

HOW TO ACHIEVE MULTIPLE BENEFITS FROM GREEN STORMWATER INFRASTRUCTURE: A FORESTRY RESEARCH APPROACH

USDA Forest Service, Pacific Northwest Research Station



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New Partners for Smart Growth, January 8, 2016

Presentation Outline

1. USFS urban research program
2. Green Cities Research Alliance (GCRA)
3. Green-Duwamish Watershed as a research landscape
4. GCRA as collective impact initiative



Caring for the Land *and* Serving People!

- Forest Service Strategic Plan
 - Engage urban America
 - Ecosystem services: Recreation & water
 - Environmental justice
 - State & Private Forestry (UCF Program)
- USFS R&D
 - Urban natural resources stewardship
 - Urban forest inventory
 - Urban field station in PNW?
- “All lands approach. . .”



~ 80% of region's population is urban

Forestry Research in the City Restoration, Stewardship & Env Sustainability

USDA Forest Service, Pacific Northwest Research Station



7 year research program

- urban start from ARRA funding
- metro Seattle partnerships
- practical applications
- volunteer stewardship, jobs, training, & tools

Green Cities Research Alliance



Sustainable cities through science, policy, and citizen action



USDA Forest Service
Pacific NW Research Station



UW Remote
Sensing &
Geospatial Lab



University of
Washington



Parks & Recreation
Division



City of
Seattle



FORT&RRA



International Forestry
CONSULTANTS, INC.
a subsidiary of American Forest Management, Inc.

Productive Effort: 2009-2014

\$1.25 million for 4 years
~ \$335 K per year
~\$100 K matching

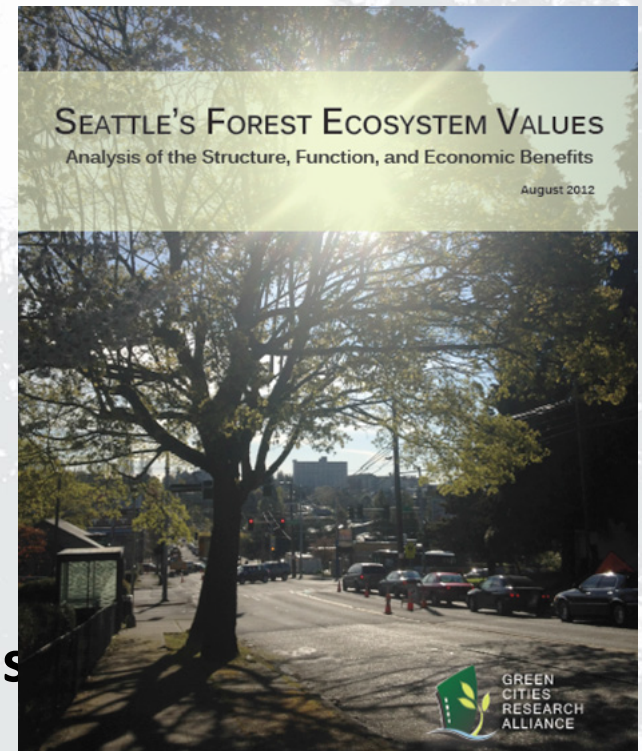


Jobs (tech, science, mgmt)

- **3.5 FTE for 4 years**

Science Products & Outreach

- **46 peer-reviewed publications**
- **26 professional publications**
- **3 in progress/review**
- **40+ scientific/scholarly presentations**
- **75+ professional presentations**



