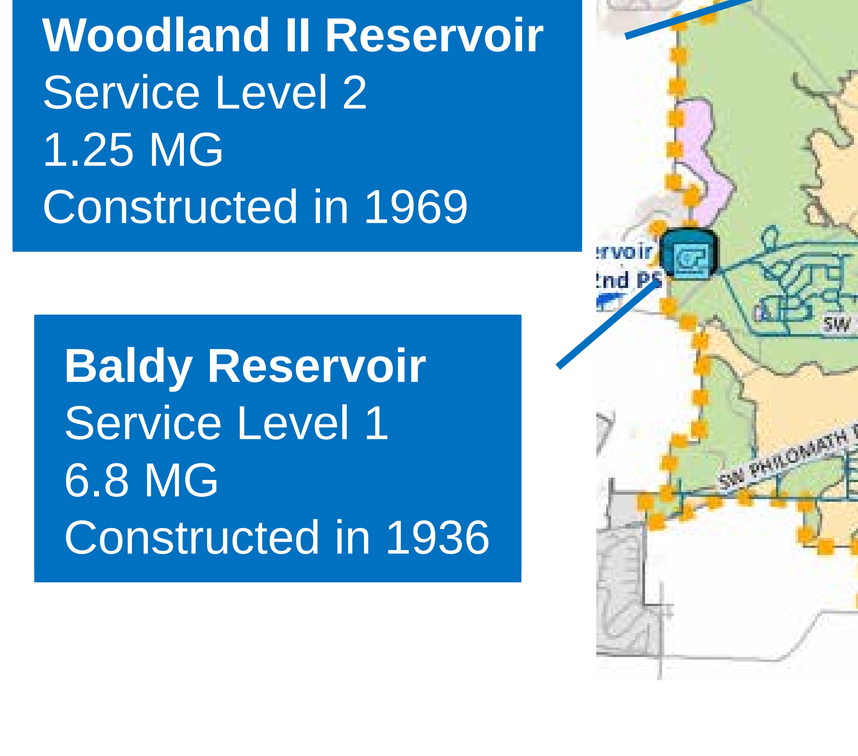
**Woodland II Reservoir**
Service Level 2
1.25 MG
Constructed in 1969

