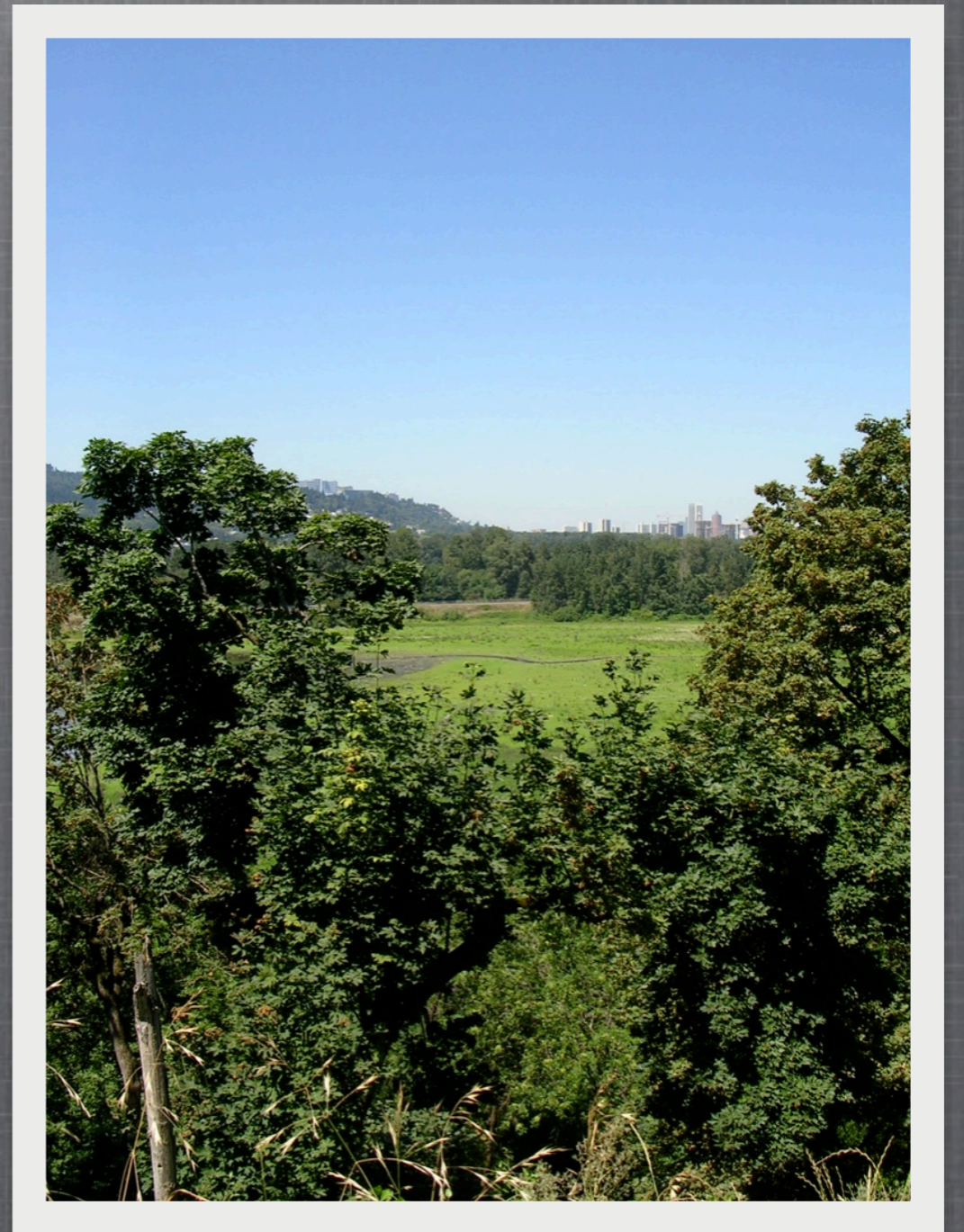


# ULTRA Economic Valuation Studies

Noelwah R. Netusil  
Stanley H. Cohn Professor of Economics  
Reed College

March 17, 2014



*Oaks Bottom Wildlife Refuge*

# Research Projects

Is the sale price of a residential property influenced by...

