

URBAN FORESTRY



TREES PAY US BACK

Urban Forest

Asset Value & Benefits

January 13, 2011

Asset Value

Current Tree Inventory - Incomplete

(approx. 15% of all public trees, not statistically representative)

Park Trees	8644	\$59,597,930
Street/Other	<u>2733</u>	<u>\$10,208,640</u>
Total	11,377	\$69,806,570

Estimated Asset Value of ALL public trees:

\$300,000,000 to \$500,000,000

Annual Benefits

Residential Boulevard Sample –

312 Trees along Manito Boulevard

Energy Savings	\$6328	(\$20.28 per tree)
Stormwater	\$2555	(\$8.19 per tree)
Air Quality	\$964	(\$3.09 per tree)
CO2	\$689	(\$2.21 per tree)
<u>Aesthetic/Other</u>	<u>\$27,434</u>	<u>(\$87.93 per tree)</u>
Total Annual Benefit	\$37,971	(\$122 per tree)

Asset Value/Replacement Value = \$2,378,962

Annual Benefits

Overall Benefits

Stormwater

Property Value

Energy

Air Quality

CO2

About the model



Breakdown of your tree's benefits

Click on one of the tabs above for more detail

This 16 inch Norway maple provides overall benefits of: **\$129** every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 21 inches, it will provide **\$214** in annual benefits.



Norway maple
Acer platanoides

Annual Benefits

Overall Benefits

Stormwater

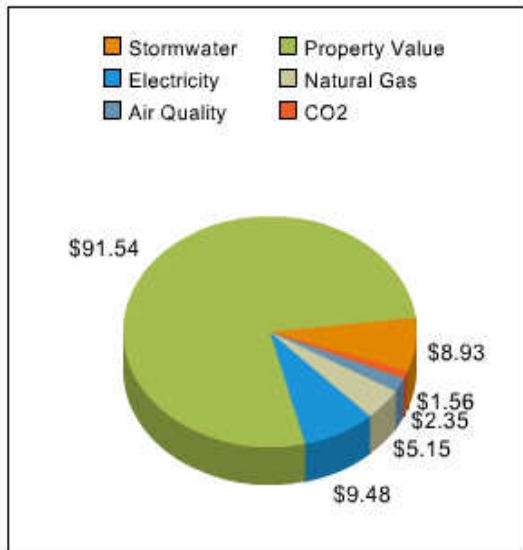
Property Value

Energy

Air Quality

CO2

About the model



Breakdown of your tree's benefits

Click on one of the tabs above for more detail

This 23 inch Ponderosa pine provides overall benefits of: **\$119** every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 28 inches, it will provide \$178 in annual benefits.



Ponderosa pine
Pinus ponderosa

Annual Benefits

Central Business District Sample –

67 Trees Downtown

Energy Savings	\$555	(\$8.28 per tree)
Stormwater	\$176	(\$2.63 per tree)
Air Quality	\$71	(\$1.05 per tree)
CO2	\$52	(\$0.77 per tree)
<u>Aesthetic/Other</u>	<u>\$1444</u>	<u>(\$21.55 per tree)</u>
Total Annual Benefit	\$2297	(\$34 per tree)

Asset Value/Replacement Value = \$141,229

Annual Benefits

Overall Benefits

Stormwater

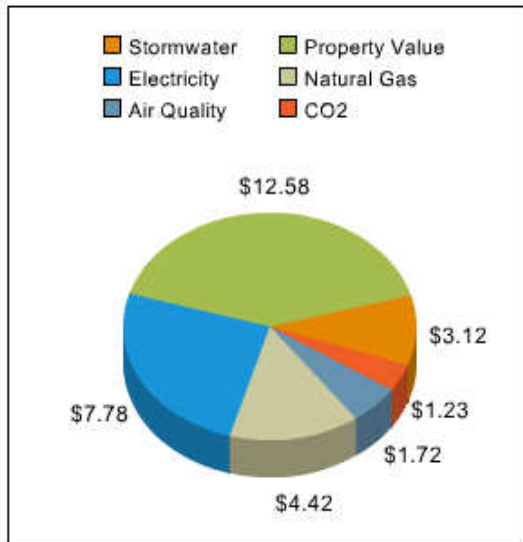
Property Value

Energy

Air Quality

CO2

About the model



Breakdown of your tree's benefits

Click on one of the tabs above for more detail

This 12 inch Honeylocust provides overall benefits of: **\$31** every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations—a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 17 inches, it will provide **\$48** in annual benefits.



Honeylocust
Gleditsia triacanthos

Annual Benefits

Combined Sample of Commercial & Residential

379 trees provide \$40,268 in annual benefits

\$106 per tree per year

Estimated Annual Benefit of ALL public trees:

\$2,000,000 to \$5,000,000

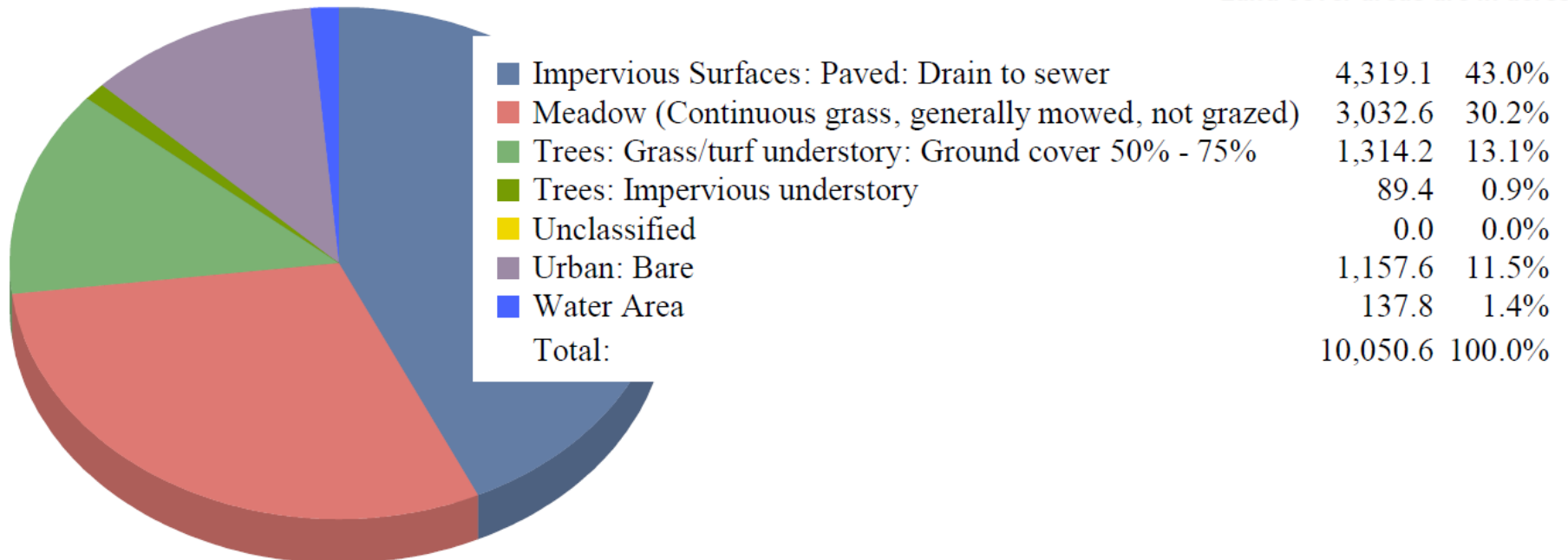
Canopy Analysis



Analysis Report for Coeur d Alene



Land cover areas are in acres.



Canopy Analysis

Air Pollution Removal

By absorbing and filtering out nitrogen dioxide (NO₂), sulfur dioxide (SO₂), ozone (O₃), carbon monoxide (CO), and particulate matter less than 10 microns (PM₁₀) in their leaves, urban trees perform a vital air cleaning service that directly affects the well-being of urban dwellers. CITYgreen estimates the annual air pollution removal rate of trees within a defined study area for the pollutants listed below. To calculate the dollar value of these pollutants, economists use “externality” costs, or indirect costs borne by society such as rising health care expenditures and reduced tourism revenue. The actual externality costs used in CITYgreen of each air pollutant is set by the each state, Public Services Commission.

	<u>Lbs. Removed/yr</u>	<u>Dollar Value</u>
<i>Carbon Monoxide:</i>	3,753	\$1,602
<i>Ozone:</i>	37,533	\$115,310
<i>Nitrogen Dioxide:</i>	20,018	\$61,499
<i>Particulate Matter:</i>	65,058	\$133,445
<i>Sulfur Dioxide:</i>	6,256	\$4,695
<u>Totals:</u>	132,618	\$316,550

Canopy Analysis

Water Quantity (Runoff)

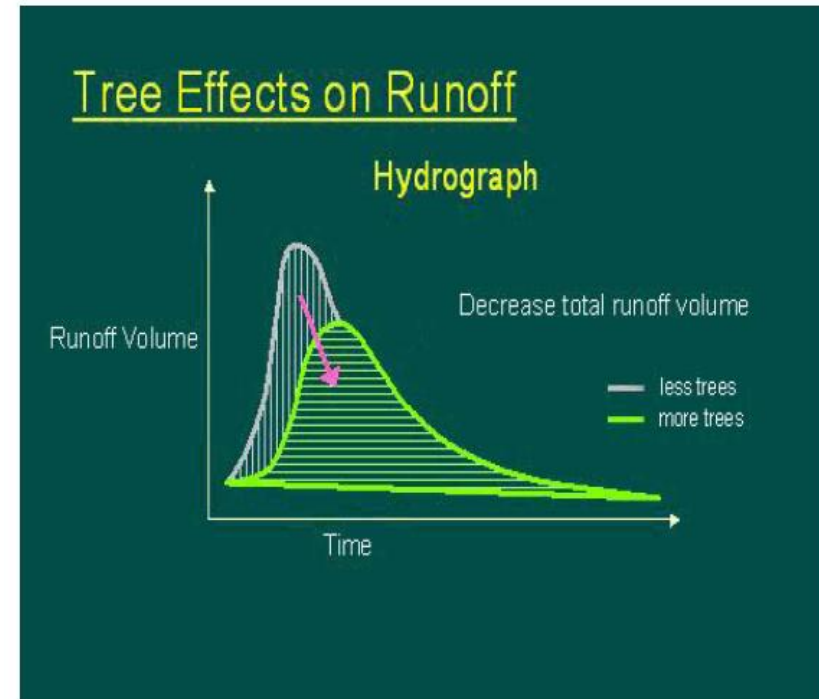
2-yr, 24-hr Rainfall: 1.75 in.

Additional stormwater storage volume needed: 5,685,788 cu. ft.

Construction cost per cu. ft.: \$2.00

Total Stormwater Savings: **\$11,371,577**

Annual costs based on payments over 20 years at 6% Interest: **\$991,426 per year**



Sustainability = Profitability

National average:

A tree returns \$2.70 for each \$1 of community investment

- **1 million trees save \$10 million a year in energy costs.**
- **4 million trees save \$20 million in air pollution clean up.**
- **4 million trees save \$14 million dollars in annual stormwater runoff costs.**
- **A tree, over a 50-year period, will generate \$31,250 worth of oxygen, provide \$62,000 worth of air pollution control, and recycle \$37,500 worth of water.**