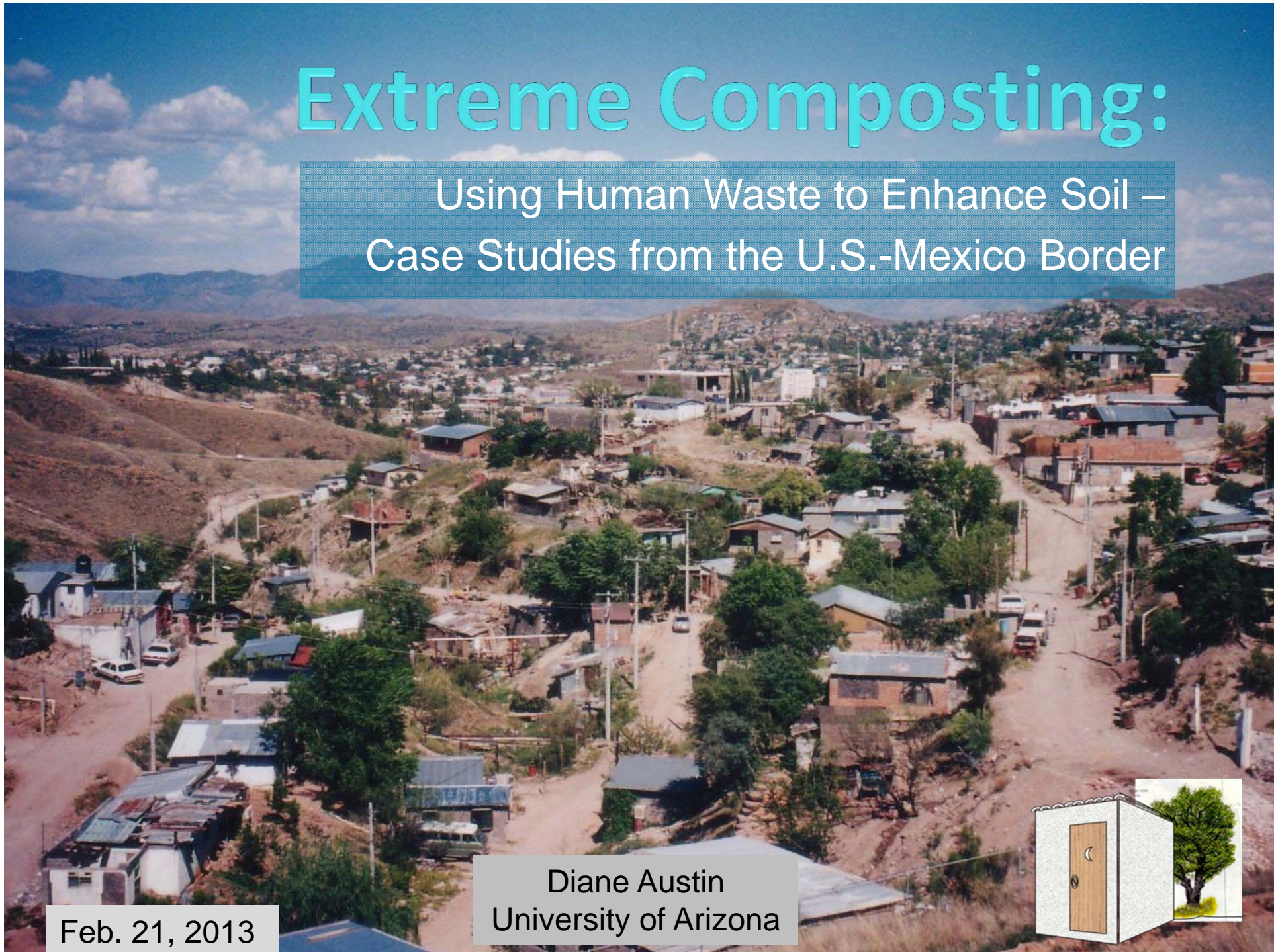


Extreme Composting:

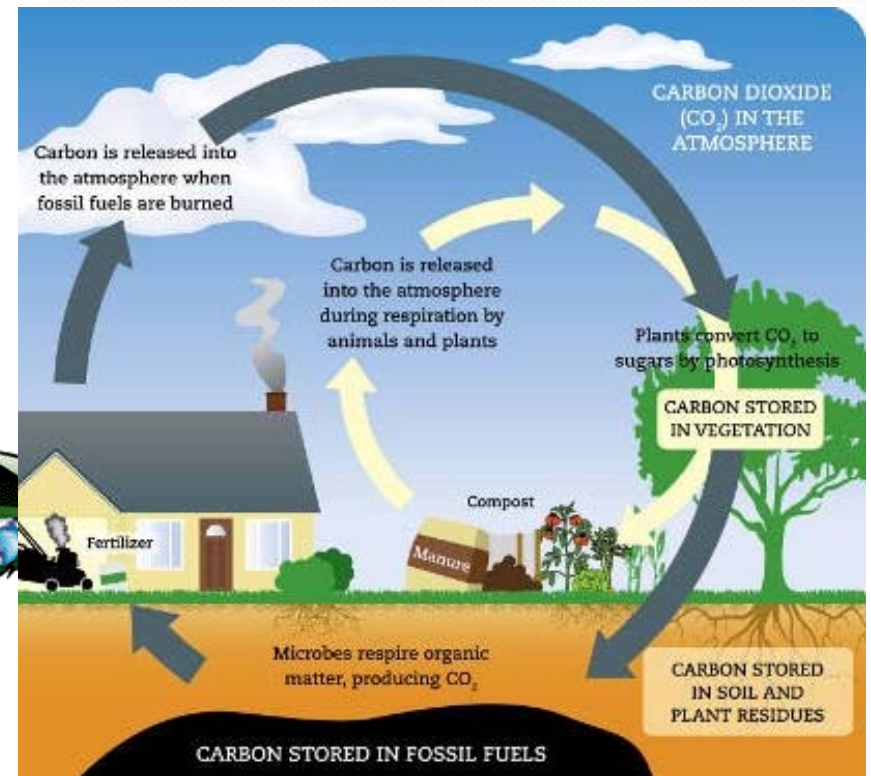
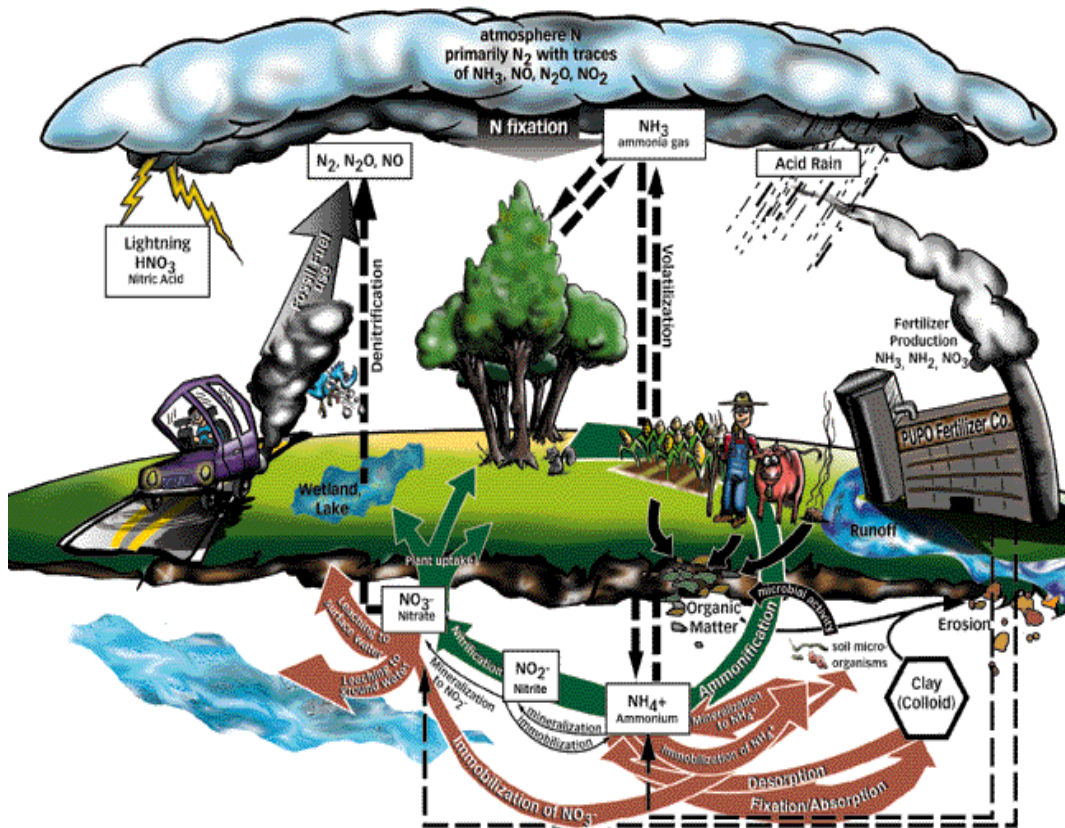
Using Human Waste to Enhance Soil –
Case Studies from the U.S.-Mexico Border