Project 1: Green street facilities?

Project 2: Water quality in urban streams?

Project 3: Stream restoration projects?

# Hedonic Price Method

Statistical technique that relates the sale price of a property to....

- Structural attributes: lot size, house size, age, etc.
- Location: distance to CBD, quadrant, etc.
- Environmental attributes: land cover, floodplain, etc.

Allows a researcher to focus on the variable of interest while *holding all other factors constant*. Only captures use value.

# Economic Value

- Use Values
  - Current Use Values: Consumptive, Non-consumptive
  - Option Value
- Non-Use Values
  - Bequest Value
  - Existence Value
- Total Economic Value = Use + Nonuse Values

# Project 1: Valuing Green Infrastructure In Portland, Oregon

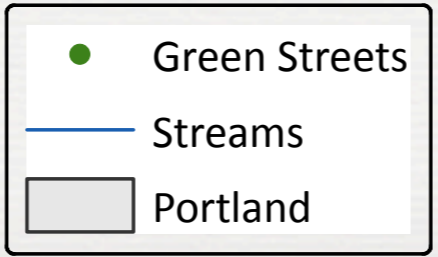
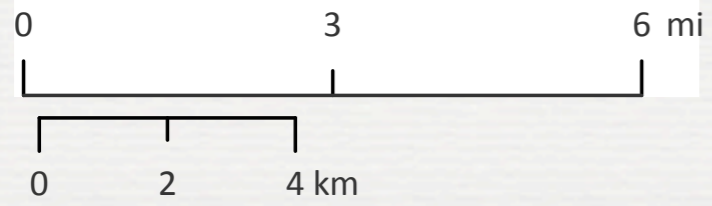
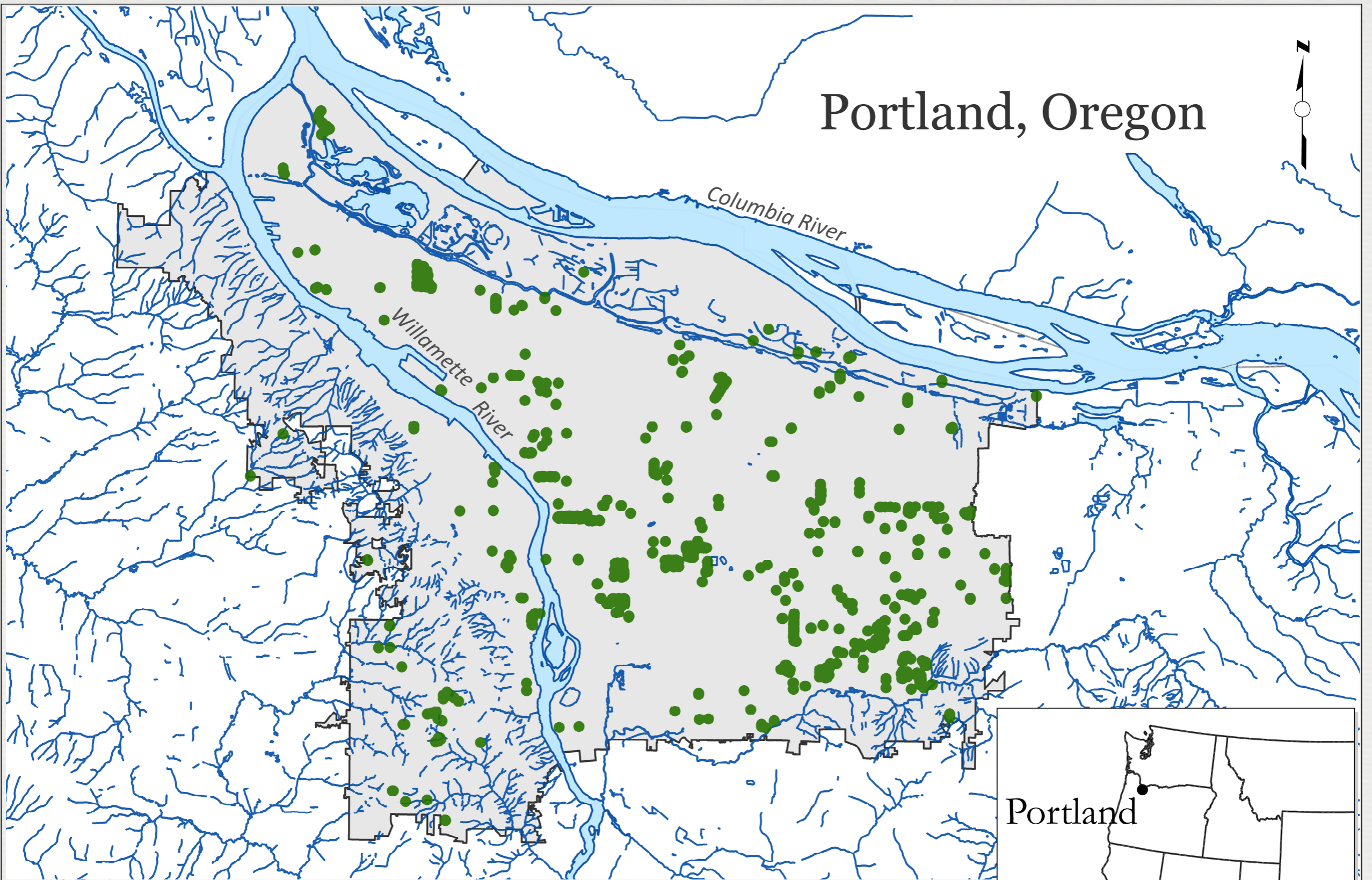
Noelwah R. Netusil and Zachary Levin  
Reed College, Department of Economics

