Tree Benefits

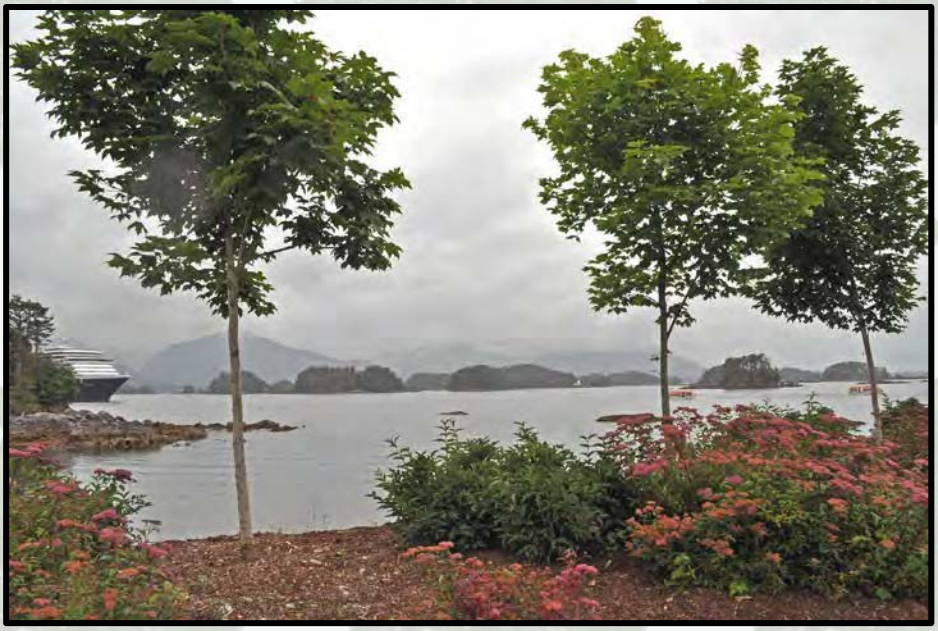

Figure 2. *Sitka's green infrastructure – its trees, open spaces, and views – contribute to its beauty and attractiveness to visitors and residents.*

Few features in urban areas can be said to boost property values, sustain fisheries, support retail activity, enhance tourism and visitor experiences, improve municipal health, protect water quality, reduce storm water runoff, counter climate change, and ensure roadway safety. Communities looking for these benefits may be surprised to find a solution right in their own backyards, along streets, and in parks – trees. Landscapes with trees, parks and open space, provide a wealth of benefits for CBS.

The urban forest has been recognized for its visual and environmental benefits for decades but has only recently been seen as a vital component of a community's infrastructure and given the specific label of "green infrastructure" or "natural capital." Nationwide, easy access to parks and open space has become a new measure of community wealth – an important way to attract businesses and residents by guaranteeing both quality of life and economic health. Due to the changing nature of business needs and the move toward tourism based economies, businesses locate or re-locate based on a community's quality of life.

Sitka is a center for trade and services and it is important that it remain competitive and attractive to residents, businesses, customers, and visitors. Increased recreational and community activity attracts new businesses, fosters expressions of creativity, and stimulates tourism. Networks of natural areas and trails give a city a reputation for being a good place to live and visit. These natural assets definitely contribute to the high quality of life in Sitka and throughout Alaska.

A number of scientific studies have quantified the environmental, ecological, economic, and social benefits trees provide in urban environments. A summary of key values and benefits and supporting sources is provided below.

Water Quality. Trees attenuate peak flows, maintain base flows, and control erosion.(Bernatzky 1983; Xiao et al 1998; Floyd 2002; American Forests 2007). According to one study, 37,500 tons of sediment per square mile per year comes off of developing and developed landscapes; urban trees could reduce this amount by 95% (Coder 1996). The U.S. Environmental Protection Agency report, *Using Smart Growth Techniques as Storm Water Best Management Practices*, identifies urban tree canopy as a means to reduce storm water runoff and the costs associated with its management. Maintaining vegetation and buffer strips between residential and commercial developments and anadromous streams protects water quality and reduces polluted runoff in valuable watersheds.

