



Memorandum

To: Sparacino Concrete
Date: April 6, 2009

From: James Allen, Environmental Scientist

Subject: *Rainwater Catchment and Greywater System, 546 Smilax Road, San Marcos, California*

The purpose of this memo is to provide you and your client with information about rainwater catchment systems and greywater systems. The information is separated into three categories: 1) general description; 2) how these systems can be used at your site; and 3) why these systems are important.

1. General Descriptions

Rainwater Catchment Systems: Most rainwater catchment systems direct rainwater from gutter downspouts into aboveground tanks or underground cisterns for storage. However, all the water that falls on a property can be incorporated into rainwater catchment systems, either through French drains or simple earthworks (berms, swales). Once stored, the water can be used for a variety of purposes (usually landscaping). Additionally, rainwater from coastal onshore flow is one of the freshest sources of water available and it can be used in the household (including drinking if run through a particulate filter).

Greywater Systems: Greywater consists of a household's non-sewage wastewater, as opposed to blackwater, which is water from toilets. Greywater systems use separate pipes to direct greywater from the home and into a collection system where it can be reused for landscaping. Based on our research, greywater systems are the future for Southern California and someday will be mandated by local building codes.

2. How Rainwater Catchment and Greywater Systems Can Be Used At Your Site

Rainwater Catchment: We reviewed the Google Earth map for 546 Smilax Road. Our review showed that the property area was approximately 20,700 ft² and the roof area was approximately 3,550 ft². Additionally, the City of San Marcos Stormwater Manager estimated that annual rainfall in your area is between 11 and 15 inches (we used 13 inches for our estimates). Based on these numbers and the general rule of thumb of 1-inch of rain results in 600 gallons of water, Allterra came up with the following estimates:

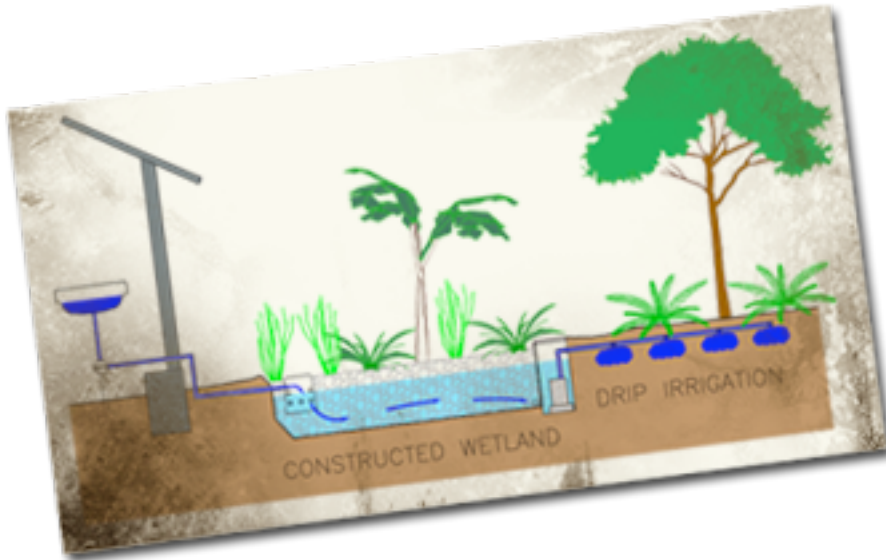
One-Inch Storm (a big overnight storm):

- 12,400 gallons of water falls on the property
- 2,100 gallons of water falls on the roof

Annual Rainfall (13 inches of rain):

- 161,000 gallons of water falls on the property
- 27,000 gallons of water falls on the roof

Greywater System: Our review of the property layout indicated a large backyard with lots of potential for using greywater. If properly designed and installed, the household could have a lush garden with a constructed wetland and drip irrigation system (recently featured on the Green Channel) (see sketch below). In addition to the aesthetics of the landscaping, the average household can save 38,000 gallons of water if a greywater system is installed.



Sketch – Greywater System

3. Why These Systems Are Important:

Drought conditions are impacting the entire State of California, and the meteorological data trends suggest that it is going to get worse. Even the State Government is concerned about current and future water issues, as indicated by the State of California’s proposed Recycled Water Policy, which opens with:

“California is facing an unprecedented water crisis. The collapse of the Bay-Delta ecosystem, climate change and continuing population growth have combined with a severe drought on the Colorado River and failing levees in the Delta to create a new reality that challenges California’s ability to provide the clean water needed for a healthy environment, a healthy population and a healthy economy, both now and in the future.”

While water problems are regional, even global, the solutions remain local-scale. Individual action, in the form of maximizing rainwater catchment and water recycling, is the solution to regional water scarcity.

If anyone has any questions or comments, please send me an email at james@allterraenv.com.