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Learning from Failure; Improving Reclaim Systems

Karen Guz

Conservation Director, San Antonio Water System



Reclaim Water Is A Great Option

More properties can be “off the grid” for landscapes



SAWS main building is surrounded by an attractive landscape watered with cooling tower blow-down and rain water.

- The system has been working well through drought for over four years
- Success Not Easy
 - When SAWS moved in the scheduling of the system was causing water waste
 - Backflow on system had to be corrected
 - Faulty potable water back-up wasted one million gallons in a month

Four Opportunities to Succeed...or Fail

1. Design
2. Construction
3. Commissioning
4. Maintenance & Operation

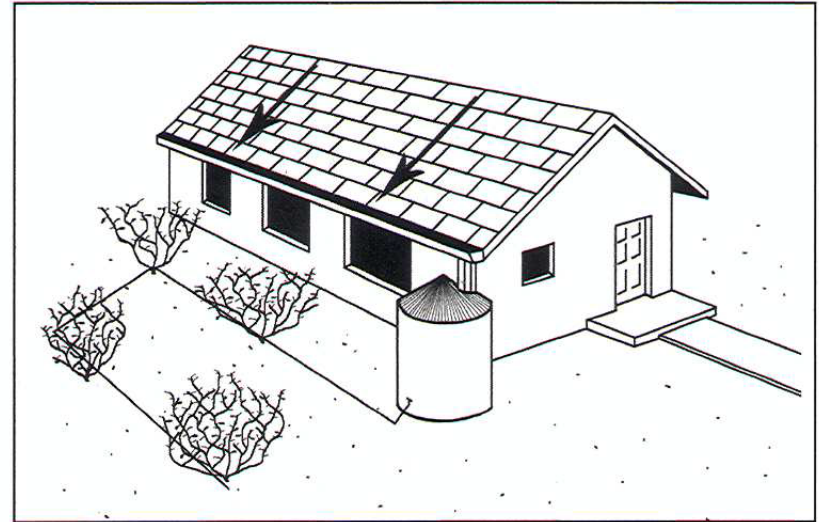


Success Starts with Good Design!

American Rainwater Catchment System Association

How can people in my city find a qualified designer and installer for a rainwater harvesting system?

The ARCSA website menu includes a robust member search engine, [Find a Pro in the ARCSA Resource Guide](#) which effectively identifies members within a selected radius of a zip code.



Complex water harvesting system with roof catchment, gutter, downspout, storage and drip distribution system.

Certified RWH Designers Prevent Problems



- Design should take scope of irrigation into account
- Should require specialty training & testing in RWH
- Checklists for minimum standards for plan review

Design and installation challenges be resolved before construction begins.

This rustic raised tank requires water to be pumped up a small pipe at a slow rate from an underground tank where it is initially collected.

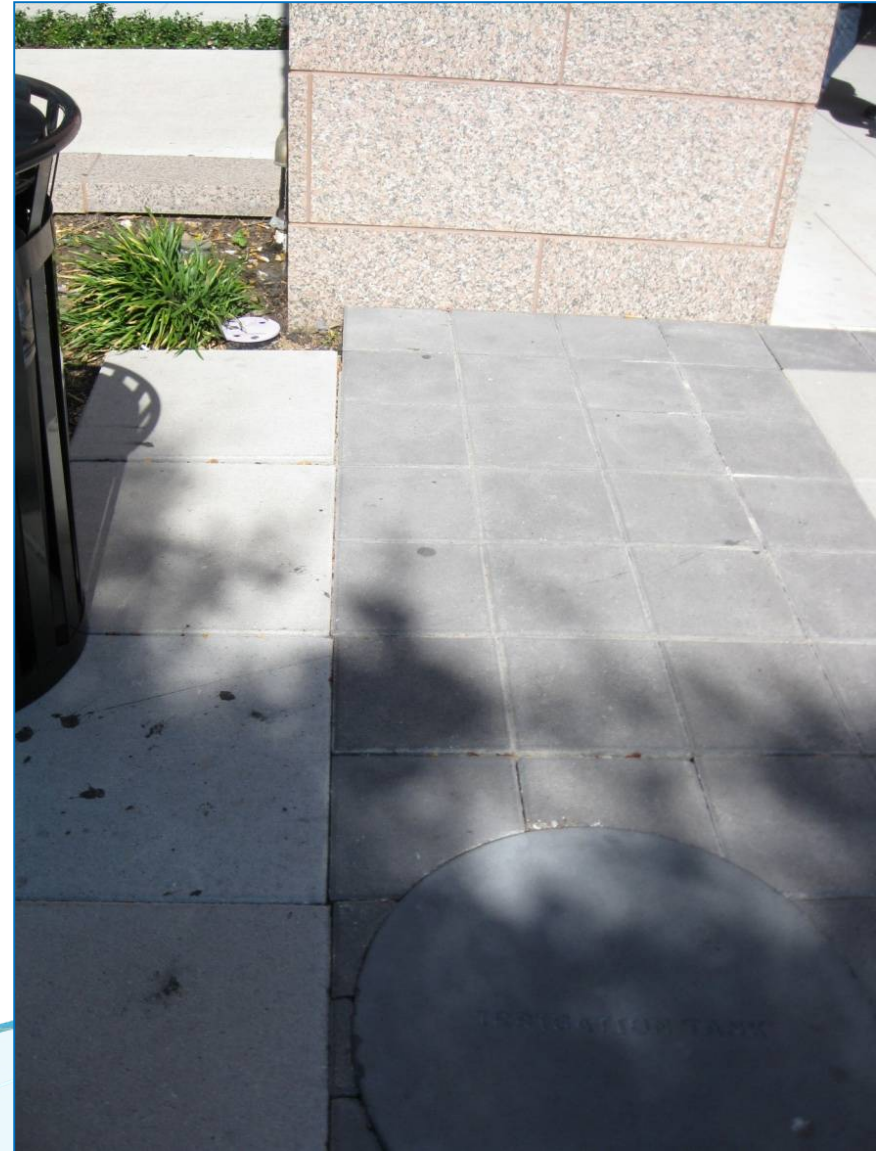
The system quickly developed problems and was operational for only a short time.