Feb. 21, 2013

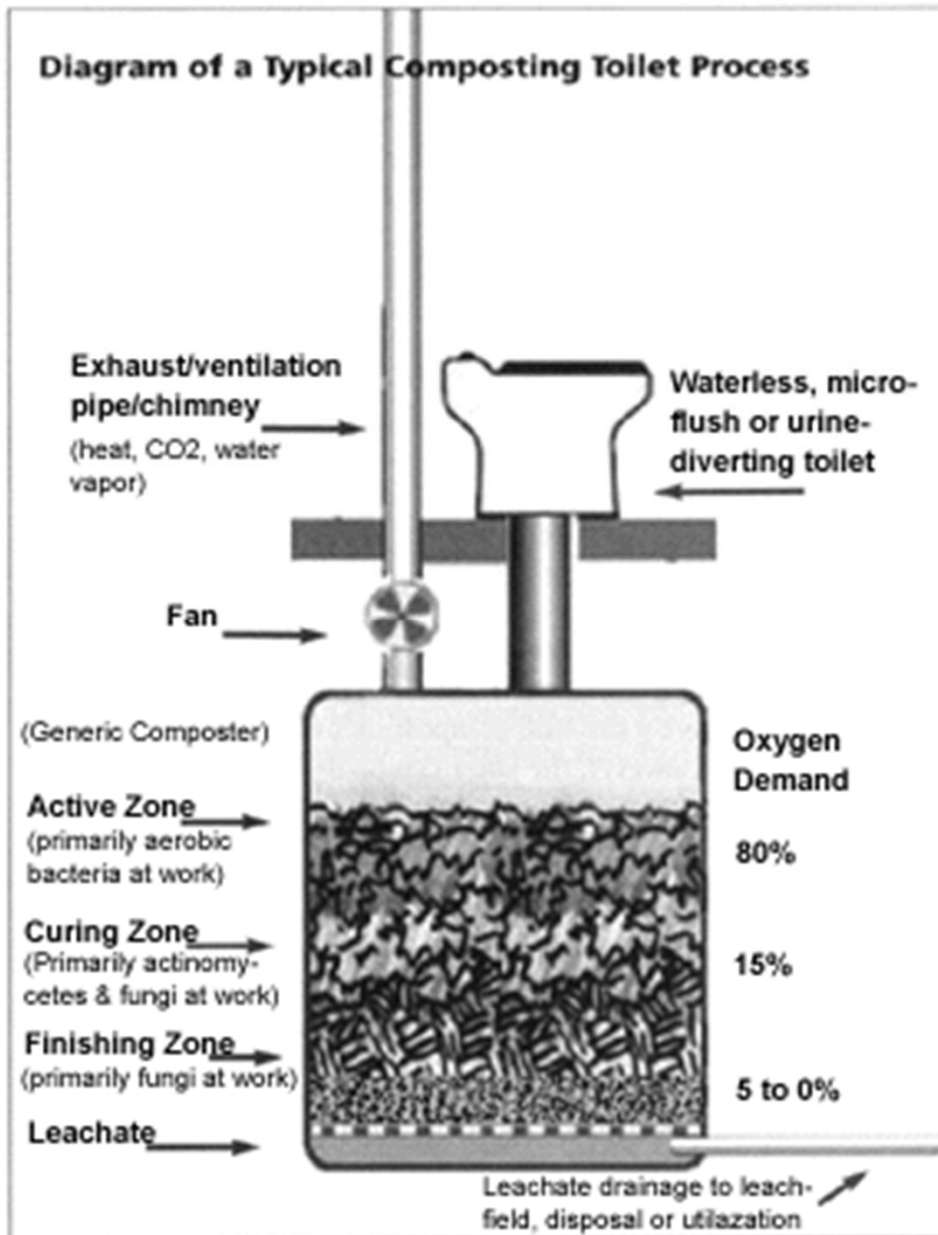
Diane Austin
University of Arizona

Sustaining Soil Systems



[www.thirteen.org/edonline/studentstake/water/Upper Hudson/nitrogen/images/nitrocyc.gif](http://www.thirteen.org/edonline/studentstake/water/UpperHudson/nitrogen/images/nitrocyc.gif)
 from ltpwww.gsfc.nasa.gov/globe/NFTG/nitrocyc.htm

www.nuclearfreeplanet.org/images/soil-Cycle-1.jpg
 adapted from www.farmingfutures.org.uk/