GCRA

Research Themes and Accomplishments



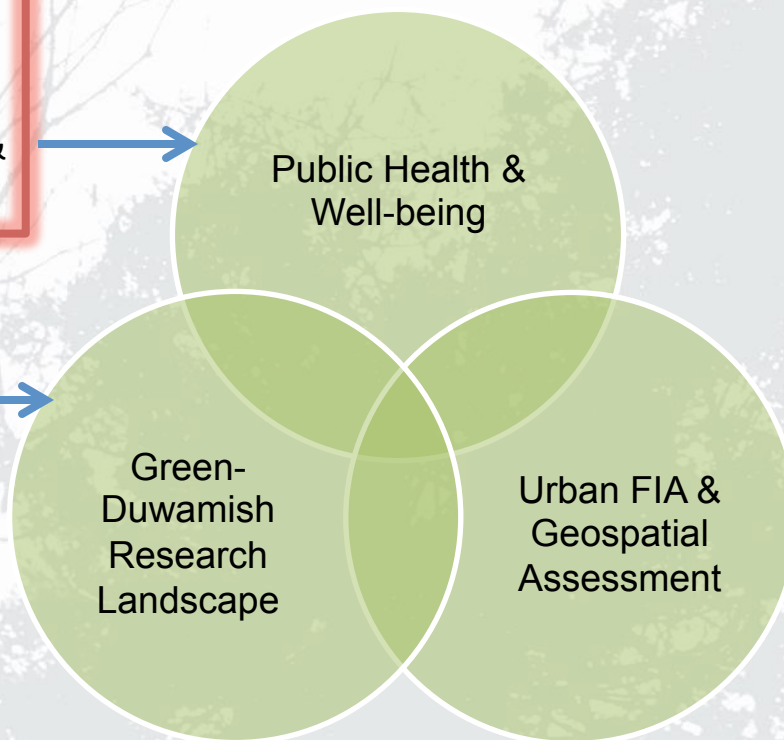
Socio-Ecological Systems :: Landscape Gradient

PNW Station Urban Forest Research Priorities

Build on PNWRS strengths to establish long-term research program of work to document and quantify benefits of trees, vegetation, and community forestry activities for individual, social, and ecological health and sustainability.

1. Fundamental human health responses to trees & vegetation
2. Health consequences of stewardship participation
3. Large landscape scale interactions of forest & human health

1. Multiple co-benefits of trees & GI: replicate ecological function and address health, social, economic disparities
2. Natural landscape-level laboratory
3. Long-term, participatory work

