

Smart Water Meter Overview

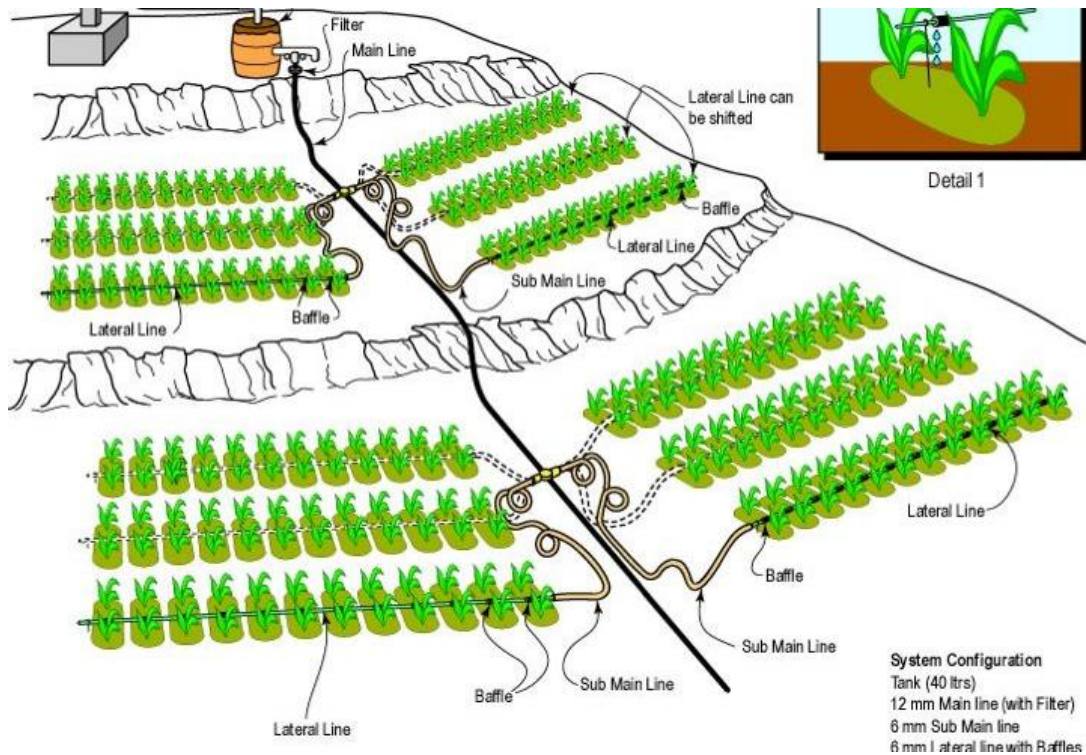
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January 22, 2021



University of Idaho
Extension
Latah County

This presentation



- Relationship to irrigation system
- Review of controllers
- ***Review Every Drop Meter***
- Soil Stewards Student Farm Irrigation Data
- Where to go for more information

