

URBAN FORESTRY APPLICATIONS TO WATER CONSERVATION AND STORMWATER MANAGEMENT



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INSTITUTE FOR
ENVIRONMENTAL SOLUTIONS

PREVIEW



- IES
- The Tree Project
- What is an urban forestry carbon credit (UFCC)?
- Who buys UFCCs?
- Who can sell UFCCs?
- How are UFCCs created?
- How much money can be made?
- Colorado Urban Forestry Climate Coalition
- Next steps

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Mission

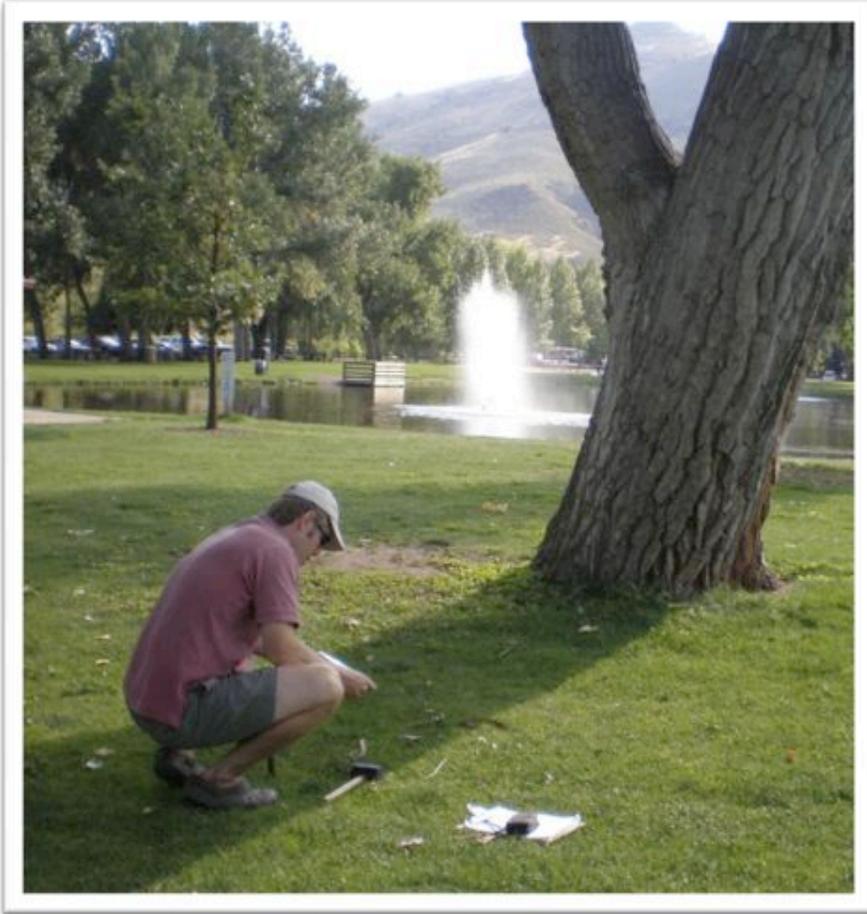
Engage stakeholders to deliver proactive, technically sound solutions to complex environmental and natural resource problems that avoid unwanted side effects.

Approach



SCIENTIFIC SOLUTIONS FOR A BETTER ENVIRONMENT

THE TREE PROJECT



- Identifying how trees can optimize:
 - Air quality
 - Water conservation
 - Energy conservation
 - Carbon sequestration
- Pilot city: Golden

TREES AND WATER CONSERVATION



- Investigated trees' water conservation potential on irrigated lawns
- 14-day field program
- 1,344 soil samples

WATER CONSERVATION EFFECTS AND TRADEOFFS

- Indirect water conservation
- Tree water use



- Soil beneath trees drier than similar treeless spaces
- Impact varies by species

STORMWATER MANAGEMENT EFFECTS



- Trees increase infiltration, filtration
- Trap water and slow runoff
- Increase soil porosity

