

CEEn-2016CPST- 003

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LID Approach Effectiveness & Functionality

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Background Information

- Recently, the EPA has required municipalities in Utah to design their stormwater systems to retain the 90th percentile storm on site
- In the past, stormwater would be piped to a river or stream
- Spanish Fork City has implemented a LID stormwater system that utilizes R-Tanks to retain the water on site
- Our job was to analyze the system to check its compliance, provide possible design improvement suggestions, and to investigate silt build-up to develop a maintenance schedule.



Findings

- 90th percentile storm = 0.54in
- LID systems exceeded EPA standards in Spanish Fork
 - Total runoff volume = 2301 ft³
 - Total system volume = 4635 ft³
- LID performance varied for the 5, 10, 25, 50, and 100 year storms depending on soil quality.
 - Poor soil drainage caused R-tanks to overtop in these cases analyzed
- We observed problems with leaf build up in R-tank entrances
- Poor initial layout of R-tanks by contractors resulting in complications

Storm Intensities	Runoff Volume (pcf)	Drainage Time (hrs)
100 years storm	28002	0.306
50 years storm	23727	0.259
25 years storm	19608	0.214
10 years storm	14730	0.161
5 years storm	11274	0.123
90th percentile storm	2301	0.025

Recommendations

- Use water meter vault to provide access to already constructed systems to provide access for cleaning
- For future systems, use a wire mesh (i.e. Chicken wire) to cover the entrance and “filter” leaves and larger debris
- Improve inspection procedures during construction
- For sites with poor soil, if overtopping is a concern, the R-tanks could be stacked deeper to increase storage volume.