&

Vivek Shandas and Ted Hart  
Portland State University

Netusil, Noelwah R., Zachary Levin, Vivek Shandas, Ted Hart. 2014. Valuing green infrastructure in Portland, Oregon *Landscape and Urban Planning* 124 (April): 14-21.

# Portland, Oregon



# Research Questions

- Does proximity to a green street facility influence the sale price of single-family residential properties?
- Does how we measure proximity matter?
- Does the abundance of green street facilities near a property influence its sale price?
- Does the spatial scale for measuring abundance matter?
- Do green street characteristics affect the sale price of nearby properties?

# Findings

- Increasing a property's distance from a green street is estimated to increase sale price, but the effect is small
- Street Network is preferred proximity measure
- Census tract or block group are preferred abundance measures
- Need a critical mass of projects, e.g., 143 at the census tract level which translates into covering around 0.14% of the census tract with green street facilities



# Findings

- Age of nearest green street has a positive effect on sale price after around 4-5 years
- The more trees in the nearest facility, the better
- Complexity has a positive effect; a dam at the nearest facility increases sale price by 0.6% and increasing the number of taxa up to around 9 has a positive effect

**Project 2: Valuing Water Quality In  
Urban Watersheds: A Comparative  
Analysis Of Burnt Bridge Creek, WA  
And Johnson Creek, OR**

