



# Green Infrastructure & Stormwater Management CASE STUDY

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## Kaiserman residence

**Location:** 4515 Hwy A1A, Melbourne Beach, FL

**Client:** Carl & Judy Kaiserman

**Design Firm(s):** Carl Kaiserman, AIA

**Landscape architect/Project contact:** Carol Kaiserman, AIA

**Email:** [carl@kaiserman.net](mailto:carl@kaiserman.net)

**ASLA Chapter:** None

## Project Specifications

**Project Description:** The entire 1,600 sq/ft standing seam aluminum roof of this single family home acts as a stormwater collection surface, directed to a single 1,000 gallon on-grade cistern. Less than one inch of rainfall will fill the tank. The location of the home along the Atlantic shore in Central Florida provides sufficient annual rainfall (36 to 50 inches) to maintain a constant source for the exclusive use of toilet flushing. This saves so much water for homeowners the 1,500 gallon monthly usage water bill of \$15 is rarely exceeded.

### Project Type:

Single family residential

Part of a new development

**Design features:** Bioswale, cistern, and porous pavers.

### This project was designed to meet the following specific requirements or mandates:

Provide an eco-friendly dwelling

**Impervious area managed:** less than 5,000 sq/ft

**Amount of existing green space/open space conserved or preserved for managing stormwater on site:** Because of the stormwater collection and reuse, we estimate 12,000 gallons of potable water is saved annually by this single household. And because this home uses a septic system to return waste water to the site, the net "taking" from groundwater is negligible.

**The regulatory environment and regulator was** unreceptive/hostile to the project.

**Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? No.**

## Cost & Jobs Analysis

**Estimated Cost of Stormwater Project:** <\$10,000 (Public funding: None )

### Related Information:

- Gutters on all roof edges, downspout to cistern
- 1,000 gallon polystyrene cistern
- SS sump pump, bladder pump, wiring and controls
- Separate non-potable supply piping to all 4 low flow dual flush toilets
- Check valves at connections to city makeup water for drought condition backup

**Was a green vs. grey cost analysis performed?** Yes, this saves so much water for homeowners that the minimum 1,500 gallon monthly usage water bill of \$15 is rarely exceeded. Previous usage bills by the same owners at a prior local residence were three times the cost. Savings of \$30 each month translate to a 6 year payback (\$3,600 investment) at current water rates.

**Cost impact of conserving green/open space to the overall costs of the site design/development project:** Not applicable.

**Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)?** Slightly increased. A cistern overflow connects to a system of perforated piping, located at foundation footing level and emerges into an on site porous swale

**Number of jobs created:** One

**Job hours devoted to project:**

Planning and Design: 36

Construction: 8

Annual Maintenance: 3

## Performance Measures

**Stormwater reduction performance analysis:**

No stormwater leaves the site.

**Community & economic benefits that have resulted from the project:** The reason I submitted this example was to show that even a very modest addition to water conservation

through the capture and reuse of stormwater (much cleaner than graywater) for home toilet flushing is relatively simple and economic. Like solar HW, this is a quick payback item that should be standard in all new housing in areas with even modest rainfall.

### **Additional Information**

**Links to images:** Available on request from Owner/Architect [carl@kaiserman.net](mailto:carl@kaiserman.net)