Irrigation Components



Water source

Backflow preventer
pressure regulator



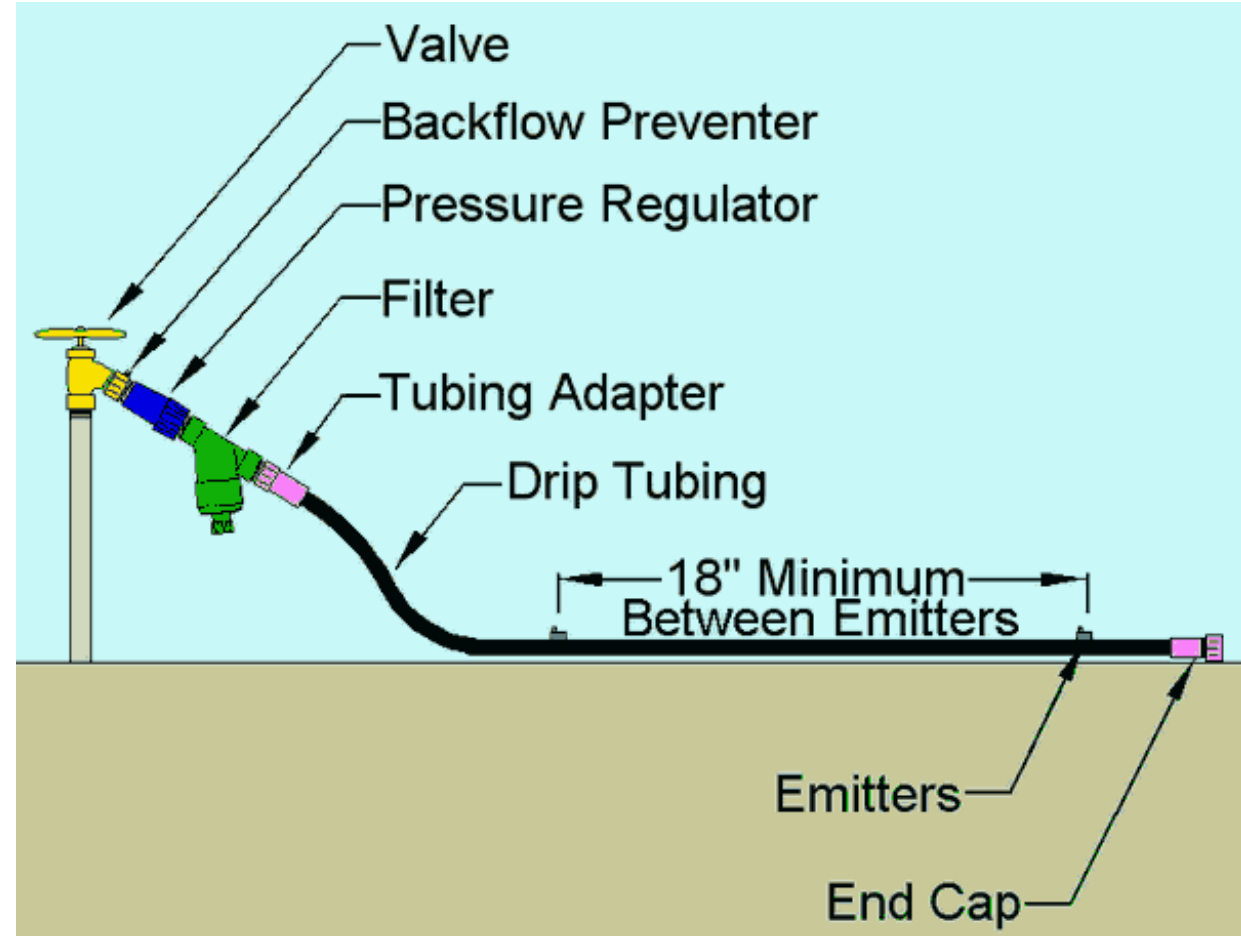
Valves



Delivery tubing, pipes or hoses



Emitters at the plant or on row



Irrigation Components



Water source

Backflow preventer
