How is ET used?
Quantifying water use by the dominant vegetation communities provides planners, decision makers, and stakeholders with a useful method to evaluate how water is distributed and used within a semiarid watershed.

Limited perennial stream reaches and vulnerability to baseflow loss due to increased reliance on ground water requires careful management to assure the sustainability of water resources, community character, and long-term economic health of Arizona.

Acknowledgement
This brochure was produced by Arizona NEMO. The Arizona NEMO program is structured within a watershed-based template and focuses educational outreach efforts on the policy makers, planners, and land use decision makers facing water management decisions. For more information, go to www.ArizonaNEMO.org

Suggested References:


What is Riparian ET?
Riparian evapotranspiration (ET) refers to the combined amount of water evaporated from:
- riparian soil
- open water surfaces
- or transpired by riparian vegetation through leaf stomata.

How is Riparian ET Estimated?
The vegetation and stream network in the riparian corridor were mapped and the areas of different vegetation communities were tabulated. ET for each vegetation community was estimated by making small-scale field measurements. These data were then used to calculate an estimate of ET for the entire riparian corridor.

Why is ET Important?
In semiarid regions, where water supplies are limited, riparian ET can comprise a major portion of a basin water budget. A water budget is an accounting of all water inputs and outputs in a basin, including rainfall, ground water withdrawals, and use by vegetation (ET).

If excessive ground water withdrawals lower the water table below the river channel, the river will go dry and riparian vegetation will die from lack of water. In addition, all the wildlife that depends on the riparian system will be harmed.

The Southwest Watershed Research Service, an Agricultural Research Service (USDA) agency in Tucson, Arizona, in cooperation with the University of Arizona, the United States Geological Survey, and the Upper San Pedro Partnership has conducted numerous water use studies within the San Pedro Riparian National Conservation Area (SPRNCA) in southeastern Arizona to quantify riparian ET.

These studies, conducted from 1997 – 2005, focused on the water use of cottonwood-willow, mesquite, seepwillow, and sacaton grass communities, which are the major vegetation assemblages in the SPRNCA.

2003 Estimated Growing Season ET by Cover Type

<table>
<thead>
<tr>
<th>Cover Type</th>
<th>ET (ft/year)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt cedar</td>
<td>2.2 – 3.3</td>
<td>Nagler et al., 2005</td>
</tr>
<tr>
<td>Mesquite</td>
<td>2.1–2.3</td>
<td>Scott et al., 2006</td>
</tr>
<tr>
<td>Cottonwood</td>
<td>1.6 – 3.2</td>
<td>Gazal et al., 2005</td>
</tr>
<tr>
<td>Sacaton grass</td>
<td>1.8</td>
<td>Scott et al., 2006</td>
</tr>
<tr>
<td>Seep willow</td>
<td>2.7</td>
<td>Scott et al., 2006</td>
</tr>
</tbody>
</table>

1Equivalent to acre-feet/acre
2Study conducted along the Middle Rio Grande River, New Mexico

Photos courtesy of R. Scott, B. Cable and R McGuire, USDA-ARS