**Baldy Reservoir**
Service Level 1
6.8 MG
Constructed in 1936

North Hills II Reservoir
Service Level 2
2.5 MG
Constructed in 1974

South Hills II Reservoir
Service Level 2
0.5 MG
Constructed in 1973



# How many miles of pipe are between the water treatment plant and your home?

## Facts

10 Pump stations

255 miles of 4” to 36” water pipe

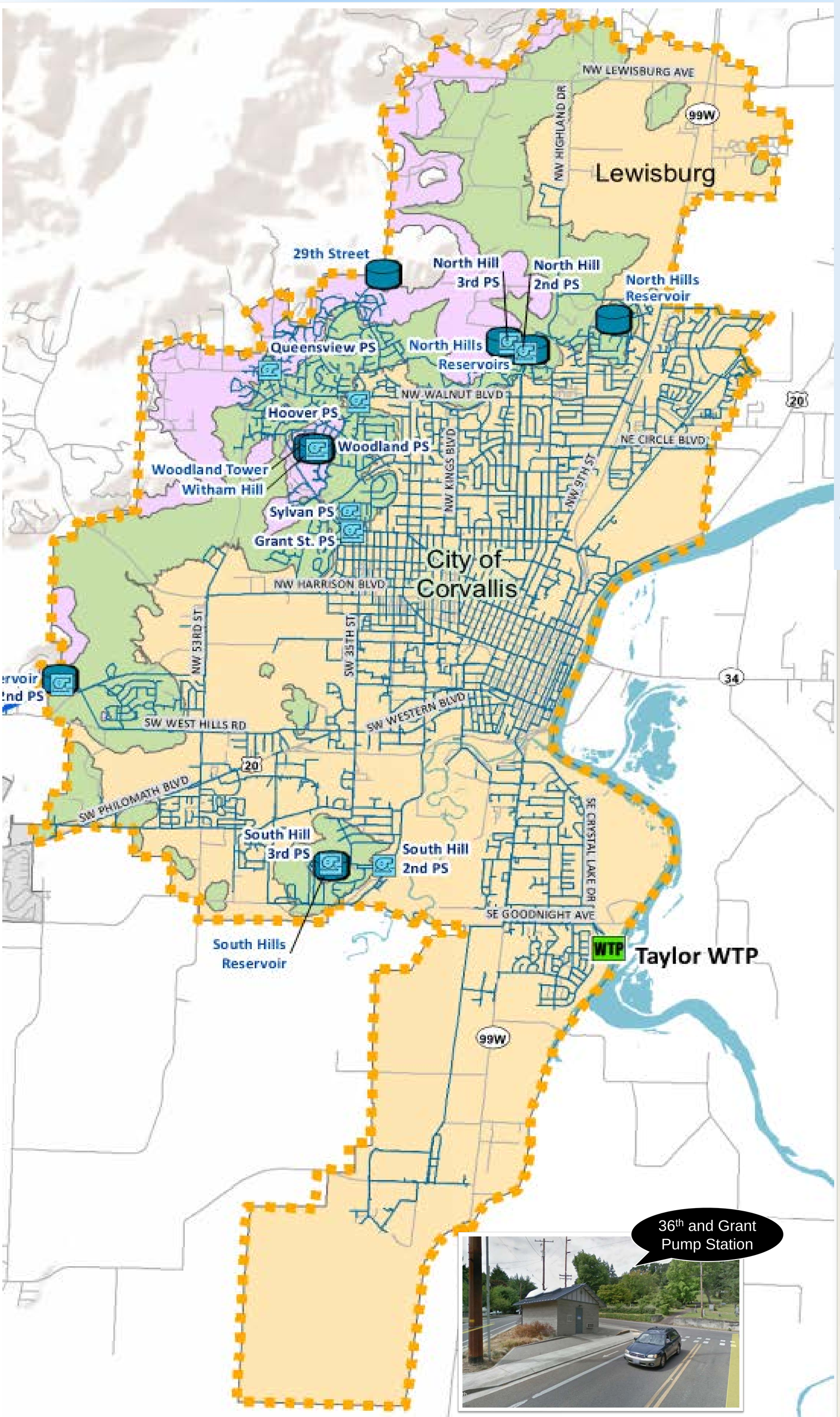
2,178 fire hydrants

7,000+ valves

System value of over $350M

17,000+ water meters from ¾” to 10”

80% of water meters are automated






## Legend

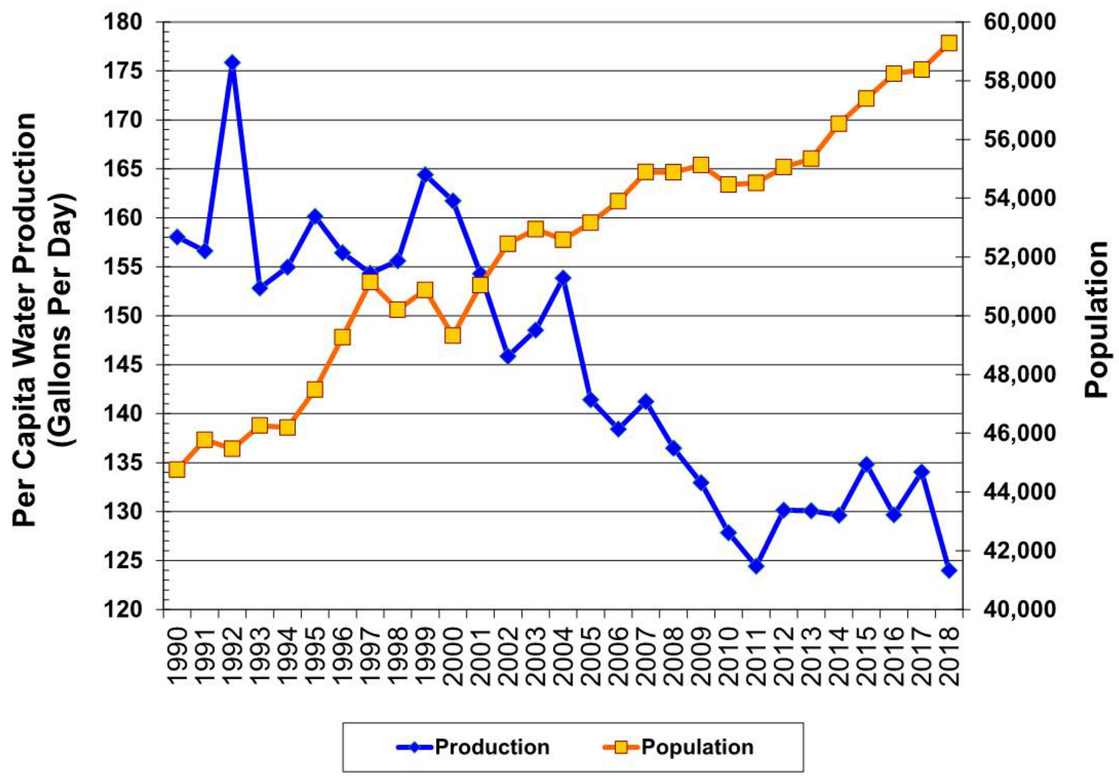
- WTP — Water Treatment Plant
- Pump Station
- Reservoir
- Intertie
- Raw Water
- Transmission Main
- Distribution System Mains
- Future Planning Area
- Streets
- Willamette River