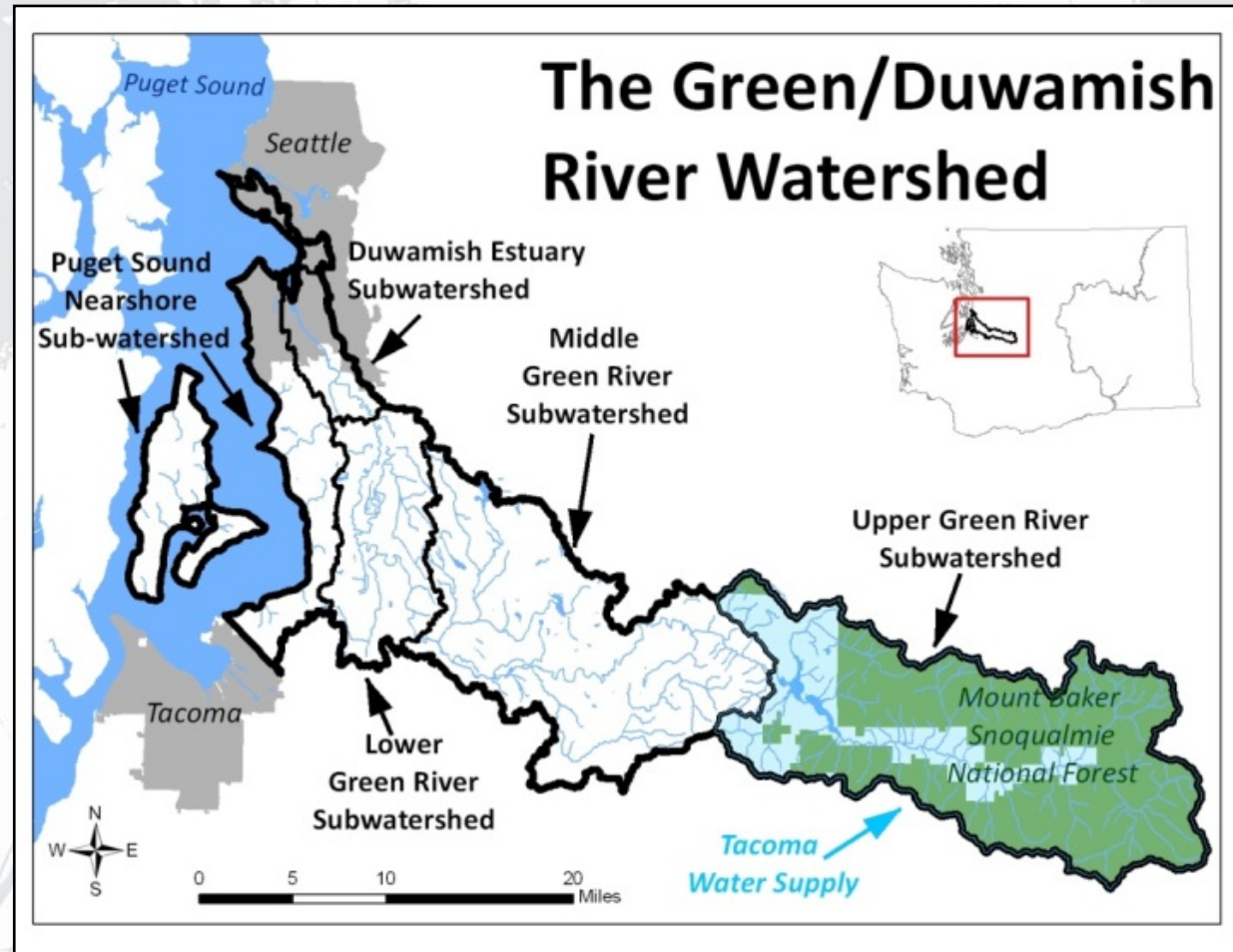


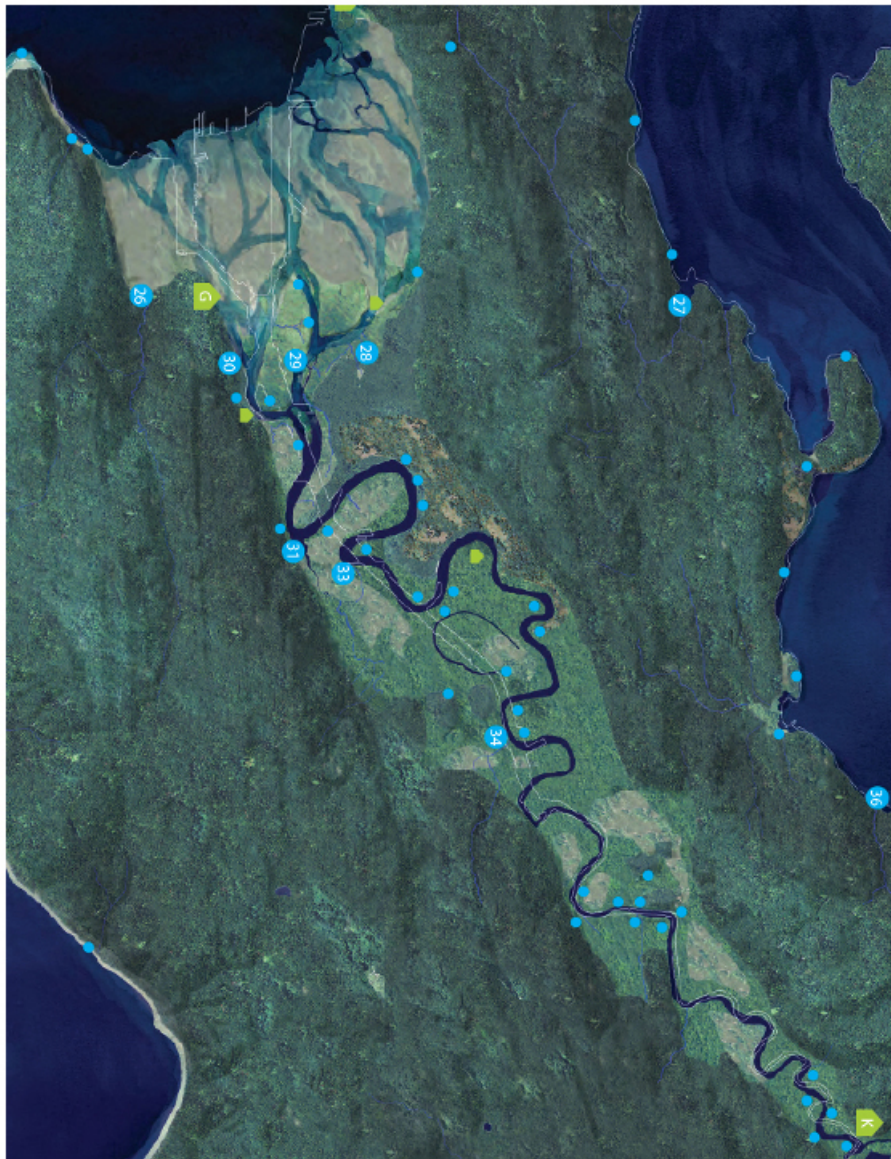
Green-Duwamish Research Landscape

Urban-wildland gradient

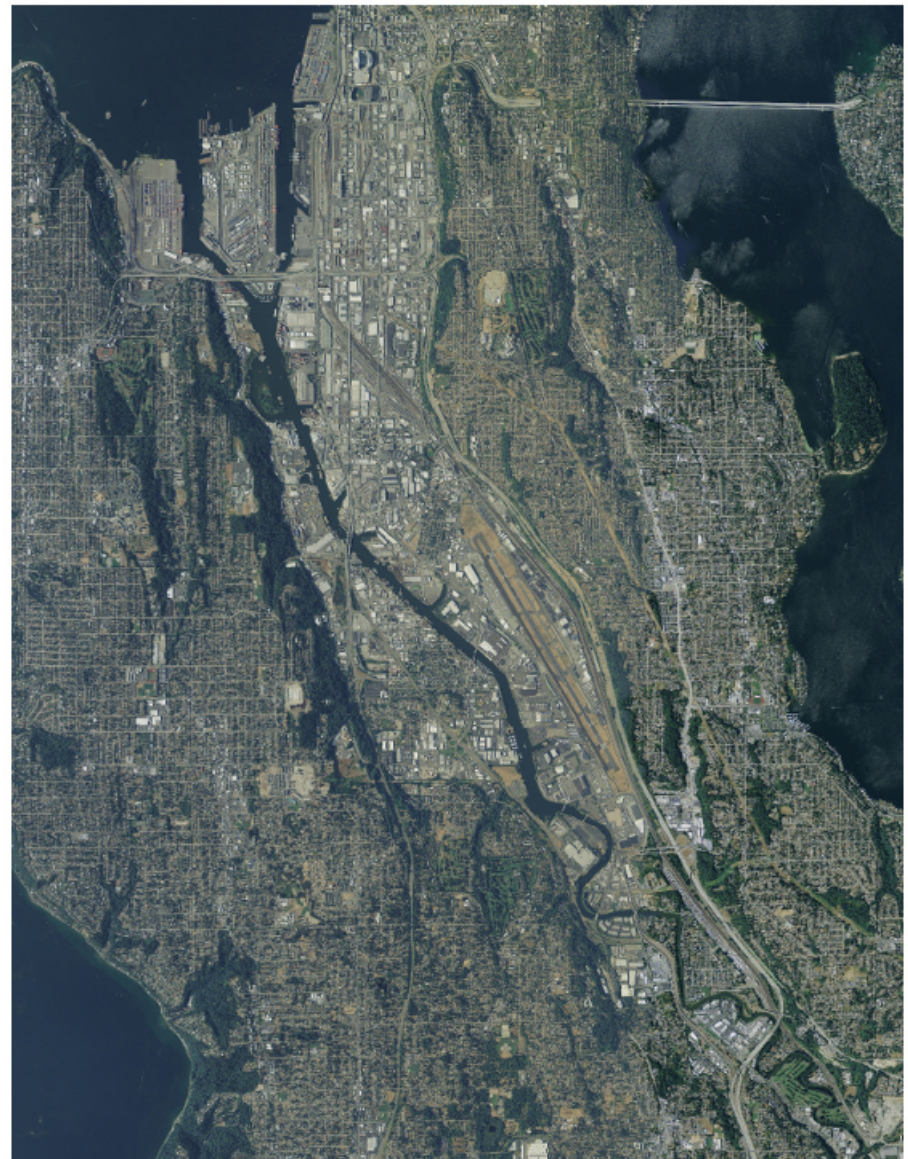
Socio-economic diversity

Co-benefits natural lab





Mid-1800s



Today

Duwamish Valley | South Seattle

Reveg Strategies

- 🌳 Green stormwater infrastructure (GSI)
 - ✓ Green from Gray (EPA \$.5B consent decree)
 - ✓ Middle green restorations
 - ✓ 'Regreen the Green' (WRIA9 communities)
 - ✓ South Park Green Spaces Coalition
 - ✓ King County GD strategy
- 🌳 Co-benefits strategy
 - ✓ Pollution removal
 - ✓ Salmon habitat
 - ✓ Public health
 - ✓ Quality of life
 - ✓ Environmental justice
- 🌳 Natural lab & quasi-experimental designs
- 🌳 Pilot, demo watershed?