Don't Forget Access for Maintenance

Bexar County Justice Center



Critical equipment located under heavy stone lid that cannot be moved.



Insist on Sustainable Landscape RWH

Set design goal of how much potable water to offset

- Goal: No more than 50% potable make-up
- Options:
 - Increase cistern size
 - Efficient irrigation application methods
 - Modify landscape to sustainable levels
 - Add reclaim water sources



- This attractive tank holds 10,000 gallons
- One irrigation cycle of the irrigation uses 100,000 gallons

Why Require Commissioning?

This is required testing and operations by contractor

- Surprising numbers of reclaim systems never worked
- Reclaim system is often last thing added at the end of high profile projects
- Contractors at fault are long gone once problems discovered

Cautionary Tale:

A builder association put their reclaim tanks under a patio with no reasonable equipment access. Was not tested before contractor was paid.

Case Study – Mission Library

- System installed during extended dry period
- Good design on first flush, but not installed to plan
- Extensive dirt and dust from construction washed into tank after first rain
- Liner had to be rinsed many times...with potable water.



Commissioning to Ensure Function



The large storage tanks from this parking structure have great promise, but the system functions poorly based only on gravity because the pumps installed never worked properly after installation. This should have been better tested after project completion.

- What happens after the ribbon cutting is over?
- Maintenance staff need support for complex systems
- Best intentions will not yield results without operations plans!

Maintenance Plan & Budget



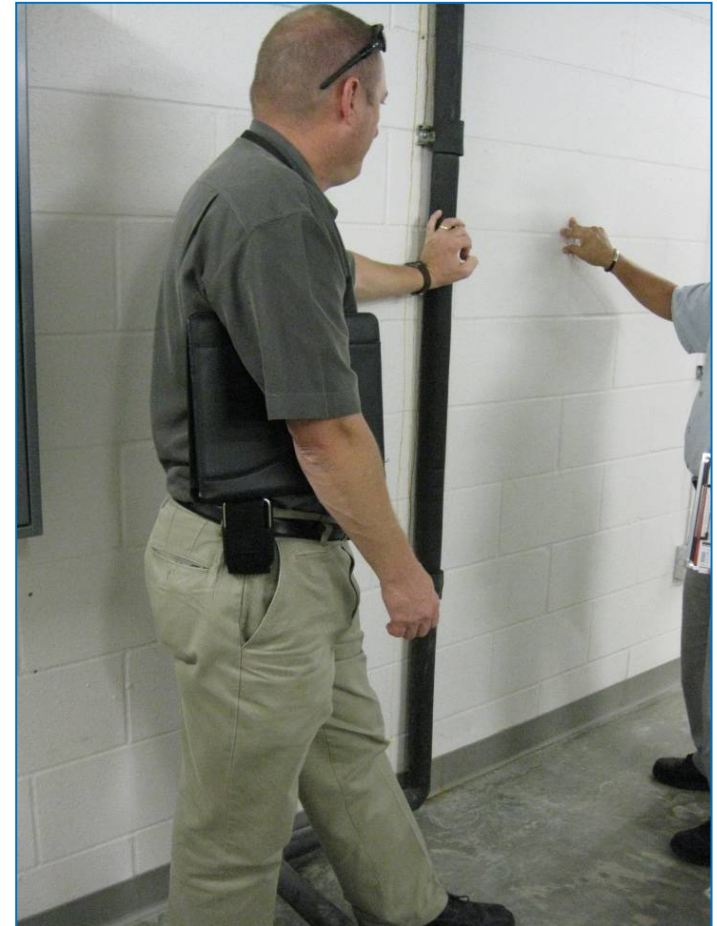
- Design required manual addition of biocide to condensate tanks
- No easy access to tanks and no staff time allocated
- Water fouled and there were health concerns with spray irrigation

This system collected condensate from a large public library. It ceased functioning after a few years due to a lack of support from library maintenance staff. It is hoped that a new planned system has resolved this with a long-term maintenance agreement.

Bexar County Justice Center



Condensate from several floors drained into one area to feed system. No meter to measure yield to plan operation of fountain from reclaim system.



Development Services Condensate

Upgrades were needed to sustain functioning over time

- Ample water provided by AC condensate
- Irrigation controller needed replacement
- Float system malfunction addressed
- Scheduling training for staff



Maintenance Concerns

- Clean Water
 - Roof
 - Screens
 - First flush units
 - Biocide option
- Access to Equipment
- Operational Parts
 - Floats
 - Air Gap; potable back-up
 - Pump
 - Controller
- Scheduling
 - Sustainability
 - Balancing availability with run times & water windows
- Standard irrigation problems
 - Irrigation attached to reclaim must be maintained as well
 - Typical problems can double water usage

Eco-Centro Simple = Easy Care



SUMMARY

- We can help ensure reclaim works
 - Design
 - Construction
 - Commissioning
 - Maintenance Budget & Plan
- Sustainability?
 - Match landscape & irrigation to project
 - Do project to have it work...not for green bling



Quiz: What is wrong with this picture?

For more information

- American Rainwater Catchment Systems Association

<http://www.arcsa.org/>

- Texas Water Development Board

<http://www.twdb.state.tx.us/>

Questions? karen.guz@saws.org

GardenStyleSA.com

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