Project Description
Team Orange Water Resources (TOWR) worked with McParlane & Associates and Nuvis Landscape Architecture & Planning to design Casa Del Sol’s residential water and irrigation system for the Solar Decathlon 2015 competition. Unlike the traditional residential water system, Casa Del Sol utilizes advanced water saving techniques designed to combat the effects of California’s exceptional drought and diminishing water supply.

Team Organization
4/23/2014 Schematic Design Summary
9/9/2014 Engineering Design 80%
9/15/2014 RS Means Cost Estimate 80%
9/30/2014 Construction Drawings 90%
10/15/2014 Design-Build Phase
2/12/2015 Construction Drawings 95%

Design Approach
Landscape
- Grey Water Reuse
- Hydroponics
- Drip
- Soil Humidity
- Rain Catchment
Tank and Pump Sizing
- Fresh Water Tanks
- Grey Water Tanks
- Pressure Tanks
Water Budgeting
Energy Load Analysis
Piping
- Domestic Lines
- Waste Lines
- Pipe Materials
Grey Water Drainage
- Drainage Slope
- Linear Shower Drain
- Hazard:
- Spill Containment
Dimensional Analysis
- Sizing NW Corner and Mechanical Room
- Fire Sprinklers

Design Constrains and Parameters
- International Residential Code 2012
- Solar Decathlon Building Code
- Water Consumption Based on Competition Schedule
- Green Building Code

Final Design Results
Designs set for construction as of 2/12/2015

Environmental Documentation
Casa Del Sol is an environmental friendly net-zero house participating in the U.S. Department of Energy’s Solar Decathlon. Environmental documentations are regulated by the USDOE during the competition. After the competition, Casa Del Sol will rest at a permanent site location (TBA). Environmental documentation will be completed accordingly once the site is determined.

Cost Estimation
Plumbing Fixtures - $15,479
Domestic Water Distribution - $3,210
Sanitary Waste - $2,162
Rainwater Drainage - $2,700
Solar Tube Collector - $2,930
Collector Controls - $1,120
Fire Sprinklers - $4,446
Total Cost - $32,047

Plan For Next Phase
2/15/2015 Construction Phase
10/1/2015 Competition