



## Environmental Integrity Focus Area Green Infrastructure Element

Prepared for the Environmental Integrity Working Group Meeting on August 19, 2011, by the Plan Tucson Team, Planning and Community Development Division, City of Tucson Housing and Community Development Department, **Note:** This is a working document that may be further refined as Plan Tucson proceeds and additional information and input is obtained.

### I. Introduction

This working document presents basic background information for the discussion of green infrastructure policy for Plan Tucson, the City of Tucson's General Plan now underway.

### II. Background and City Role

The City of Tucson's 2001 General Plan includes an Open Space Element, as required by Arizona state law. Plan Tucson will expand this scope to include the broader concept of Green Infrastructure. Green infrastructure includes connections between open space as well as the open space itself.

“Green infrastructure is strategically planned and managed networks of natural lands, working landscapes and other open spaces that conserve ecosystem values and functions and provide associated benefits to human populations. The foundation of green infrastructure networks are their natural elements – woodlands, wetlands, rivers, grasslands – that work together as a whole to sustain ecological values and functions. Healthy functioning natural or restored ecological systems are essential to ensure the availability of the network's ecological services.” (*Definition from the Conservation Fund*)

The benefits of green infrastructure include mitigating urban heat effects, creating community resilience to climate change, providing wildlife habitat, and managing storm water, among other ecosystem services. The 10-year Strategic Plan developed by the City's Parks and Recreation Department (2006) identified six strategic directions. The first two provide support for current approach to open space including an emphasis on providing connectivity between parks, open space and recreational facilities and protection of natural resources. The Transportation Department also plays an important role in the development of green infrastructure by planting and maintaining vegetation along roadways and pedestrian and bike thoroughfares.

### III. A Sustainable Future

In Southern Arizona, washes and riparian areas are important components in a green infrastructure network. Riparian areas provide a wide range of ecosystem services including wildlife habitat, wildlife linkages, storm water conveyance, flood-peak reduction, biological treatment of urban runoff, groundwater recharge, recreational use, carbon sequestration, heat island mitigation, economic benefits to property owners, and aesthetic enhancement. Washes are often the only open space in some highly urbanized areas of central Tucson and these washes are a primary conduit for the urban trail system developed by the City's Parks and Recreation and Transportation Departments in collaboration with



Pima County. Many urban washes have been impacted by human activities and development and the functional value has been reduced as a result. Non-native, invasive species dominate urban washes and wildlife habitat is isolated and degraded.

Research has shown significant community health benefits from green infrastructure including improved air and water quality, more attractive and comfortable areas which encourage exercise, psychological and spiritual benefits of green space, and economic benefits to those who live near green space and to the community as a whole.

Green Infrastructure can include small scale agriculture and community gardens, which reduce the amount of impervious surface in the city and the urban heat island effect, provide green community gathering spaces and provide fresh, locally grown produce to Tucson residents.

#### **IV. Recent Initiatives**

Recent initiatives and studies may have an impact on future City of Tucson Green Infrastructure policies. These initiatives are presented below. The 2001 General Plan can be found on the City website, [www.cms3.tucsonaz.gov/hcd/plans](http://www.cms3.tucsonaz.gov/hcd/plans).

##### ***Recent Initiatives Related to Green Infrastructure***

<b>Document</b>	<b>Year</b>	<b>Policies &amp; Recommendations (web links)</b>
Avra Valley Habitat Conservation Plan, Final Draft	2010	<a href="http://www.tucsonaz.gov/ocsd/docs/CMS1_037980.pdf">http://www.tucsonaz.gov/ocsd/docs/CMS1_037980.pdf</a>
Pima Regional Trail System	2010	<a href="http://www.pima.gov/nrpr/pdfs/Pima_Trails_Draft_080910.pdf">http://www.pima.gov/nrpr/pdfs/Pima_Trails_Draft_080910.pdf</a>
Lee Moore Wash Basin Management Study	2009	<a href="http://www.tucsonaz.gov/ocsd/docs/CMS1_035103.pdf">http://www.tucsonaz.gov/ocsd/docs/CMS1_035103.pdf</a>
Southlands Habitat Conservation Plan	2008	<a href="http://www.tucsonaz.gov/ocsd/docs/CMS1_034665.pdf">http://www.tucsonaz.gov/ocsd/docs/CMS1_034665.pdf</a>
Urban Landscape Framework	2008	<a href="http://cms3.tucsonaz.gov/sites/default/files/planning/prog_proj/projects/urbanlandscape/cms1_030013.pdf">http://cms3.tucsonaz.gov/sites/default/files/planning/prog_proj/projects/urbanlandscape/cms1_030013.pdf</a>
City of Tucson Parks and Recreation Ten Year Strategic Service Plan	2006	<a href="http://cms3.tucsonaz.gov/sites/default/files/parks/stratplan.pdf">http://cms3.tucsonaz.gov/sites/default/files/parks/stratplan.pdf</a>
Sonoran Desert Conservation Plan	1998	<a href="http://www.pima.gov/cmo/sdcp/">http://www.pima.gov/cmo/sdcp/</a>
City of Tucson Riparian Vegetation Preservation and Protection Codes, Standards and Policies Summary	multiple	<a href="http://cms3.tucsonaz.gov/transportation/wp-code-summary">http://cms3.tucsonaz.gov/transportation/wp-code-summary</a>

## V. Definitions

**Carbon Sequestration:** Carbon sequestration is the process through which agricultural and forestry practices remove carbon dioxide (CO<sub>2</sub>) from the atmosphere. The term “sinks” is also used to describe agricultural and forestry lands that absorb CO<sub>2</sub>, the most important global warming gas emitted by human activities. Agricultural and forestry practices can also release CO<sub>2</sub> and other greenhouse gases to the atmosphere. (<http://www.epa.gov/sequestration/>)

**Green Infrastructure:** an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations  
( *Green Infrastructure: Smart Conservation for the 21st Century*; By Mark A. Benedict, Ph.D. & Edward T. McMahon, J.D., *The Conservation Fund*)

**Greenway:** A greenway is a corridor of open space. Greenways vary greatly in scale, from narrow ribbons of green that run through urban, suburban, and rural areas to wider corridors that incorporate diverse natural, cultural and scenic features. (*Pennsylvania Department of Conservation and Natural Resources*)

**Open Space:** Natural areas both in and surrounding localities that provide important community space, habitat for plants and animals, recreational opportunities, farm and ranch land (working lands), places of natural beauty and critical environmental areas (e.g. wetlands). ([www.smartgrowth.org](http://www.smartgrowth.org))

**Urban Run-off:** Storm water from city streets and adjacent domestic or commercial properties that carries pollutants of various kinds into the sewer systems and receiving waters. (*EPA on-line glossary of terms*)