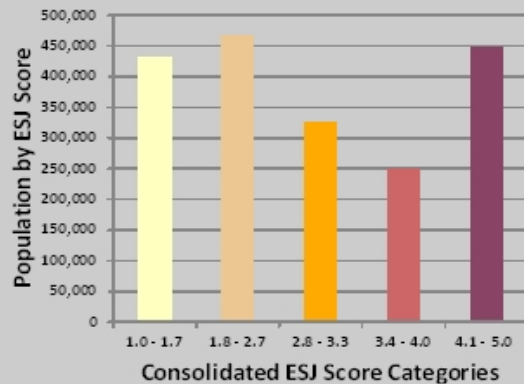


Who and where are priority populations?

Consolidated Demographics: People of Color, Income, & English Proficiency Census Tract, 2010

People of Color	Score	Median Household Income	Score	Lack English Proficiency	Score
6.3% - 18.0%	1	\$92,917.01 - \$184,375.00	1	0.0% - 3.3%	1
18.1% - 27.1%	2	\$77,708.01 - \$92,917.00	2	3.4% - 6.7%	2
27.2% - 36.4%	3	\$64,199.01 - \$77,708.00	3	6.8% - 11.0%	3
36.5% - 51.1%	4	\$49,764.01 - \$64,199.00	4	11.1% - 17.1%	4
51.2% - 91.2%	5	\$5,000.00 - \$49,764.00	5	17.2% - 58.8%	5

Equity and Social Justice Demographics



Note: Each category uses the Quintile classification method. A score is assigned to each Quintile class: 1 - 5. The total score for each classification is the 33.3% weighted total for categories People of Color, Median Household Income, & Lack of English proficiency. The weighted total is sorted using the Natural Breaks classification method. A lower score indicates less diversity, higher income, & higher English proficiency. A higher score indicates more diversity, lower income, & lower English proficiency.

2 1 0 2
Miles



Date: 6/9/2014

King County
GIS CENTER

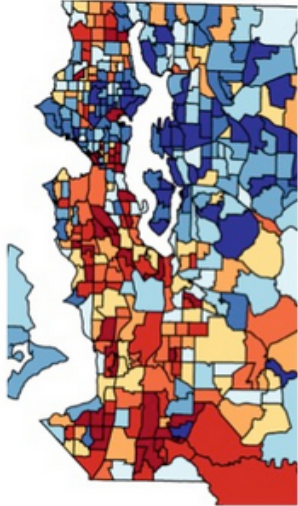
The information included on this map has been compiled by King County staff from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. This document is not intended for use as a survey product. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.

Data Source: 2010 Census & 2006 - 2010 5 Year American Community Survey

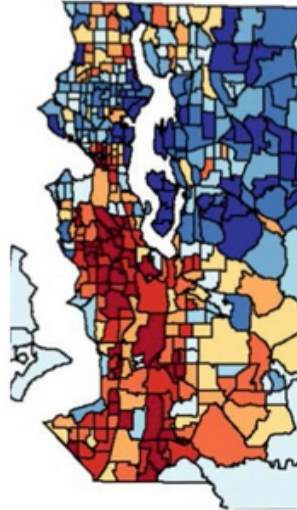
Note: Because the American Community Survey is a small sample, margins of error are high, and these data should be used with caution.

