

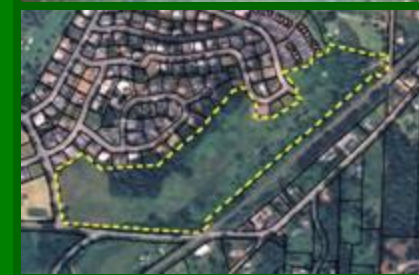
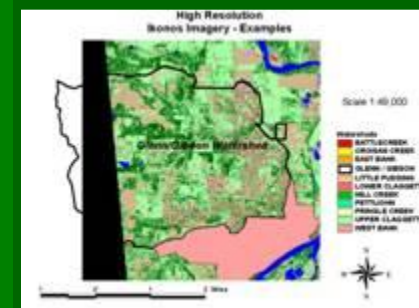
Seeing Green with Trees: The Economic and Environmental Benefits of Urban Forests

Presentation Focus

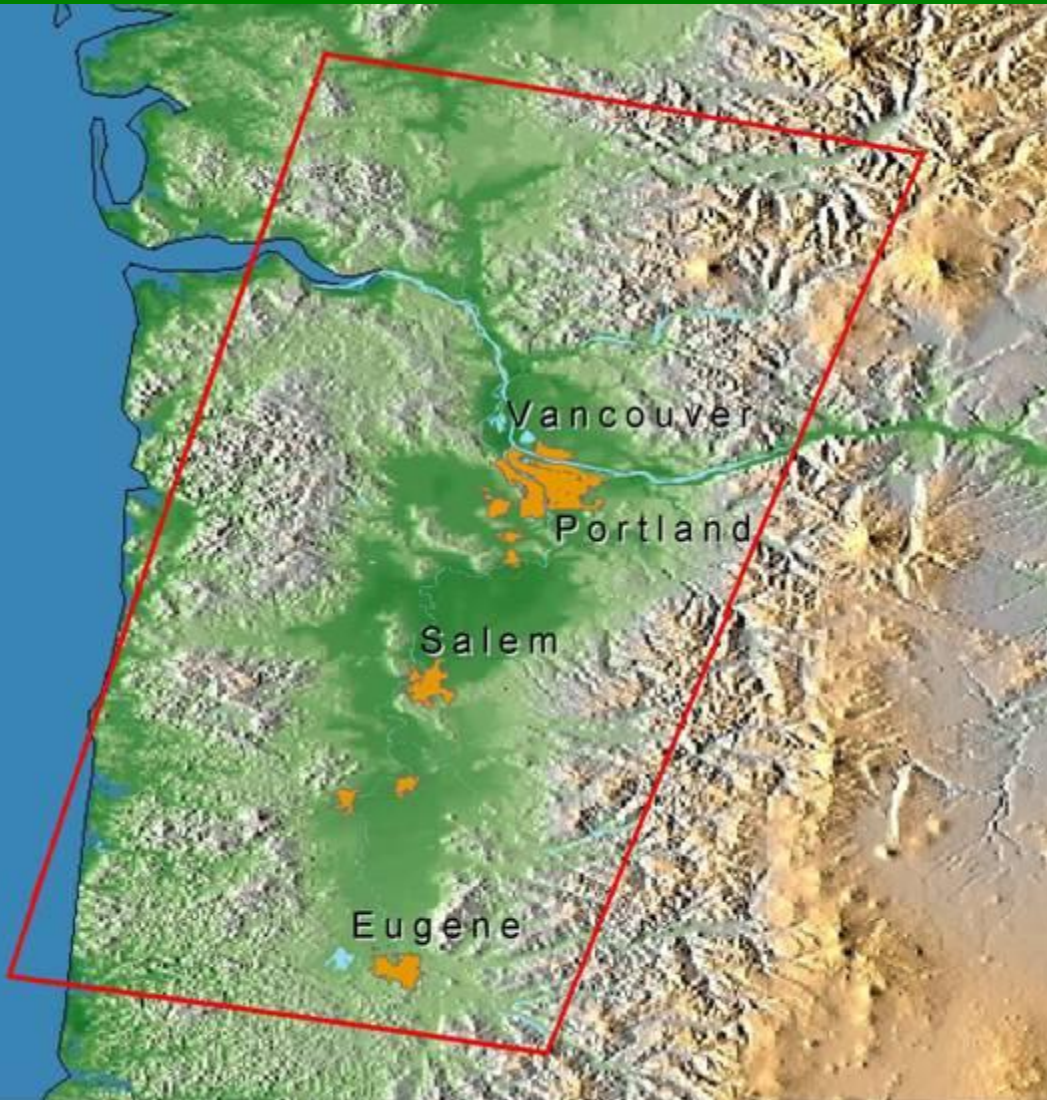
- Introduction
- Recap Salem's 2001 Tree Canopy Analysis
- CITYgreen software – Natural Resource Management Tool
- Natural Resource Programs