**Service Level**

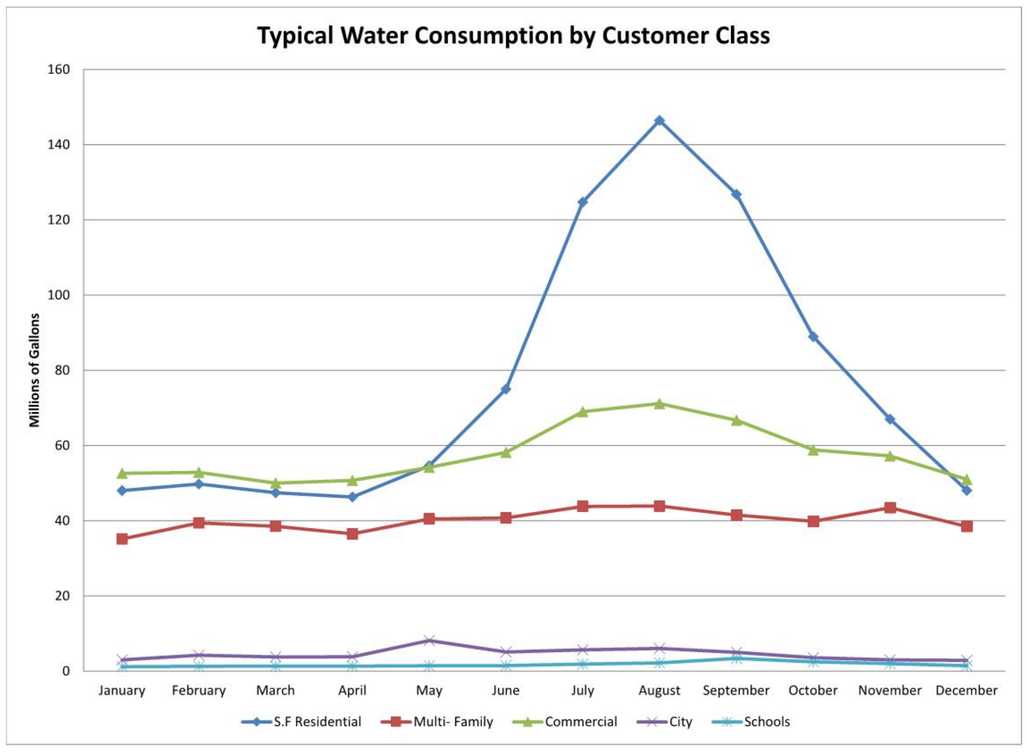
- 1st Level
- 2nd Level
- 3rd Level
- Not Served
- Neighboring Municipalities

