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NEWS RELEASE

USDA Forest Service

FOR IMMEDIATE RELEASE
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Trees in Charleston are Paying Huge Dividends

Charleston, SC June 30, 2006 – Charleston city officials are proud to announce that the city’s trees are dramatically improving urban life and making Charleston a more enjoyable place to live, work, shop, and play, according to a new study by the USDA Forest Service, Center for Urban Forest Research. Over the years, the people of Charleston have invested millions of dollars in the municipal forest. Citizens are now receiving a return on that investment. The study found that for every \$1 spent on care and maintenance, trees are paying back \$1.35 in benefits for stormwater reduction, energy conservation, and cleaner air. This is a 35% return on the investment. Not bad in today’s market.

Charleston is home to over 50,000 trees publicly managed trees on streets, traffic medians, parks, wooded buffers, and drainage areas. “For purposes of this study we used only the 15,244 street trees which have been inventoried,” said Dr. Greg McPherson, Center Director. “Our research in Charleston has shown that the municipal street trees provide \$717,000 in annual benefits, about \$47 per tree, and only cost the city \$530,000 per year to maintain. That is a huge return on your investment.”

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The Center's research clearly shows that healthy city trees improve air quality, lower summer temperatures, decrease the need for air conditioning, and reduce stormwater runoff. "These environmental benefits are important to the human health and well-being of Charleston residents, says Dr. McPherson. We also know that healthy street trees increase real estate values, provide neighborhoods with a unique identity, and increase business income."

Charleston trees are also associated with some intangibles such as increased community attractiveness, stress reduction, reduced crime, and recreational opportunities that make Charleston a more enjoyable place to live, play, work, shop, and do business. "If we could put a dollar value on these kinds of tree benefits, Charleston's return on investment would be a lot higher. Right now we can't, but we are working on it," says Dr. McPherson.

The details of the study clearly show how municipal trees benefit residents. Like many cities, Charleston is faced with improving the management of its stormwater. The federal Clean Water Act requires municipalities to obtain a permit for managing their stormwater discharges into water bodies and identify the Best Management Practices (BMPs) it will implement to reduce its pollutant discharge. According to Dr. McPherson, "The good news for Charleston is that its street trees intercept 28.3 million gallons of stormwater annually, or 1,858 gal per tree on average. The total value of this benefit to the city is \$171,000 or \$11.24 per tree. We like to think of trees as mini-reservoirs, controlling runoff at the source. And Charleston's trees do that very well." Dr. McPherson also points out that certain species are much better at reducing stormwater runoff than others. The best trees in Charleston for reducing stormwater runoff are the

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laurel oak (\$38 per tree), water oak (\$36 per tree), and live oak (\$19 per tree).

Interception by live oak alone accounts for 41% of the total dollar benefit for street trees.

Poor performers are species with relatively little leaf and stem surface areas, such as dogwood and crapemyrtle.

Live oaks account for 23.8% of the total tree numbers, but provide 34.6% of the energy savings, as expected for a tree with such a significant presence and importance. Water oaks and laurel oaks provide even greater energy savings on a per tree basis. One reason their contribution is greater than live oaks is because, as semi-deciduous trees, they block less of the winter sun's rays and, therefore, do not have a negative effect on heating costs, as live oaks can. Crapemyrtles, in contrast, make up 20.1% of the population and provide less than 5% of energy savings, simply because they are small crowning trees. "Size is definitely a factor" says Dr. McPherson. Together, all of the street trees in Charleston annually save a total of 1,039 MWh and 2,002 Mbtu of electricity and natural gas respectively, for a total retail savings of \$120,991 or \$7.94 per tree.

The study also found that trees dramatically benefit human health. Charleston's street trees clean the air of nearly 3.6 tons of ozone, particulates and other gaseous pollution per year, and sequester another 944 tons of the greenhouse gas carbon dioxide, while offsetting an additional 711 tons of CO₂, along with 4 tons of sulfur dioxide through reductions in energy plant emissions. "But the largest benefit to the residents of Charleston is the property value increase", according to Dr. McPherson. The value is just over \$398,000 per year to the community, with laurel oak (\$83 per tree) water oak (\$66 per tree) and live oak (\$51 per tree) providing the biggest benefits, while

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small trees and palms are examples of trees that provide very few benefits. “Each homeowner can expect the resale value of their home to increase by 1% for each large front yard tree”, says Dr. McPherson.

“Like all cities, Charleston has room for improvement.” Dr. McPherson points out.

The report’s recommendations include:

- continue to diversify species to avoid catastrophic losses.
- sustain an annual planting program to increase age diversity.
- invest in intensive maintenance of mature trees to prolong their useful lifespan.
- plant large-stature trees where the site allows to maximize benefits.
- develop a strong young-tree-care program that is on a four year cycle.
- ensure adequate space for large trees in new developments.
- review and revise development ordinances to protect large trees.

“The city’s continued investment in the care and management of its trees is critical to ensuring that the community maintains or increases its return on investment into the future, says Dr. McPherson. “Cut back on the planting, watering and pruning of City trees and residents will ultimately experience a pinch in their wallets. The citizens of Charleston can rest assured that their trees are vastly improving their quality of life and that the money they are spending annually is a wise investment of municipal dollars. Continued management will ensure that the community increases its return into the future.”

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Note: The full report can be downloaded at:

http://www.fs.fed.us/psw/programs/cufr/products/cufr_661_CHSMFRA_6-06.pdf