Protecting Trees on Private Property

Riparian Protection



Regional Ecosystem Analysis Study Area



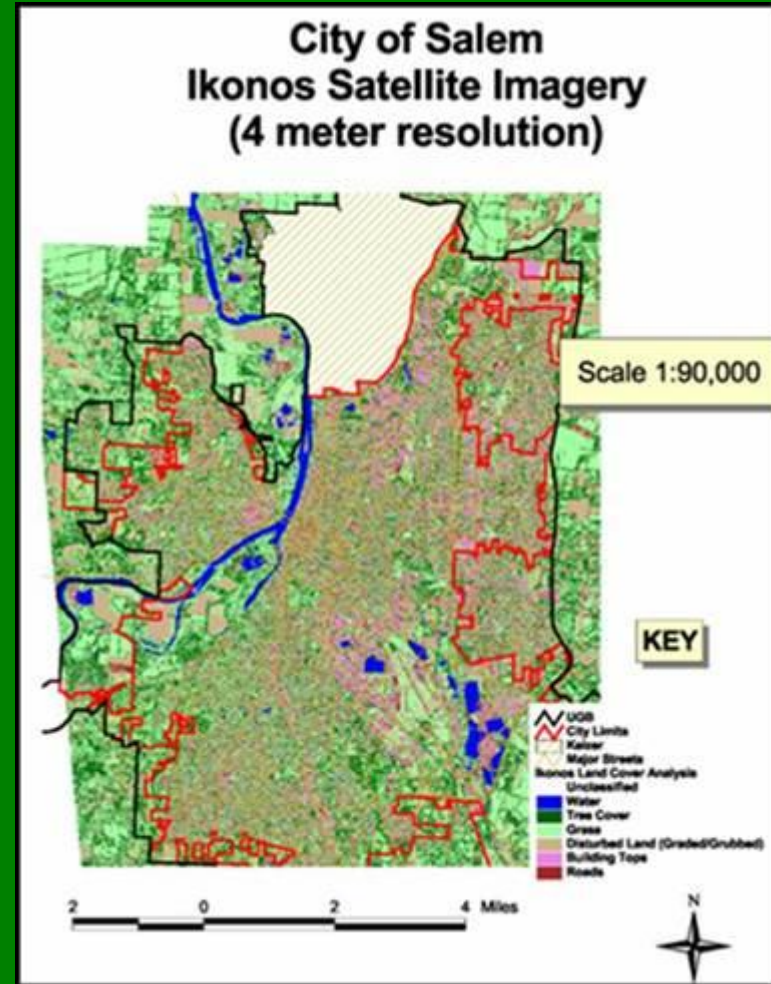
Salem, Oregon shown in Yellow Box

Local Ecosystem Analysis IKONOS Satellite Imagery

Urban Growth Boundary

Twelve Sub-basins

Fifty Riparian Corridors



Salem Analysis within UGB

Land Cover Distribution

Disturbed Land	9,429 acres	22%
Impervious	8,024 acres	18%
Open Space/Pasture/Meadow	16,733 acres	39%
Trees	7,617 acres	18%
Water	1,283 acres	3%