Annual service value of individual urban trees

Small trees: $1-8 Medium trees: $19-25 Large trees: $48-53

Source: Society of American Foresters: Western Forester, January 2007

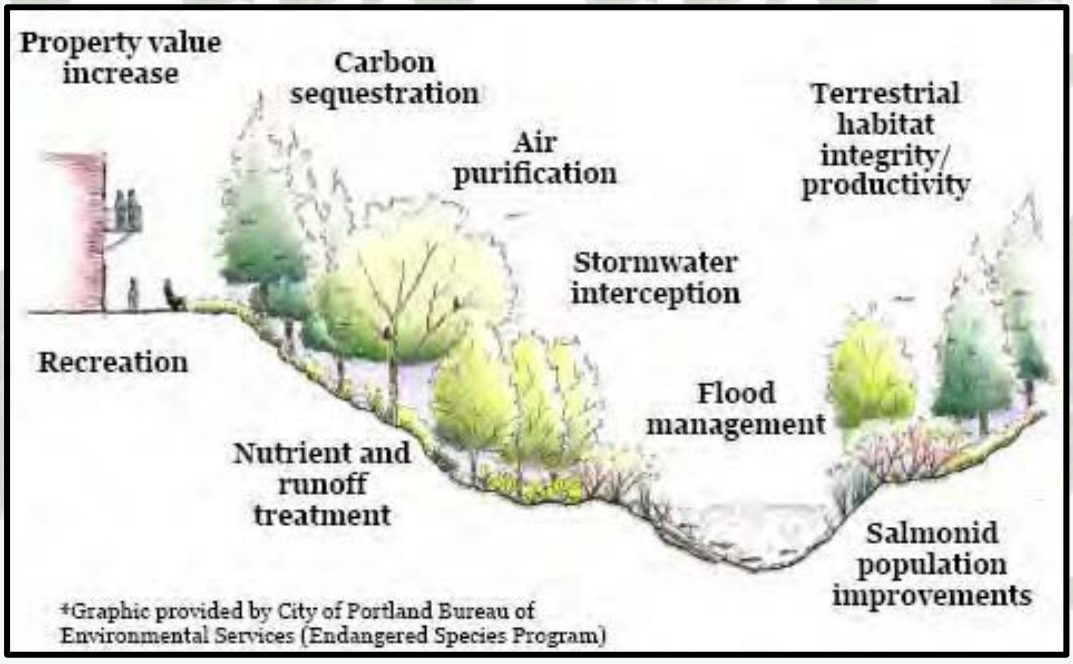

Figure 3. *Benefits and services provided by the urban forest.*

Air Quality. According to the Alaska Department of Environmental Conservation Division of Air Quality, particulate matter poses a dangerous threat to human health and the environment. Regional haze can impair visibility over a large area and air toxins such as carbon monoxide contribute to respiratory problems. Trees absorb the gaseous pollutants ozone, nitrogen oxide, and sulfur dioxide; and they filter particulate matter such as dust, ash, pollen, and smoke. Reducing these pollutants improves public health and reduces the severity of ozone-induced asthmatic responses and other respiratory illnesses.

Urban trees absorb carbon dioxide, a major greenhouse gas, at an approximate rate of 230 lbs. per year per tree. According to the U.S. Department of Agriculture, "one acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people."

Landslide Prevention. Tree canopy and continuous vegetation can stabilize slopes and prevent and minimize the damage caused by landslides or avalanches. Tree root systems enhance the shearing strength of the soil, enabling it to resist landslides and erosion (O'loughlin 1974).

Salmon Forest. The economy of CBS is driven by salmon and salmon benefit from the urban forest in the watershed and along the oceanfront. Salmon require the nutrients, clean water and stability of a healthy forest to survive as young fish. A healthy forest supports a healthy ecosystem which in turn supports a healthy Alaska economy.

The Value of Trees to a Community

The following are some statistics on just how important trees are in a community setting.

The net cooling effect of a young, healthy tree is equivalent to ten room-size air conditioners operating 20 hours a day." *—U.S. Department of Agriculture*

"If you plant a tree today on the west side of your home, in 5 years your energy bills should be 3% less. In 15 years the savings will be nearly 12%." *—Dr. E. Greg McPherson, Center for Urban Forest Research*

A mature tree can often have an appraised value between $1,000 and $10,000 – Council of Tree and Landscape Appraisers

"In one study, 83% of realtors believe that mature trees have a 'strong or moderate impact' on the salability of homes listed for under $150,000; on homes over $250,000, this perception increases to 98%." *—Arbor National Mortgage & American Forests*

"Landscaping, especially with trees, can increase property values as much as 20 percent." *—Management Information Services/ICMA*

"One acre of forest absorbs six tons of carbon dioxide and puts out four tons of oxygen. This is enough to meet the annual needs of 18 people." *—U.S. Department of Agriculture*

"There are about 60– to 200-million spaces along our city streets where trees could be planted. This translates to the potential to absorb 33 million more tons of CO^2 every year, and saving $4 billion in energy costs." *—National Wildlife Federation*

"Trees properly placed around buildings can reduce air conditioning needs by 30 percent and can save 20–50 percent in energy used for heating." – US Forest Service

"Trees can be a stimulus to economic development, attracting new business and tourism. Commercial retail areas are more attractive to shoppers, apartments rent more quickly, tenants stay longer, and space in a wooded setting is more valuable to sell or rent." *—The Arbor Day Foundation*

"Healthy, mature trees add an average of 10 percent to a property's value." *—USDA Forest Service*

"The planting of trees means improved water quality, resulting in less runoff and erosion. This allows more recharging of the ground water supply. Wooded areas help prevent the transport of sediment and chemicals into streams." *—USDA Forest Service*

"In laboratory research, visual exposure to settings with trees has produced significant recovery from stress within five minutes, as indicated by changes in blood pressure and muscle tension." *—Dr. Roger S. Ulrich Texas A&M University*

"Nationally, the 60 million street trees have an average value of $525 per tree." *—Management Information Services*