

# Building a Better Rundown

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2017 UDFCD Annual Seminar



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Stream Services

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UDFCD budgets maintenance project. At the start of design we do a field visit. We primarily look at stream instability and contributing problems.

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On Willow Creek upstream of Arapahoe Road. One of those contributing problems was a **lovely** grouted riprap rundown.

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Alternative 1



Alternative 2



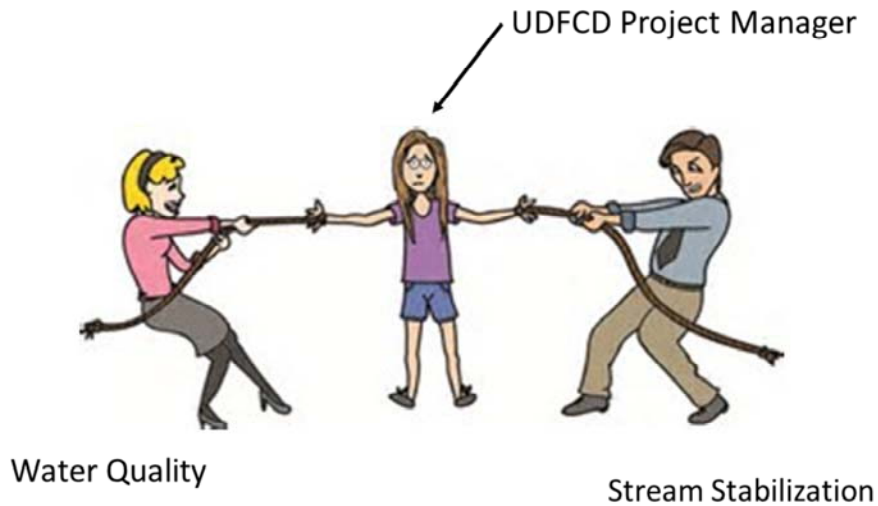
Alternative 3

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Through the design we looked at some alternatives.

## Building a Better Rundown Mental Models



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What about water quality? Historically, UDFCD didn't include water quality in maintenance projects, our old mental model that often initiated a game tug of war. Do we really need to choose a side or fight? Can we accomplish both? Within the same cost?

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UDFCD Project Manager

Project Team

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We challenged the project team to come up with a solution to meet both stream stabilization and water quality goals. This approach led to team learning.

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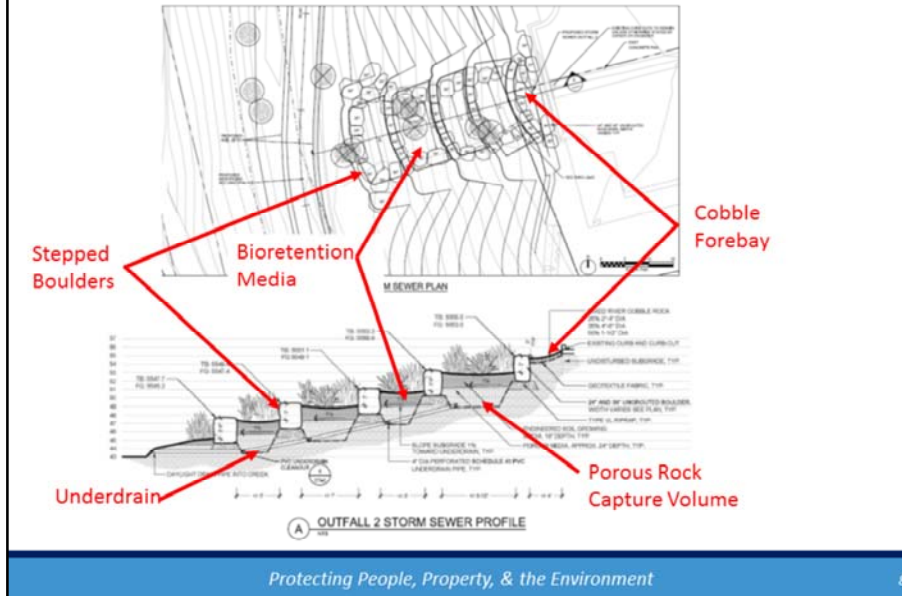


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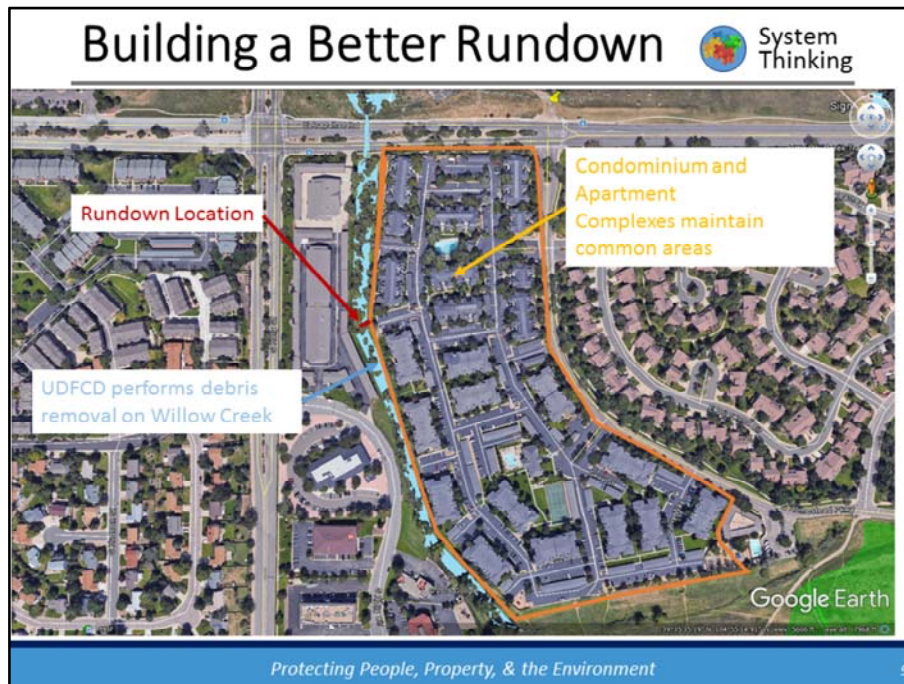
A boarder look at the problem and to innovation.

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The concept of a stepped boulder rundown with a water quality component included. Pools form between ungrouted boulders incorporate bioretention similar to a rain garden. Note cobble forebay area, filter fabric, and underdrain.





Systems thinking caused us to think of how would the rundown function and perform over time. Who is going to maintain? Local Government? HOA? A look into the whole system helped us with the solution. UDFCD will perform typical debris maintenance with Willow Creek. If we make it a nice enough amenity, Condos and Apartments provide water and likely maintain with other common areas. SEMSWA and HOA to cleanout and replace Water Quality Media.

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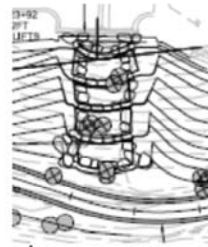
\$15,000



Priceless



\$35,000



\$15,000

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How did the costs compare? For about the same cost (excluding a bit extra for the design development) as the inlet and drop manhole, we could install the improved rundown with water quality. Why not?

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Here's what it looks like!

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Thanks to a great team.

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Mental  
Models



Team  
Learning



System  
Thinking



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To build a better rundown; we had to break the old mental model of only stream stabilization. We embraced team learning to find a solution that met both objectives of stream stabilization and water quality at about the same cost of other alternatives. We used systems thinking to figure out shared maintenance of the rundown and to help preserve its' function over time.