

## **Green Stormwater Infrastructure: Stormwater Harvesting and Reuse - Commercial Cisterns**

[00:07] Eban Bean: We're here now at a commercial site where they've installed three cisterns. These are each about 500 gallons, to capture the roof runoff. They are using this water now for irrigation in the landscape. There's quite a bit of volume that can be generated from the rooftop whenever there's a rainstorm.

[00:26] Eban Bean: The key, though, with the effectiveness of reducing the runoff is that you've got adequate storage. So, in kind, it's also important that there's a use that's using that water and recovering that storage volume, so that the next time there's a rain event, there's available capacity to capture that volume.

[00:46] Mark Clark: So, when you're thinking about rainwater harvesting, you're really thinking about, what's my catchment area, how much water can I generate? But then, equally important, how do I store that water, so that I can capture the volume and then reuse it, but lastly make sure that you actually use the water, because once this is full, it doesn't store any more water. You've got to recover that volume, so you get the next rain event.

[01:09] Eban Bean: That's right.

[01:10] Mark Clark: So, what's different about this setup than the rain barrel we saw?

[01:13] Eban Bean: Well, Mark, it's essentially the same conceptual layout but they achieve it differently. If you look at how the downspout comes down, and there's a Y. That pipe continues down and it fills this pipe up initially. This is what we call that first wash off, that first flush that comes off the roof. Any material is going to collect down here, so that that can be cleaned out every so often.

[01:35] Eban Bean: So, what we have down here is a clean-out, where if there's any leaves or debris off the roof that comes off, you can collect down here in the bottom. And we can pull that out and perform that maintenance. And then that cap just screws back in there.

[01:48] Eban Bean: The water then, after this is filled up, then bypasses and goes into, the cistern.

[01:53] Mark Clark: Starts filling up the cistern.

[01:54] Eban Bean: That's right. And so, as water fills up in here, then, once water gets up to this level, it would then start to overflow, so we don't want to overflow the cistern, and they've got an overflow here that's directed into the landscape to allow and disperse that extra water.

[02:11] Eban Bean: We also have this connected to a pumping system where it's providing irrigation to this landscape on a regular basis.

[02:18] Eban Bean: What we have here is the outlet for where the cistern would discharge to the pumping system. And we have a valve here that can be closed, for example if this cistern needs to be taken off-line and maintained. And then here we have the connection that goes on to the irrigation and pumping system.

[02:36] Mark Clark: So, when the pump kicks on, which typically either would be supplied by potable water or maybe a groundwater well, instead, it's tapped into this water you captured during the rain event, and so we're essentially saving on ground water, we're still irrigating our landscape, great opportunity to do rainwater harvesting.

[02:52] Eban Bean: That's exactly right. And you think about the size of this, that's quite a bit of savings on the water bill too, for the owner here.

[02:59] Eban Bean: So, Mark, somebody might see the size of these tanks and think that they're not the most aesthetic thing to have in the landscape. What can people do about that?

[03:07] Mark Clark: Yeah, it is a challenge. So, the smaller rain barrels can kind of be set up along your house and kind of out of sight. The larger the barrel, or the larger the cistern storage, we need to think about what we can do, and landscaping is one option to try to you know, block the view. Make sure the color of the cistern or the tank is kind of compatible with the house color, or green to blend in, but they also make these that can be put underground. So literally, we can take this whole tank and put it subsurface, so it's out of sight. A little more expensive per volume, a little more structural requirements, but still provide that tank, but it's out of sight.