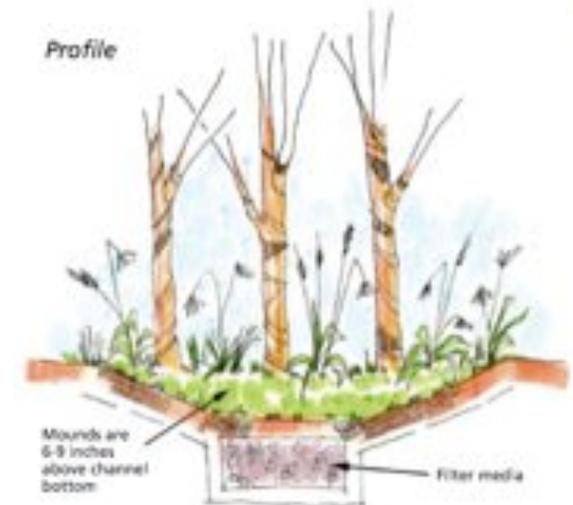
- Average amount of runoff intercepted by a medium-sized tree in a year: **2,300 gallons**
- The value of the runoff volume and pollution reduction function of Golden's street trees: **over \$50,000 per year**

TREES FOR STORMWATER MANAGEMENT: PURPOSE

Goal: Take advantage of trees' ability to increase filtration and infiltration of runoff while optimizing trees' other environmental benefits.

PROJECT OBJECTIVES

1. Offer practical guidance to stormwater managers on applying trees to parking lot stormwater management
2. Evaluate the application of trees to parking lot stormwater management in terms of runoff volume and pollution reduction as well as cost-effectiveness



Urban Watershed Forestry Manual Part 3 www.cwp.org

APPLYING TREE STRATEGIES IN CO

- Species selection
- Structural soils
- Maintenance / irrigation regime
- Costs / benefits



STORMWATER: STATUS

TIMELINE

Research, stakeholder outreach, and experimental design
Fall / Winter 2008-09

Experimentation to test local adaptation of tree strategies
Spring / Summer 2009

Dissemination through presentations, documents, and the web
Fall / Winter 2009

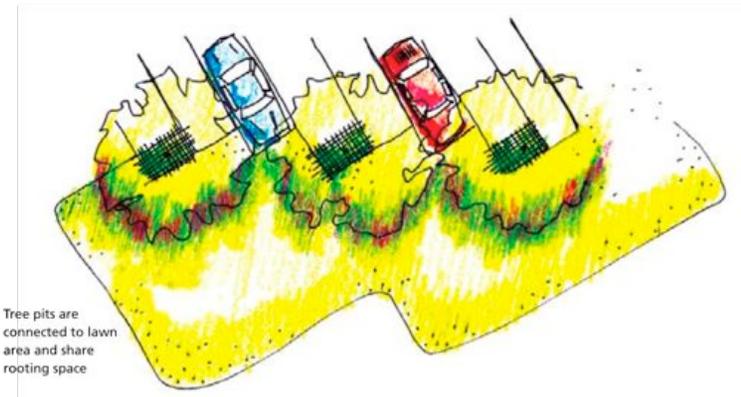
NEXT STEPS

Secure funding

Experimental design

UDFCD "Volume III" update

AWARE CO barrier analysis / outreach



Tree pits are connected to lawn area and share rooting space

Urban Watershed Forestry Manual Part 3 www.cwp.org

OPTIMAL IRRIGATION FOR URBAN TREES: PURPOSE

Goal: Answer the critical question, “What is the minimum amount of water this tree needs to thrive in this landscape?”

OBJECTIVES

- Determine tree growth and water-use at irrigated pilot sites
- Prescribe an alternative water-stress irrigation regime
- Calculate the water and money savings that could result from application of the optimal irrigation regime



RESOURCES

- Virginia Tech:
Stormwater Management with Trees and Structural Soils
<http://www.cnr.vt.edu/urbanforestry/stormwater/>
- USFS PSW Research Station Center For Urban Forest Research
<http://www.fs.fed.us/psw/programs/cufr/>
- Cornell Urban Horticulture Institute
<http://www.hort.cornell.edu/UHI/>