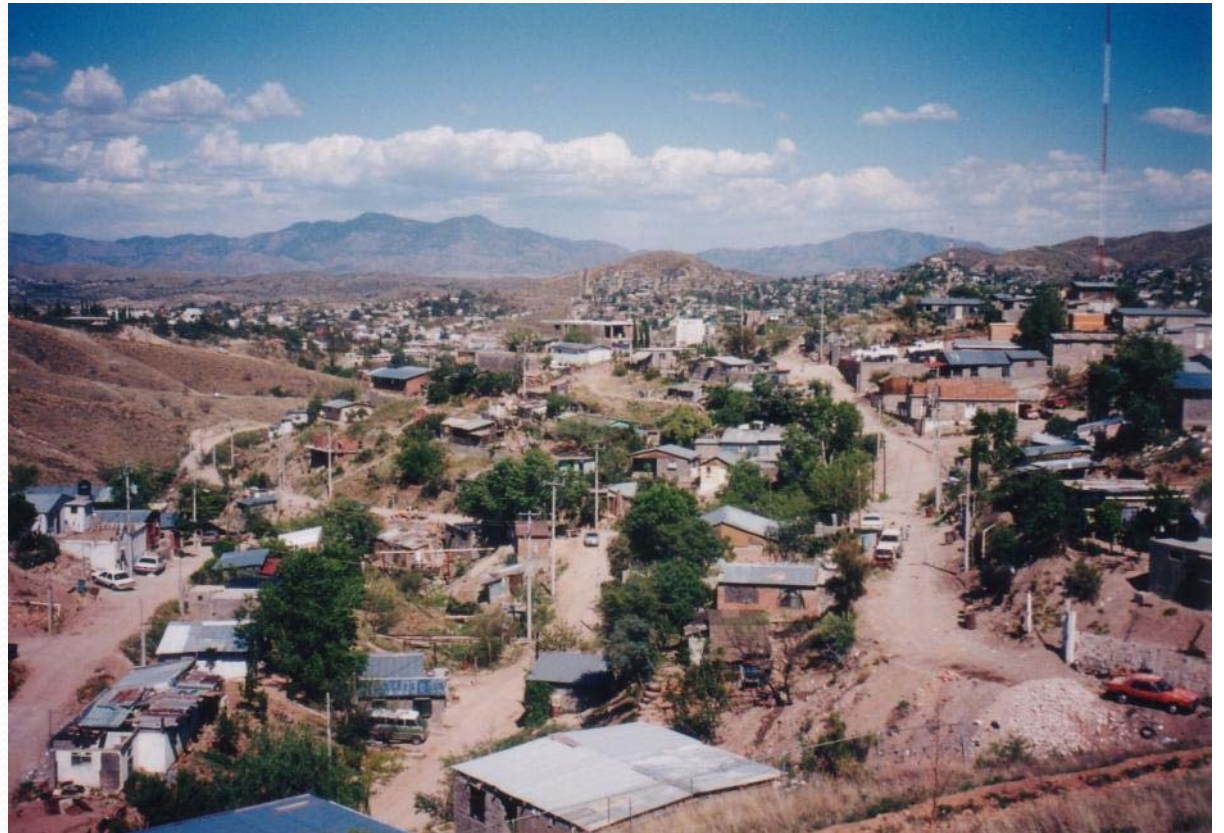


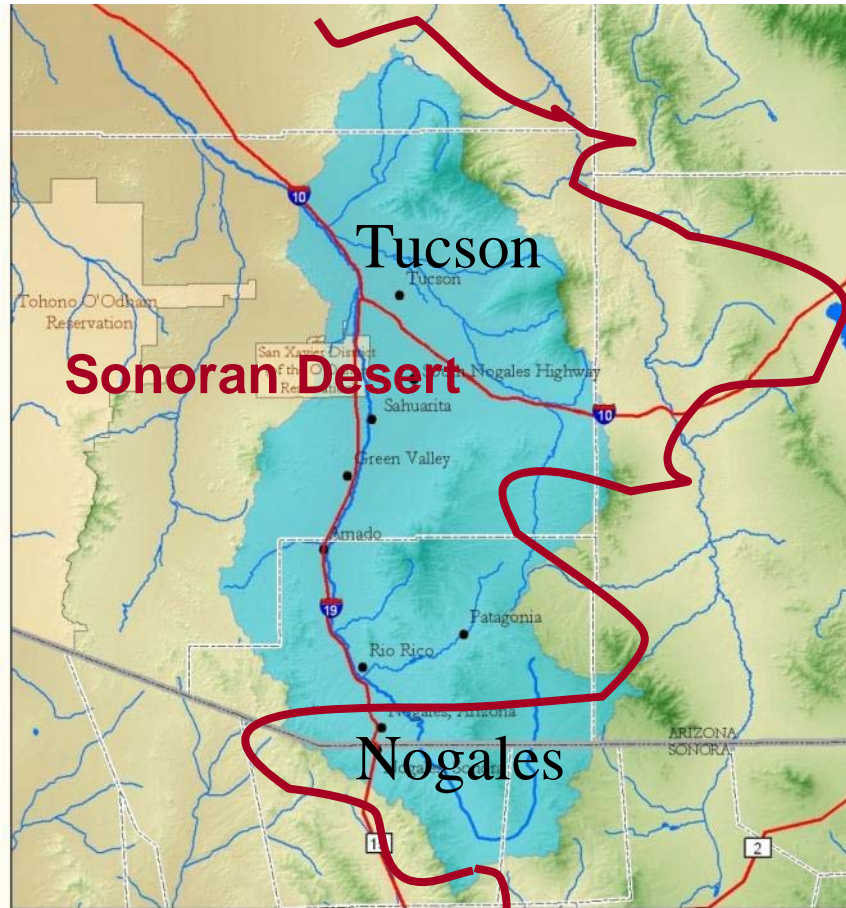
Key Features of a Composting Toilet

www.reuk.co.uk/Introduction-to-Compost-Toilets.htm

Case Study: Nogales, Sonora

- Setting
- Project origin
- Project evolution
- Monitoring
- Challenges
- Benefits





Map composition by Jodi Penin, Center for Applied Spatial Analysis, University of Arizona, 4/7/2003

Ambos Nogales

Nog., Son.: pop. 350,000

Nog., AZ: pop. 21,000

Shared env. concerns: air and water quality, water scarcity, deforestation

Port of entry for winter produce

Economy based on maquiladoras

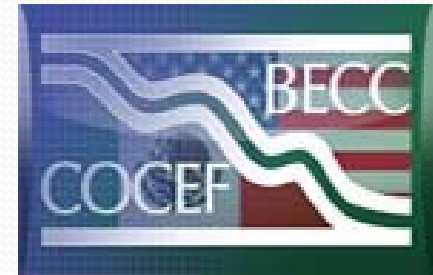


The Santa Cruz Watershed

Composting Toilet Initiatives

- **2002** Borderlinks Project in *Colonia Bella Vista*
- **2008** BARA-UA, community, NGO partnership in *Colonia Colinas del Sol* (Phase 1)
- **2009** Nogales Municipal Government projects in *Colonia Colinas del Sol* and *Ejido Mascarenas* (Phase 2)
- **2012** BARA-UA, NGO, Technical School (CECATI) project at Eco-Casa demonstration site
- **2012** BARA-UA, Technical Institute (ITN) project in *Colonia Colosio*