Noelwah R. Netusil and Michael Kincaid  
Reed College, Department of Economics

&

Heejun Chang

Portland State University, Department of Geography

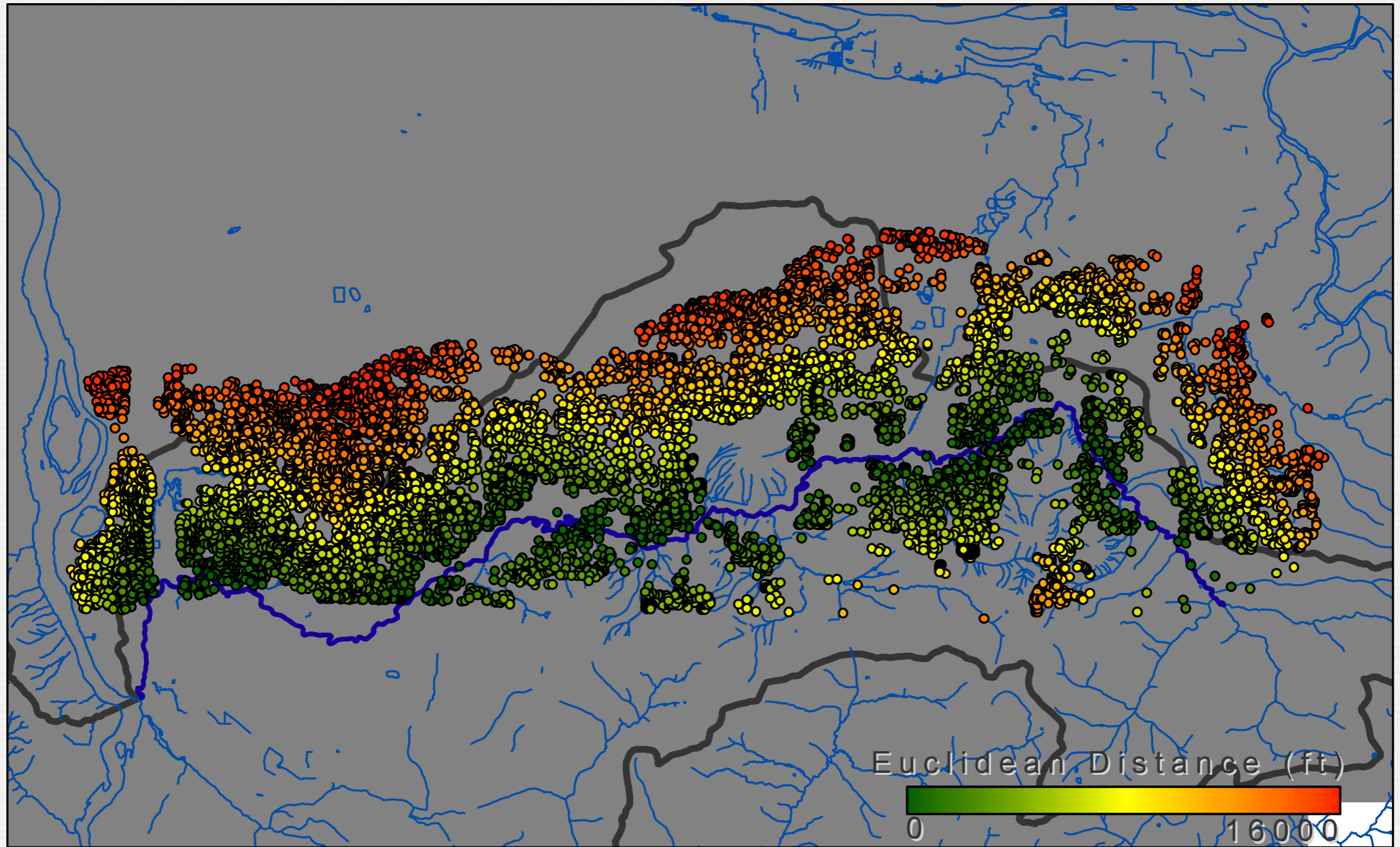
*Paper currently under review*

# Research Questions

- Does water quality influence the sale price of single-family residential properties in urban watersheds?
- Does this effect vary by distance to the water body?
- Does how we measure distance matter?
- Is seasonality important?
- Are estimated effects similar across watersheds?
- Does correcting for spatial dependencies change estimated effects?

# Johnson Creek Data

- 10,479 residential property sales between 2005-2007
- Detailed information about home sale price, characteristics, location, and environmental attributes
- Five water quality parameters: dissolved oxygen, E. coli, pH, temperature, and total suspended solids
- Matched each property transaction with water quality at nearest of 8 monitoring stations



Property Sales: Euclidean Distance to Creek 0 0.5 1 2 3 4 Miles

# Johnson Creek Results

Water Quality Parameter	1 / 4 mile	1 / 2 mile	1 mile	> 1 mile
E-coli (100 count per 100 ml increase)	-2.57%	-0.84%	-1.14%	-0.69%
DO (1mg / L increase)	13.71%	7.05%	8.18%	3.12%

