



LANDSCAPE PERFORMANCE SERIES

Elmer Avenue Neighborhood Retrofit—Los Angeles, CA Methodology for Landscape Performance Benefits

Environmental

- ***Infiltrates up to 5.4 million gallons of stormwater annually.***

16" (average annual rainfall) X 0.31 (runoff coefficient)] X 0.08333 feet per inch X 40 acres X 43,560 square feet per acre X 7.4805 gallons per cubic foot = 5,387,000 gallons

- ***Improves water quality by reducing concentrations of lead, copper and total suspended solids by 60%, 33%, and 18% respectively, by passing water through a catch basin sump before it enters the infiltration gallery.***

Percentages calculated from results of water sampling as reported in:

Belden, Edward and Kristy Morris. 2011. The Elmer Avenue Neighborhood Demonstration Project: Measuring the success of green infrastructure. 10th Annual StormCon proceedings, Anaheim, CA. Web retrieved July 22, 2011:

<http://watershedhealth.org/dataandreference/Document.aspx>

- ***Reduces potable water use by 30% for homeowners with enhanced front yards and 10% for others, saving homeowners \$120-\$360 annually.***

According to the landscape architect Guy Stivers of Stivers & Associates Inc. (August 2, 2011), calculation is based on research done at Metropolitan Water District. Smart controllers coupled with an efficient irrigation system and "California friendly" planting design should reduce irrigation water consumption by at least 30%.

The \$360 and \$120 annual cost are based on planting area, irrigation efficiency, evapotranspiration (58" annual Eto) and the cost of water. Planting area ≈ 6,500 ft² for right-of-way plantings and 9,500 sf for private front yards.

- ***Increased soil sequestration potential by approximately 6 times, resulting in 7.25 tons of carbon sequestered annually by soil and plant tissue.***

According to the project's landscape architect Guy Stivers of Stivers & Associates Inc. (August 2, 2011), the project's agronomist (Wallace Labs) assessed the carbon sequestration potential of Elmer's soil could be as much as 3 lbs of carbon per cubic foot of planting soil. Prior to construction, soil testing indicated that there was approximately 0.5 lbs of carbon per cubic foot of planting area. Estimate is based on soil and plant tissue carbon sequestration over 16,000 ft² of planted area for 2010-2011, but this is expected to slow to approximately 2 tons as the landscape matures by its 8th year.

Social

- ***Educates at least 300 visitors annually on water issues and best management practices for stormwater.***

Recorded from tours provided, reported by Edward Belden, Project Manager, Council for Watershed Health (July 14, 2011).

- ***Increased resident satisfaction with their block's walkability from less than 2% of survey respondents in 2006 to 92% in 2011.***

Identical surveys were mailed to all Elmer Avenue residences in October, 2006 and again in January, 2011. Results reflect responses from 13 out of 24 households. While not reflected in these particular performance benefits, the survey was also sent to 24 households on Bakman Avenue (9 responded), a neighboring street that did not receive any BMPs, to establish a basis of comparison when appropriate.

Survey methodology and highlights are reported in:

Belden, Edward and Kristy Morris. 2011. The Elmer Avenue Neighborhood Demonstration Project: Measuring the success of green infrastructure. 10th Annual StormCon proceedings, Anaheim, CA. Web retrieved July 22, 2011:

<http://watershedhealth.org/dataandreference/Document.aspx>

- ***Increased resident understanding that rain falling on local homes can be captured and used to supply the community with water. Only 60% of survey respondents agreed with this statement in 2006 compared to 100% in 2011.***

See previous performance benefit for survey information.

Cost Comparison Methodology

- ***Construction of the Elmer Avenue retrofit cost \$1.8 million, compared with an estimated \$1.2 million minimum to install a traditional storm drain system that would connect the 40-acre watershed to the larger Los Angeles stormwater network. Though the two approaches are fairly comparable in price, the "green street" approach improves surface water quality and recharges groundwater, while a traditional conveyance system would not.***

A recent storm drain project in Los Angeles cost \$1.5 million per mile to install sidewalks, curbs and gutters, and 36" RCP, according to Richard Gomez, PE County of Los Angeles, Department of Public Works Watershed Management Division (August 2, 2011), Using this as an estimate, and making a rough estimate using Google Earth as a possible storm drain path to connect Elmer Avenue to Saticoy, we estimate:

0.8 miles X \$1.5 million per mile = \$1.2 million dollars for traditional storm drain project