Friends of the Santa Cruz River



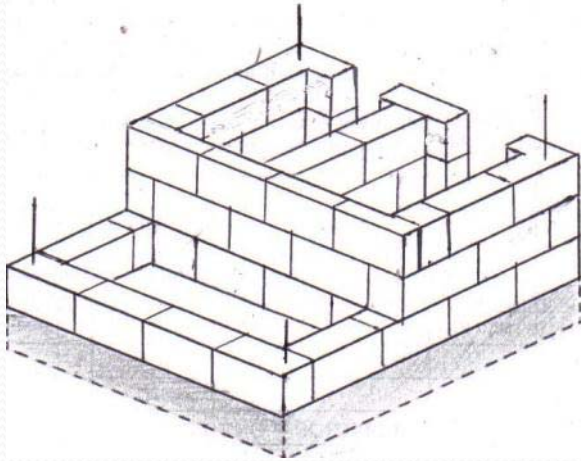
Colinas del Sol, Nogales, Sonora

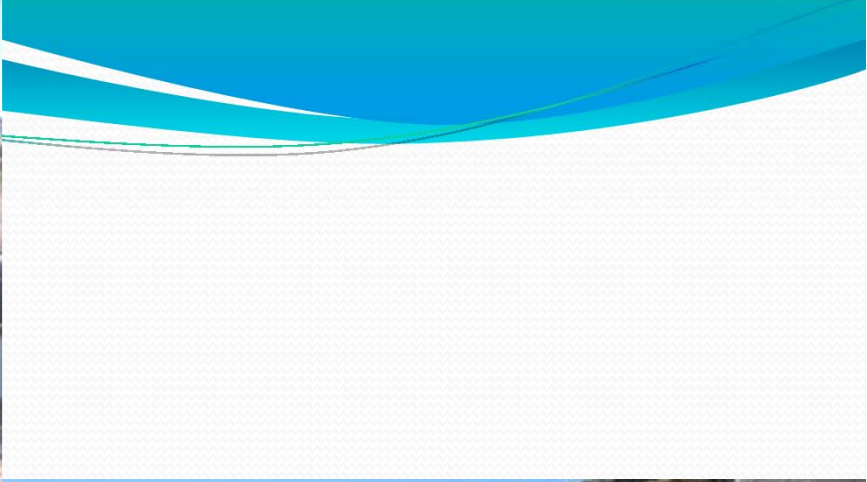


Colinas del Sol, Nogales, Sonora



Composting Toilet Design





Monitoring



Sanitarios Composteros

Taller y Celebración

- **Sábado el 18 de Febrero**
- **En la guardería del centro comunitario de Rosarito a la 1:00**
- **Información sobre el uso adecuado de los baños y el abono**
- **Noticias de proyectos de sanitarios composteros en Arizona**
- **Bocadillos provistos**