May need a pressure reducer



Smart Controller – eg. Rachio 3, Spruce, Sprinkle, OpenSprinkler



Power source



Water meter



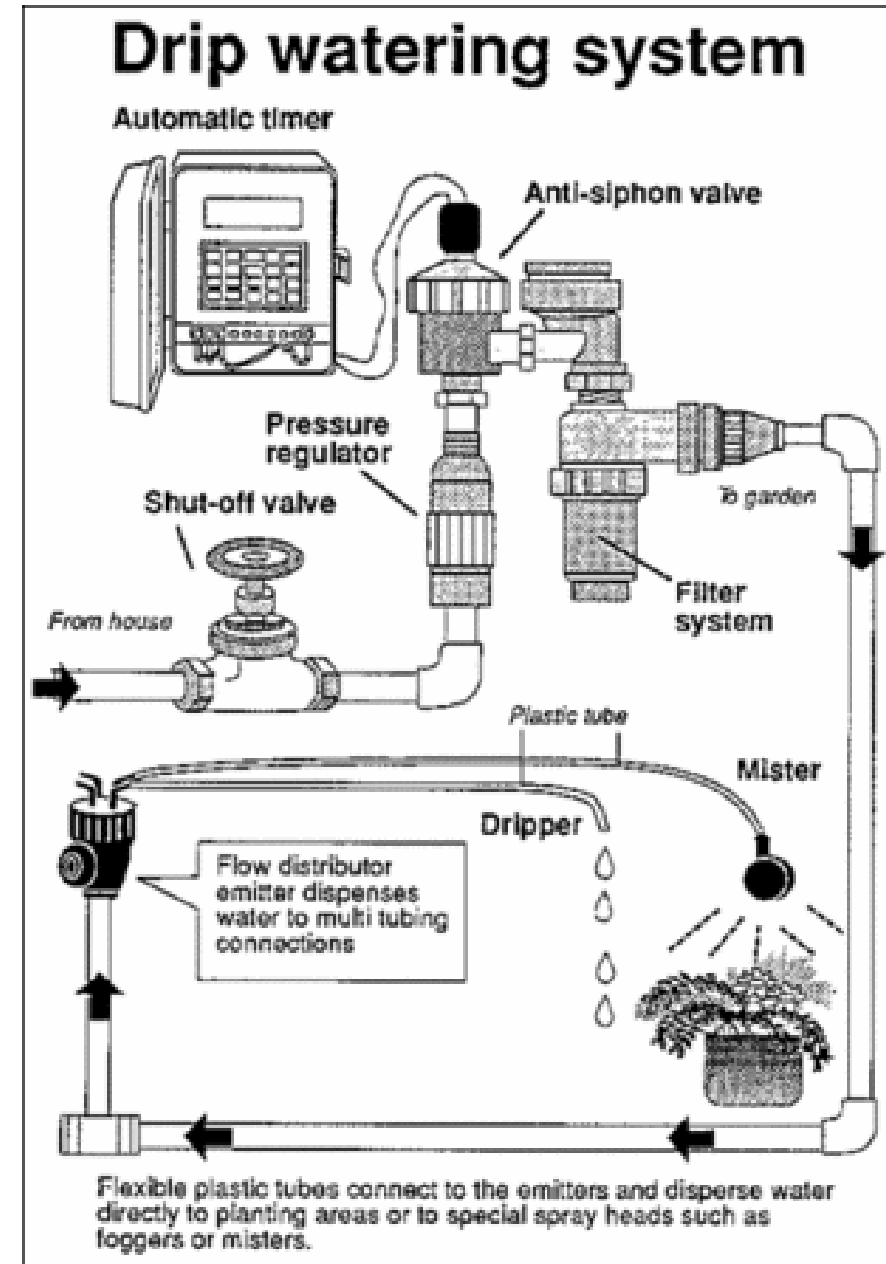
Valves



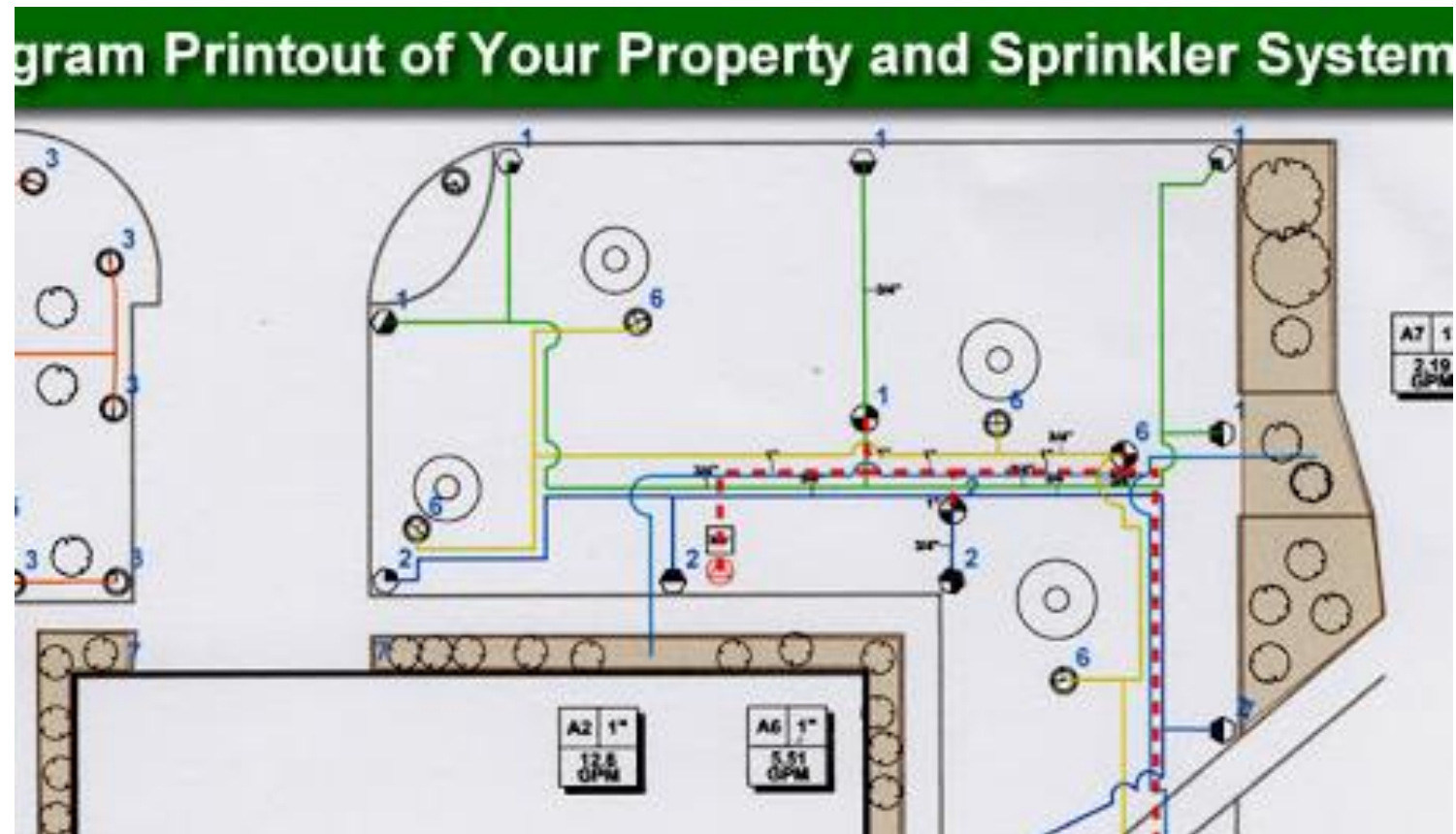
Delivery tubing, pipes or hoses & emitters