# What can I do to conserve water?

## Corvallis Community Members are saving water even as the population increases




## Single-family home irrigation provides an opportunity to save water



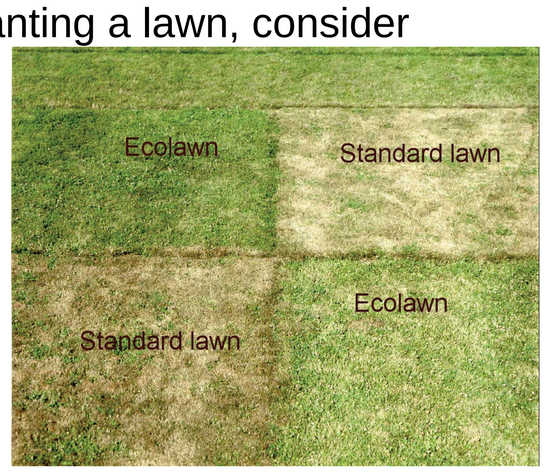

## Water Conservation Tips

**INDOORS:**

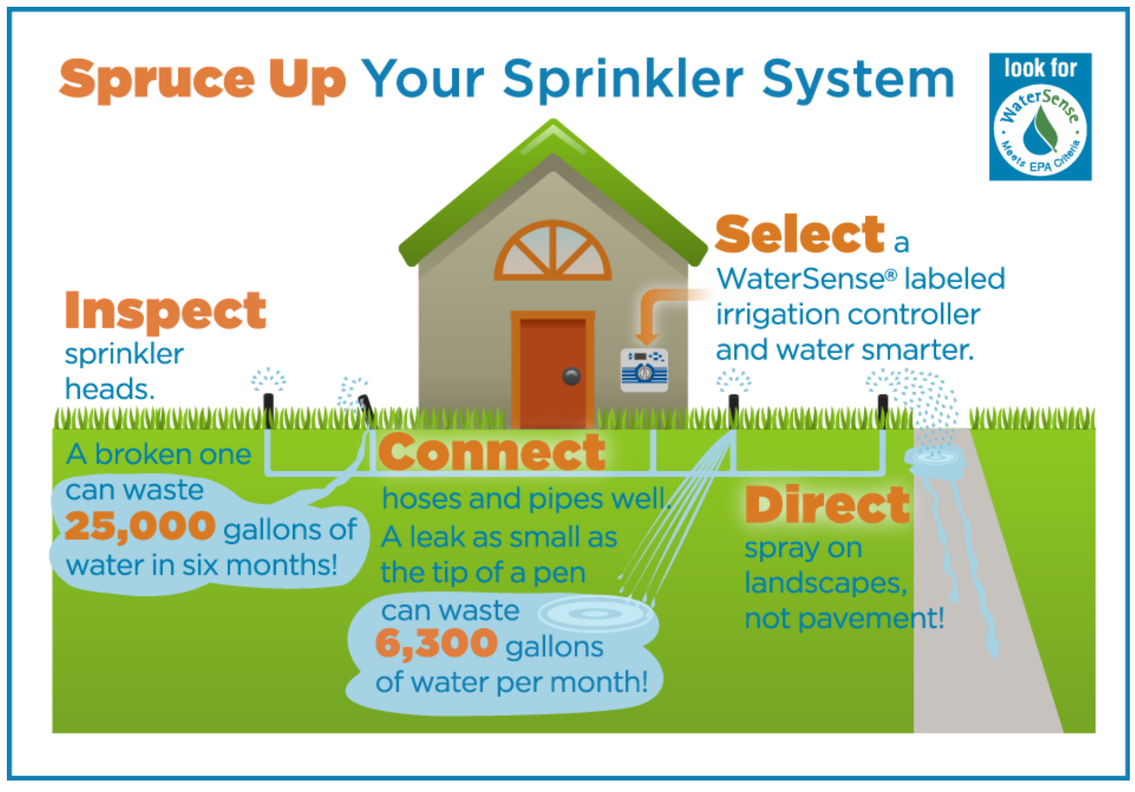
- Fix leaks in sinks, showers, and toilets. Toilet leaks are perhaps the largest water waste in your home, and toilets can leak silently for a long time.
- Turn off the water when you brush your teeth or shave.
- If you like to drink cold water, keep a jug in the refrigerator rather than letting the tap run to get cold.
- Use showerheads that deliver 2.2 gpm or less, and limit showers to five minutes. If you take baths, don't fill the tub more than about three inches.
- Use a high efficiency toilet that uses 1.28 gallons per flush, and never use your toilet as a wastebasket.
- Wash only full loads of dishes or clothes, and consider using a water-efficient washing machine. If you wash dishes by hand, don't let the water run.