Transportación disponible: reúne por el centro comunitario a las 12:45 pm

Challenges



Instrucciones del Uso para Baños Ecológicos

Paso 1
Abra la tapadera



Paso 2
Use el baño



Paso 3
Ponga dos tazas de aserrín



Paso 4
Cierre la tapadera



Benefits



Case Study: Pima County, Arizona

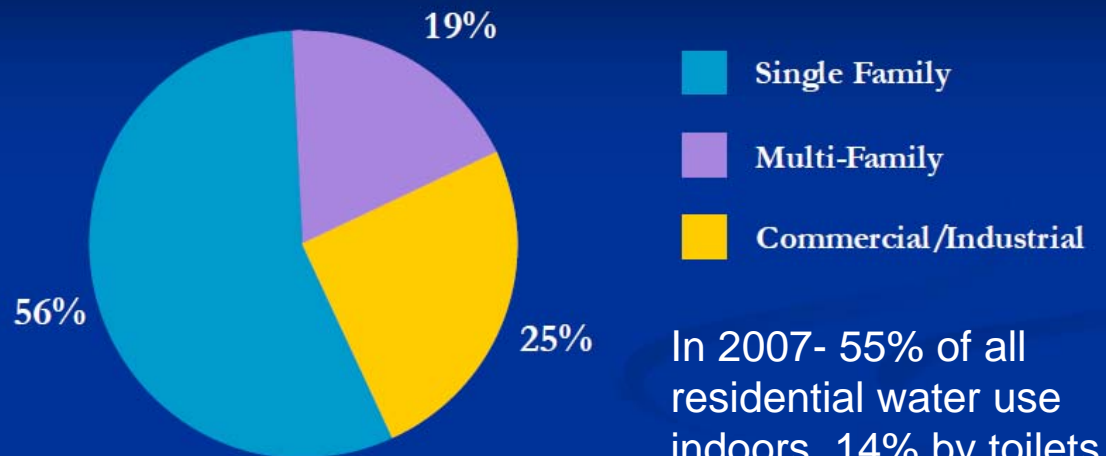
- Setting
- Project origin
- Project evolution
- Monitoring
- Benefits



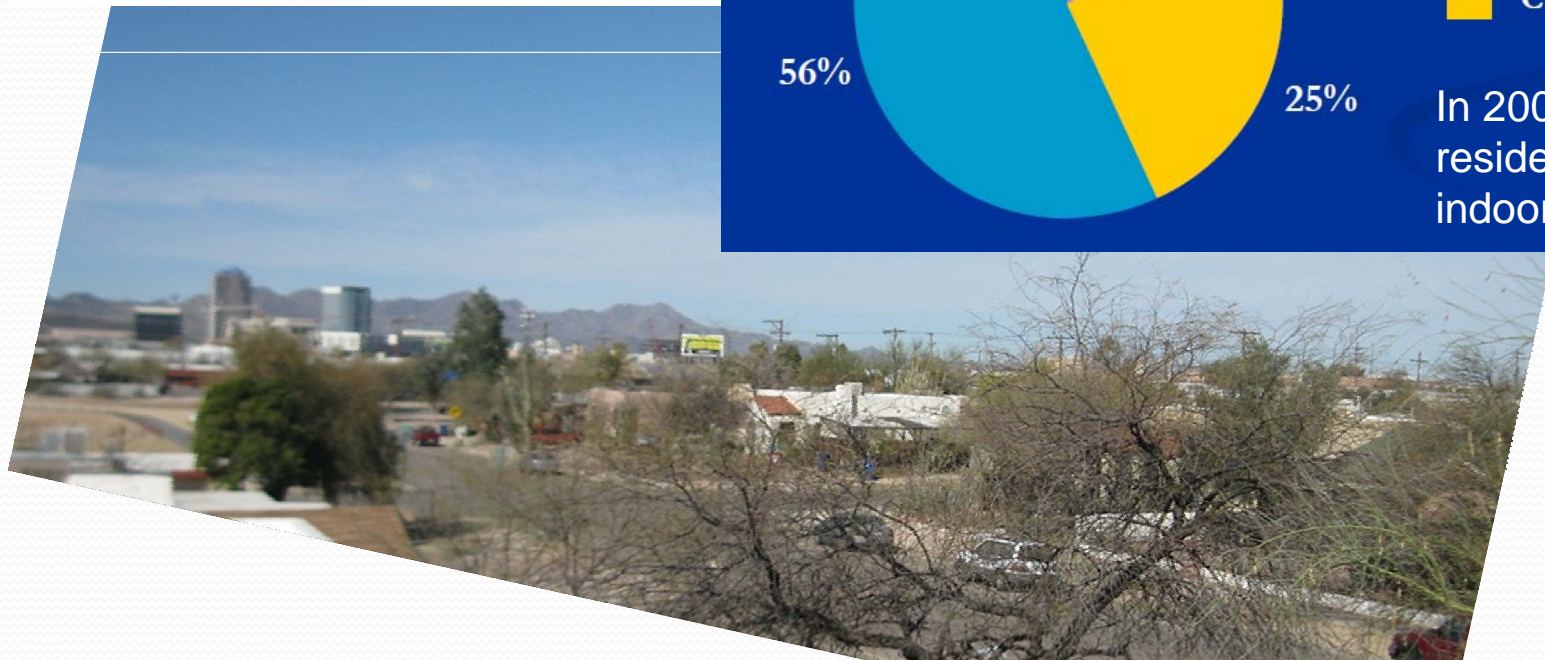
Tucson, Arizona

Tucson pop. 526,000
Metro area pop. 990,000
2007 water demand:
44 billion gallons
2020 projected demand:
57 billion gallons

Who Uses Tucson's Water?