KING COUNTY HEALTH AND WELL-BEING MEASURES

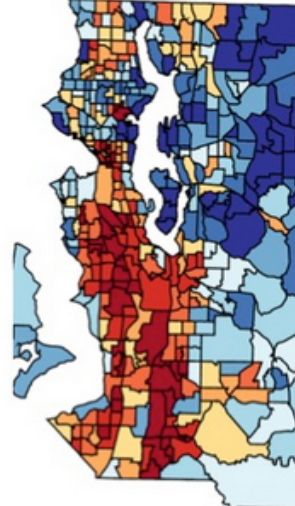
Life Expectancy



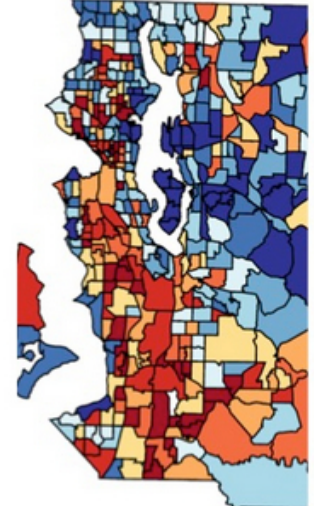
Tobacco Use



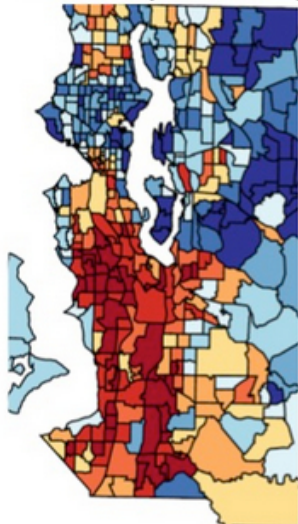
Frequent Mental Distress



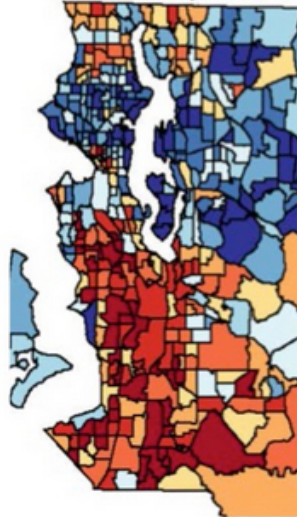
Adverse Childhood Experiences



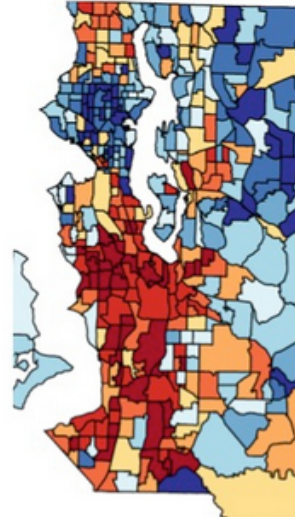
Lack of Physical Activity



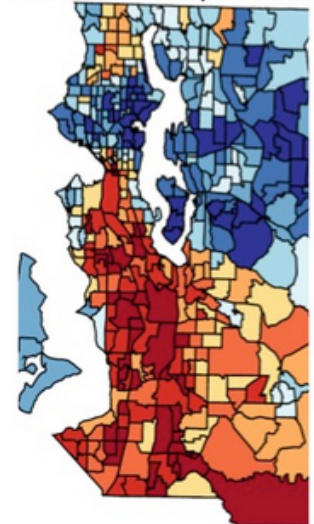
Obesity



Diabetes



Preventable Hospitalization



To identify geographic areas of need, King County census tracts were rank-ordered from highest to lowest percent of adults by the areas noted above. The tracts were then divided into 10 groups. Dark reds show tracts with the highest rates; dark blues show tracts with lowest rates (note: the Life Expectancy map ranks shortest in dark red to longest in dark blue).

“Collective Impact” Approach

(Kania & Kramer 2011)

Large scale change requires broad cross-sector coordination, yet the social sector remains focused on isolated interventions.

- Address complex social & environmental problems
- Involves many organizations
- Similar goals, BUT
- Often act & judged independently
- “Isolated impact” with joint value
- Ongoing, applied research—unique application

GCRA as Collective Impact Initiative?

- ***Common Agenda***
 - Research, Seattle urban environmental sustainability
 - Jobs, practitioner collaboration
- ***Shared Measurement Systems***
 - ARRA: Jobs, tools, and training
 - PNW: Research, pubs, reports, outreach, events
- ***Mutually Reinforcing Activities***
 - *UW Data portal/sharing, GIS, OneHub*
- ***Continuous Communications***
 - Monthly meetings, events, OneHub
- ***Backbone Support Organization . . .***

Backbone Support—The Key

- *Requires dedicated staff separate from the participating organizations with a very specific set of skills to serve as the backbone for the entire initiative.*

- Three key roles

- *Project manager*
- *Data manager*
- *Facilitator*

- GCRA “Patchwork” Backbone
 - Funding went to the research/fieldwork
 - Structure and organizing was voluntary
 - PNW Station salaries and outreach
 - Primarily voluntary participation in each role

Leadership Strategy

Collective Impact-Virtual Partnership Framework

- Organized by core group of partners
- Core group meets to identify key projects
- Connect groups who share similar interests & goals related to a specific project (and funding opportunities)
- Project groups meet to implement collaborative approach
- Periodic reports to existing multi-stakeholder groups in region

Green Cities Research Alliance Operating Procedure



Thank you!

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Geoff Donovan, USFS PNW Research

<http://www.fs.fed.us/pnw/research/gcra/index.shtml>

<http://www.urbanwaters.gov/pdf/GreenDuwamishBackground.pdf>

Kania, John & Mark Kramer. 2011. Collective Impact.
Stanford Social Innovation Review (winter: 26-31).