All results statistically significant at the 10% level; 1-tailed test

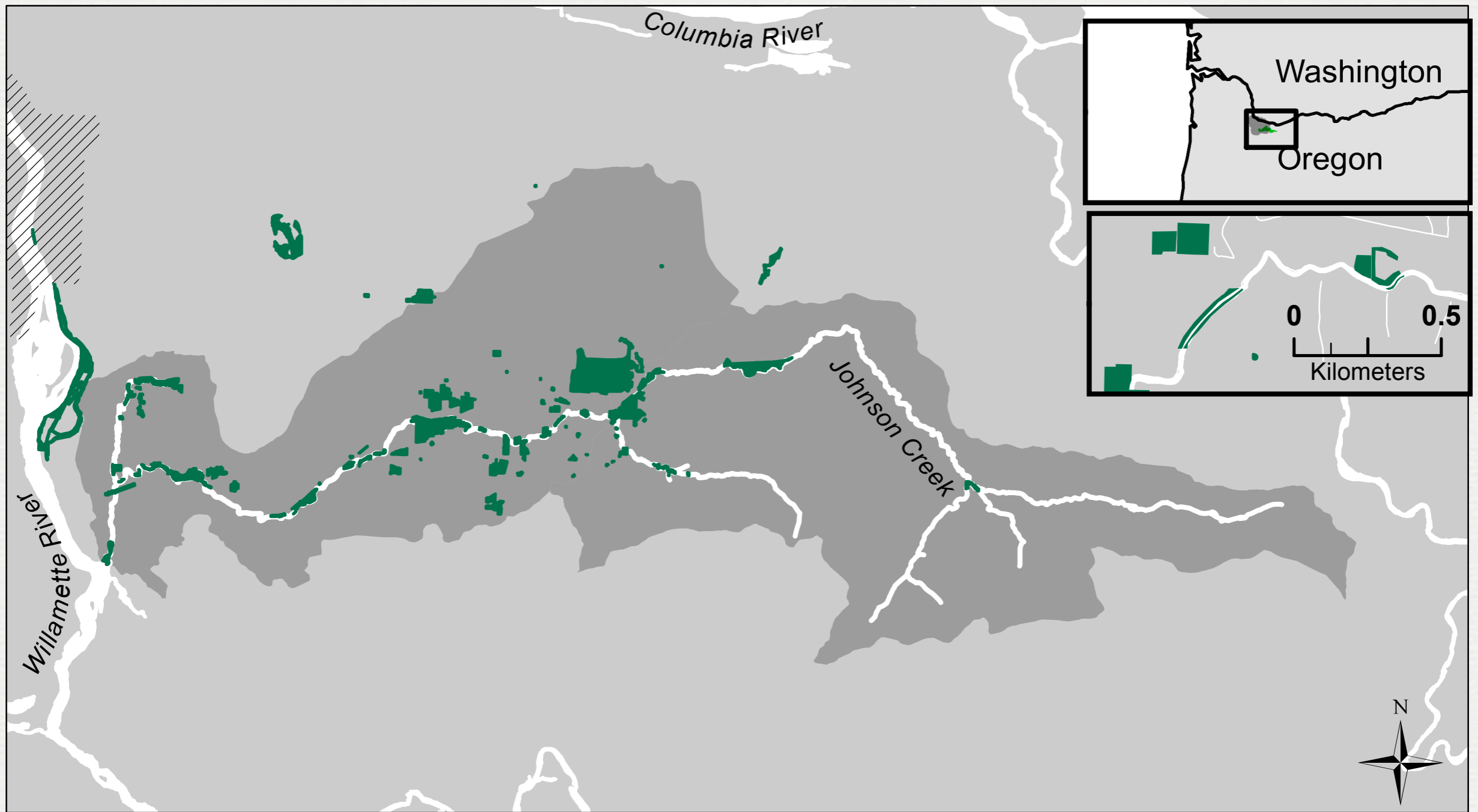
# Findings

- Some water quality measures are statistically significant across models and study areas
- Impact of water quality on a property's sale price generally declines as distance from creek increases
- Results are consistent with survey responses about water quality and property values in study areas
- Results are consistent with the literature

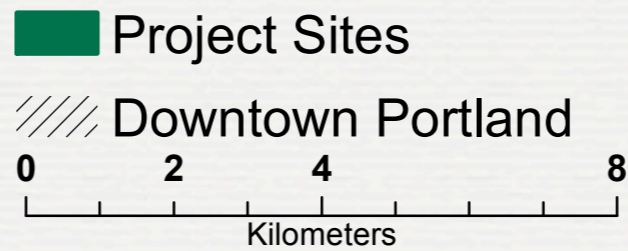
**Project 3: Urban Watershed Restoration  
Projects & Property Values:  
A Repeat-Sale/Hedonic Approach**