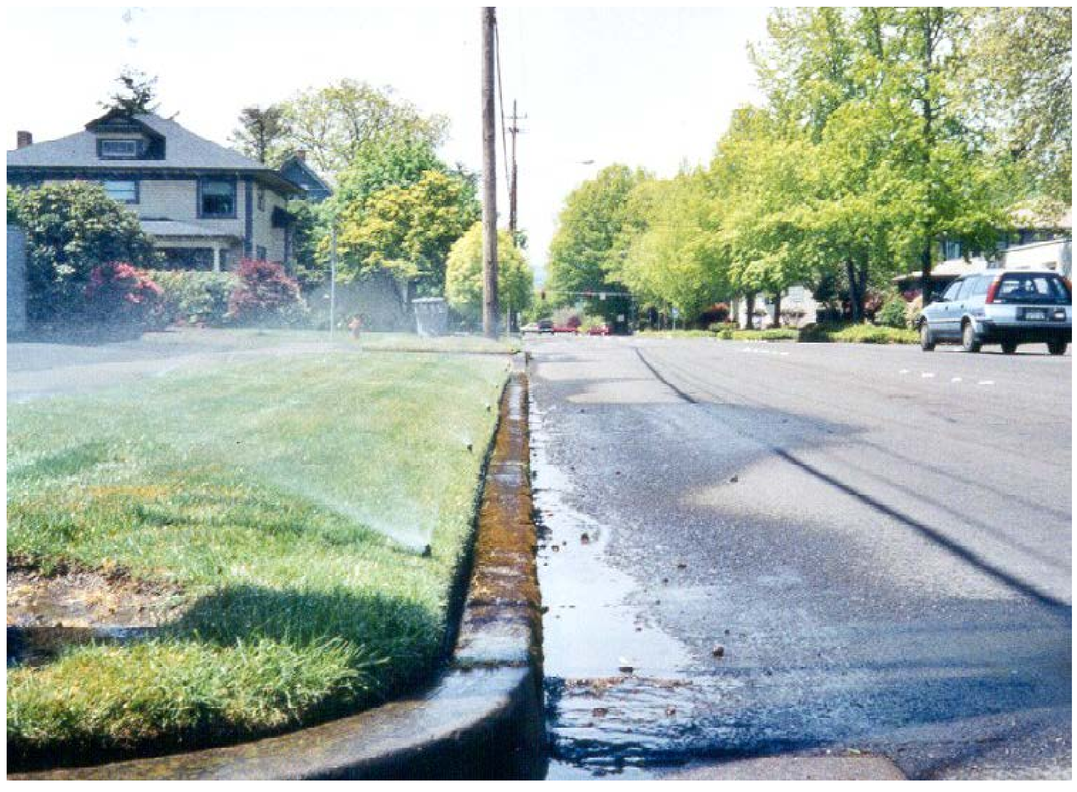
**OUTDOORS:**

- **Sweep** (never hose) sidewalks and driveways.
- **Water only when needed.** Call the Corvallis Water Conservation Hotline (541-766-6733) to find out daily or weekly evapotranspiration information to plan your lawn or garden irrigation.
- **The tuna can trick.** Measure how much you water your lawn or garden using an empty tuna can or straight-sided cup, and don't use more than your plants need.
- **Avoid high noon**. Water your garden in the early morning or late evening -- avoid watering when it's windy.
- **Two times are better than one.** Split your watering into two applications with a 15 to 30 minute break in between. In clay soils, this will help reduce runoff. In sandy soils this will allow roots more time to absorb water before it drains away.
- **Soaker or a drip?** Consider using soaker hoses or a drip irrigation system for your vegetable garden, shrubs and flowerbeds. Slow application of the proper amounts of water applied directly to the roots promotes healthy growth and better results.
- **Put some roots down**. Your lawn prefers a weekly deep watering rather than daily sprinkles. By watering deeply and infrequently, your lawn will develop deep roots. Deeper roots will enable plants to use moisture deep in the ground. Plants will be healthier and stronger. After heavy rains, you won't need to water for 10 to 14 days.
- **Reset.** If you have an automatic irrigation system, reset the computer at least once a month since your plants need less water in May and September, for instance, than in the middle of summer.
- **Dormant is not dead.** Let your lawn go dormant during the heat of the summer. It will turn green again as soon as the rain starts to fall. If you are planting a lawn, consider planting an eco-lawn, which is a blend of plants instead of just grass and will stay green longer with less water.
- **Mulch.** Use mulch to reduce the amount of water your plants need. Mulch also helps keep weeds away!



# How can I spruce up my sprinkler system and save money?



## Spruce Up Your Sprinkler System and Save

Now is the perfect time to spruce up your irrigation system ***before*** you ramp up your watering efforts this spring and summer. To get started, follow these four simple steps—*inspect*, *connect*, *direct*, and *select*:

- **Inspect**. Check your system for clogged, broken, or missing sprinkler heads. If you're not the do-it-yourself type, go with a pro—look for an irrigation professional certified through a WaterSense labeled irrigation program.

- **Connect**. Examine points where the sprinkler heads connect to pipes/hoses. If water is pooling in your landscape or you have large wet areas, you could have a leak in your system. A leak as small as the tip of a ballpoint pen (1/32$^{nd}$ of an inch) can waste about 6,300 gallons of water per month.

- **Direct**. Are you watering the driveway, house, or sidewalk instead of your yard? Redirect sprinklers to apply water only to your lawn or prized plants.

- **Select**. An improperly scheduled irrigation controller can waste a lot of water and money. Update your system's schedule with the seasons, or select a WaterSense labeled controller to take the guesswork out of scheduling.

Don't forget to add "sprinkler spruce-up" to your spring cleaning list this year. Learn more about maintaining a water-smart yard by visiting the U.S. Environmental Protection Agency's WaterSense website at www.epa.gov/watersense/outdoor.

# CITY OF CORVALLIS
# WATER TREATMENT FACTOIDS

**Max Daily capacity of:**
- Taylor WTP: 22.0 MGD
- Rock Creek WTP: 3.0 MGD

**Average annual production:**
- Taylor WTP = 2.22 Billion
- Rock Creek  WTP = 480 Million

**Plant Ages:**
Taylor WTP 1949, 70 years
- Undergone minor and major upgrades 1960, 1968, 1971, 1980 & 1995.

Rock Creek WTP 1954, 65 years
- Undergone upgrades 1984 and 2002.

**Annual Electrical Usage:**
- Taylor WTP: 3,035,000 kWh’s
- Rock Creek WTP: 226,000 kWh’s

**Water Sources:**
- Taylor WTP: Willamette River
- Rock Creek WTP: South Fork of Rock Creek, North Fork of Rock Creek, Griffith Creek. *South Fork and Griffith Creek Intakes originally built in 1906. North Fork Dam constructed in 1959.*

**Rock Creek location:**
- East slope of Mary’s Peak, Siuslaw National Forest
- The finished water is gravity fed 12 miles to Bald Hill Reservoir.

**Rock Creek Reservoir Capacity:**
- 84 MG. With flash boards 90.8 MG

**Rock Creek Watershed size:**
10,000 acres. 2400 acres owned by City of Corvallis.

**Water Temperatures, seasonal variations:**
- Rock Creek 6 deg C to 16 deg C winter to summer.
- Taylor WTP 4 deg C to 21 deg C winter to summer.