Salem Urban Growth Boundary Tree Canopy Benefits

Stormwater Management

One time value (cubic ft.) 48,204,169
US Dollars \$96,408,338

Air Pollution Removal

Value annually (lbs.) 2,907,447
(US Dollars) \$6,045,404

Total Carbon Stored (tons) 18,540

Carbon Sequestered

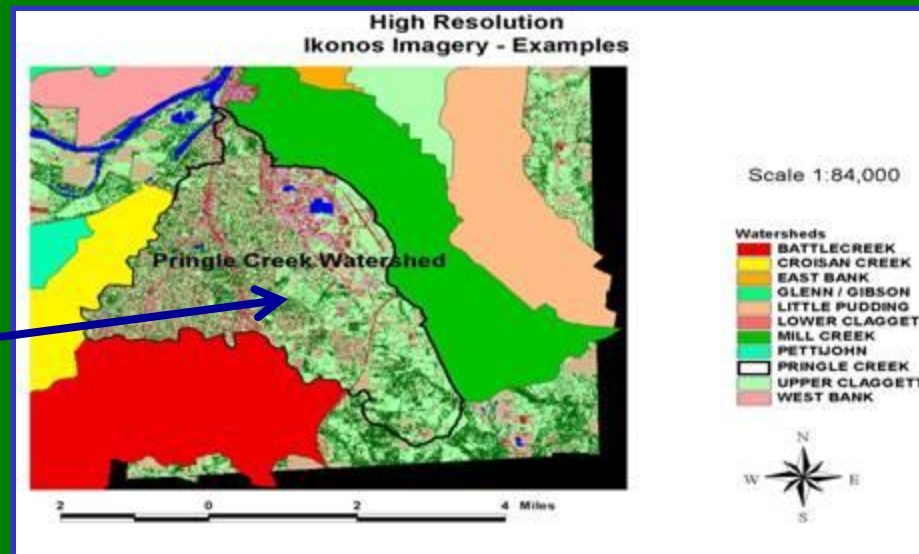
Annually (tons) 144

Total Economic Benefit \$102,453,742

Salem Watersheds - *Pringle Creek Watershed*

Pringle Creek – Land Cover Distribution

Disturbed Land	1,722 acres	20%
Impervious Roads	1,218 acres	14%
Impervious Buildings	385 acres	5%
Open Space/Pasture/Meadow	3,475 acres	41%
Forest Patches	1,637 acres	19%
Water	84 acres	1%



Pringle Creek Watershed Tree Canopy Benefits

Stormwater Management

One time value (cubic ft.) 11,235,731
US Dollars \$22,471,461

Air Pollution Removal

Value annually (lbs.) 574,924
(US Dollars) \$1,195,430

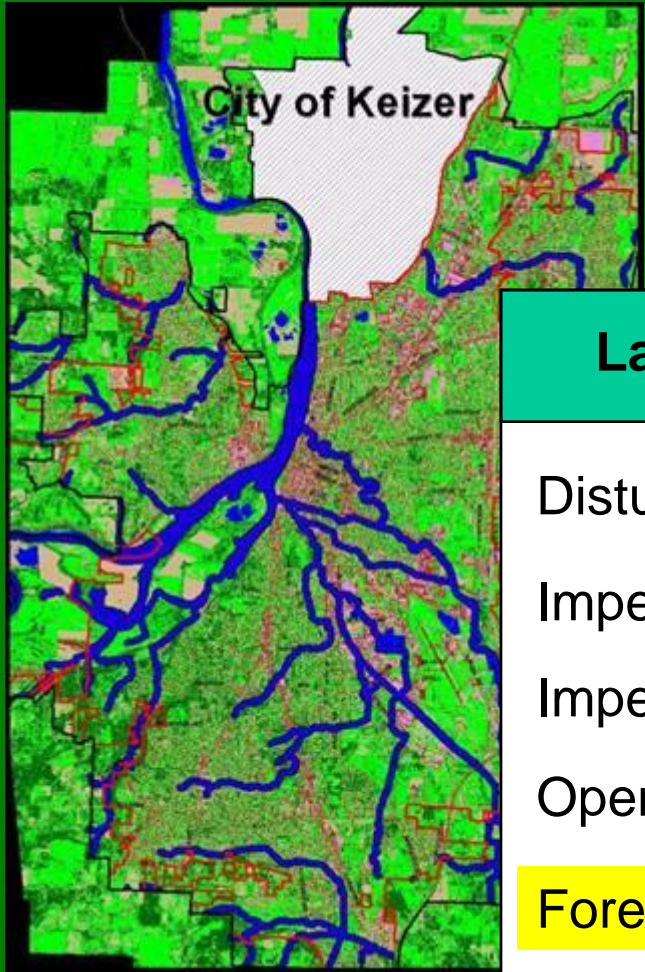
Total Carbon Stored (tons) 3,666

Carbon Sequestered

Annually (tons) 29

Total Economic Benefit \$23,666,891

Salem Riparian Corridors – 50 Perennial Streams



Land Cover Distribution – 200' Riparian Areas		
Disturbed Land	806 acres	16%
Impervious Roads	507 acres	10%
Impervious Buildings	135 acres	3%
Open Space/Pasture/Meadow	1,978 acres	40%
Forest Patches	1,418 acres	28%
Water	108 acres	2%

200 ft Riparian Buffer Tree Canopy Benefits

Stormwater Management

One time value (cubic ft.) 9,095,740
US Dollars \$18,191,480

Air Pollution Removal

Value annually (lbs.) 334,163
(US Dollars) \$694,819

Total Carbon Stored (tons) 2,131

Carbon Sequestered

Annually (tons) 17

Total Economic Benefit \$18,886,300

Long-Term Tree Preservation Work Program



Urban Forestry Management Program

- Hiring an Urban Forester
- Citizen Activism and Empowerment

City-wide Canopy Goal – 25%

Purchase High Resolution Imagery

Tree Conservation Plans

Suitability Analyses

Tree Planting

Protect Riparian Trees & Oregon White Oaks

City Tree Fund



Resources Utilized to Engage Citizen Advisory Committee and City Staff

- Strengths and Weaknesses of SRC Chapter 68
- Evaluated 15 Municipal Tree Preservation Ordinances
- Willamette Valley Planners and Urban Foresters
- Oregon Department of Forestry
- Field Trip