Maya Jarrad and Noelwah R. Netusil  
Reed College, Department of Economics

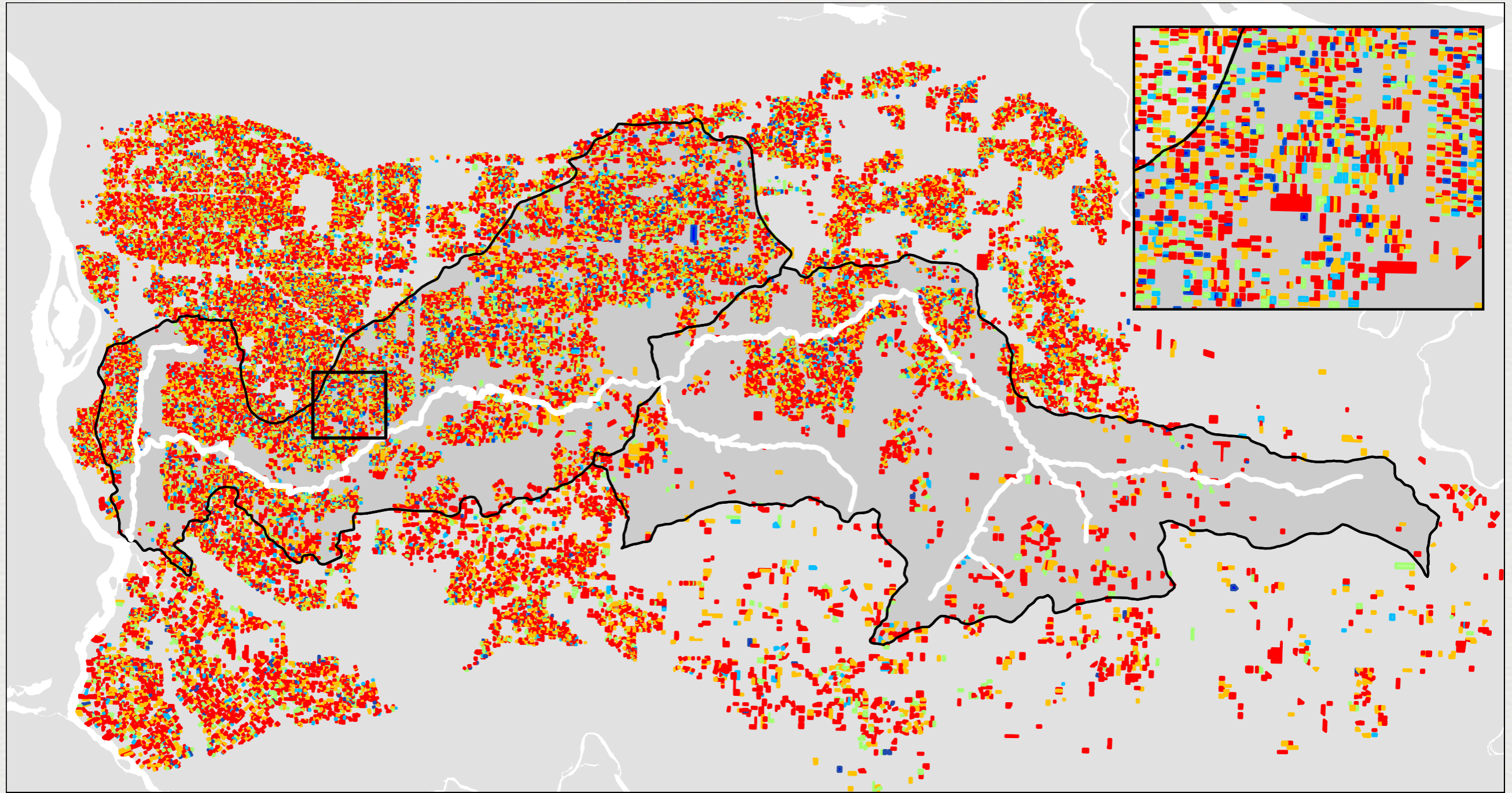




# Johnson Creek Watershed and Portland Study Area

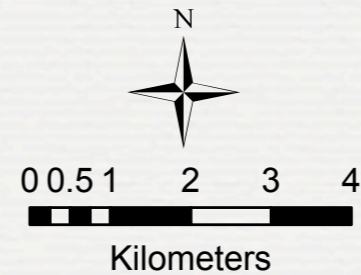


Cartographer: Maya Jarrad 2014  
 State Borders (ESRI), City Limits,  
 Center, Watershed (RLIS Discovery),  
 Project Sites (Portland BES).



# Property Sales Near Johnson Creek Portland, Oregon

Sales per Property ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 - 12



Cartographer: Maya Jarrad  
Background Layers: Portland RLIS Discovery  
Sales Data: DataQuick

# Research Questions

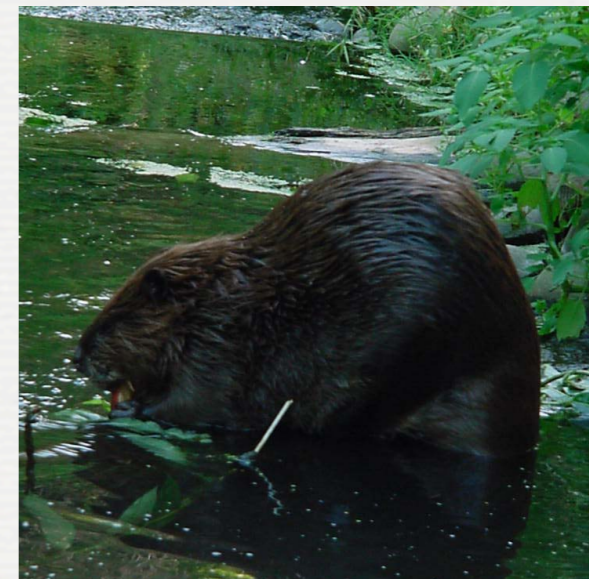
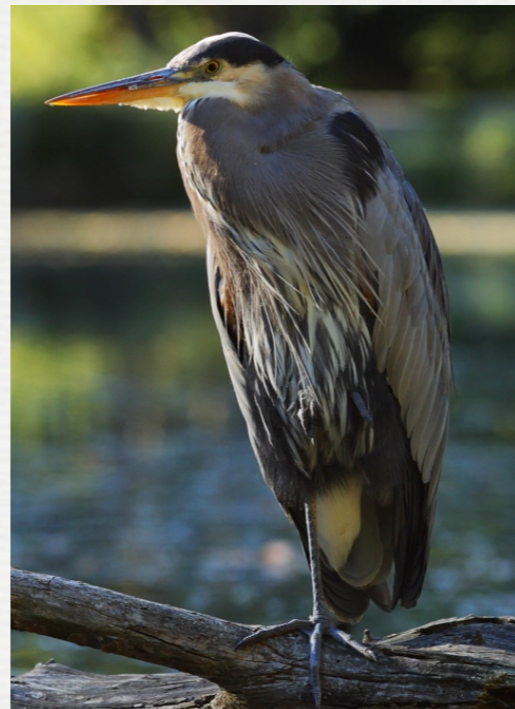
- Do stream restoration projects influence the sale price of single-family residential properties near Johnson Creek?
- Does this effect vary by distance to the site?
- Does this effect change with a site's age? Proportion of the area near a property that has been restored?
- Are project goals such as salmon habitat, invasive removal, and new trails important factors?
- Is public access an important factor?

# Related Research

- Riparian corridor property value work with Alan Yeakley, Denisse Fisher and Cameron Nilles
- “Benefits of Stormwater Management: Willingness to Pay & Willingness to Help” choice experiment survey with Catalina Londono Cadavid and Amy Ando at the University of Illinois.

# Funding

NSF Urban Long-Term Research Area Exploratory Grant  
Miller / Mintz Research Grants, Reed College



*Reed Lake, Reed College Canyon  
Johnson Creek Watershed*