In 2007- 55% of all residential water use indoors, 14% by toilets



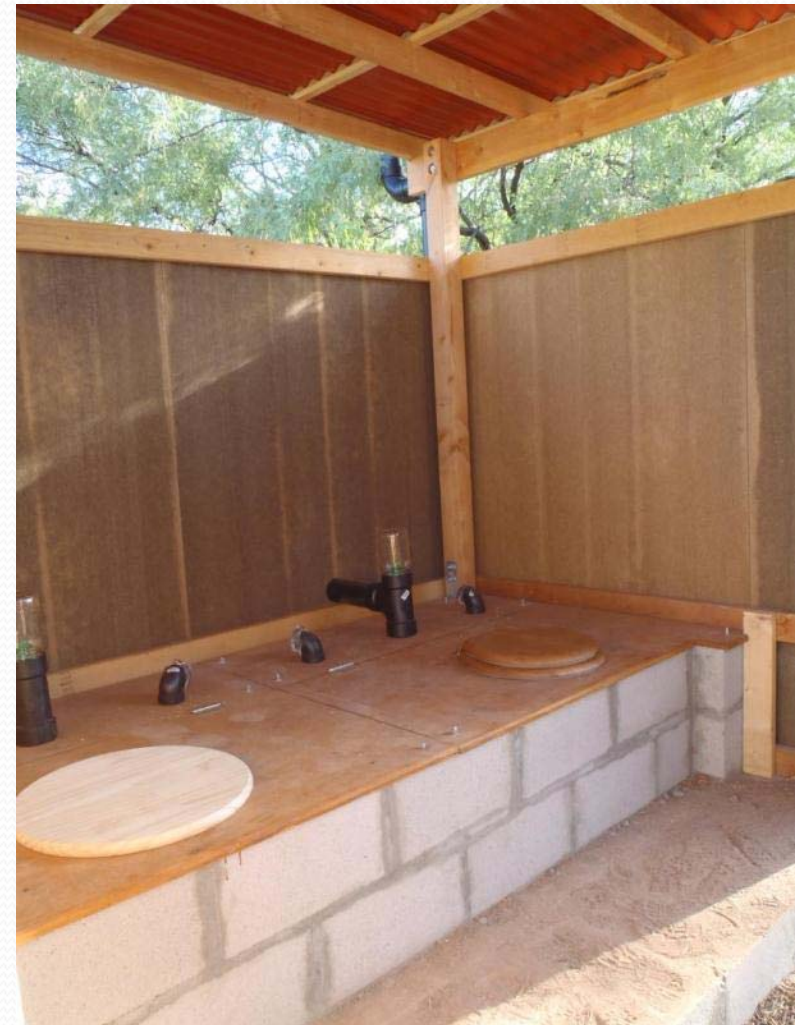


P.O. Box 44205
Tucson, AZ 85733
www.watershedmg.org

Working together towards sustainable solutions



Composting Toilet Designs





Monitoring



Benefits



The Future of Composting Toilets in the Santa Cruz River Watershed... almost endless potential!



References and Resources

- Asociación de Reforestación en Ambos Nogales.
arannogales.net/sanitarios-composteros
arannogales.webhost.uits.arizona.edu/english/composting-toilets
- City of Tucson.
cms3.tucsonaz.gov/files/water/docs/use-by-sector.pdf
- Environmental Protection Agency (EPA).
<http://www.epa.gov/owow/NPS/nps-conserve.html>
- Jensen, R. 1991. Toilets, shower heads, washing machines and faucets can all use less water. *Texas Water Resources* 17(4):1-11.
- Shipek, C. and D. Omick. Nd. Site-built Composting Toilet Pilot Project; Turning Waste into Resources. Presentation.