CITYgreen

Residential Neighborhood Analysis

1930s Neighborhood

47% Canopy



1950s Neighborhood

30% Canopy



1980s Neighborhood

16% Canopy



1990s Neighborhood

4% Canopy



1990s Neighborhood

4% Canopy



Residential Development Analysis

2000 Color Aerial Photo
(0.5 meter resolution)



2001 Aerial Photo
(0.5 foot resolution)



2001 Ikonos Image
(4 meter resolution)



Riparian Protection Program: Phase 1

Willamette River Greenway



10th Largest River in the Continental U.S.

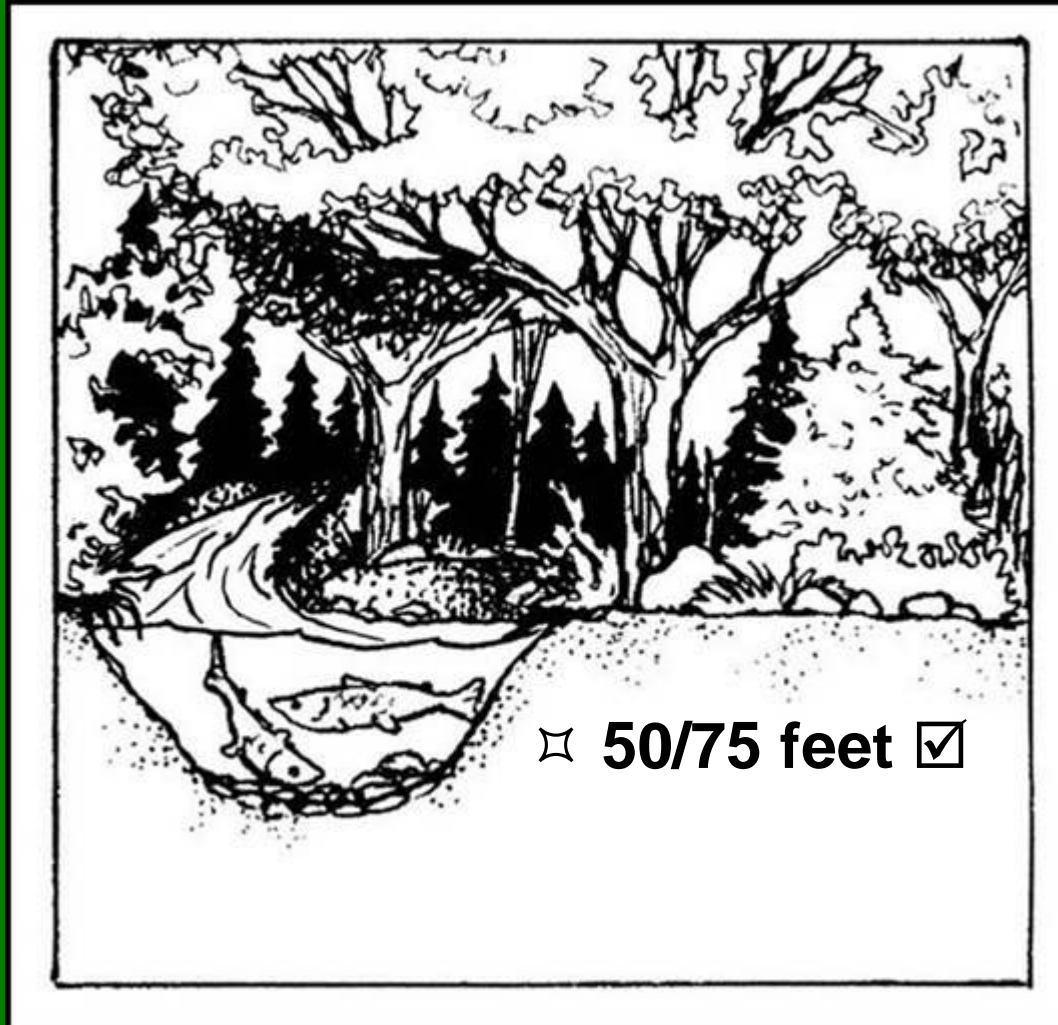
27 jurisdictions border the Willamette River

Water Quality Benefits



Framework For Protecting the Willamette River

Minimum Riparian Buffers and 1 of 5 Mitigation Measures



Stormwater Mitigation Options

Restorative Plantings



Larger Buffer Areas



Green Parking Lots



Bio-swales



Pervious Pavement



Phase 2: Water Quality Limited Streams



Re-establishing Riparian Areas



Improving Watershed Function Through Community Activism