Sensors or weather data

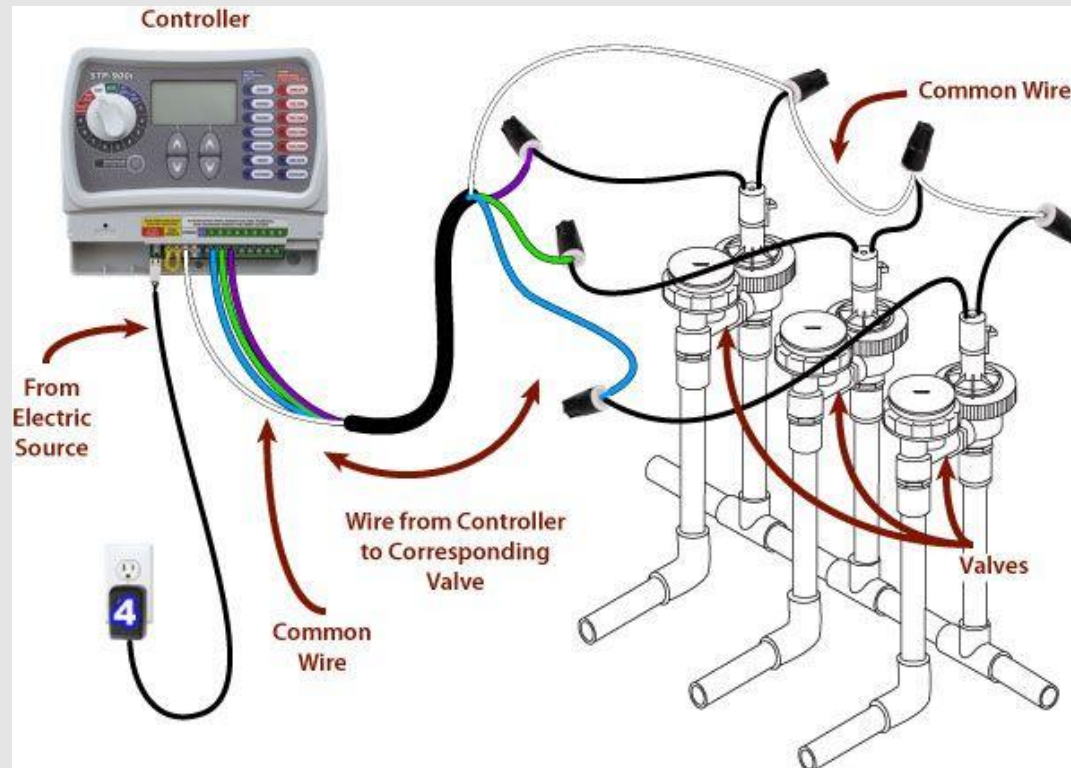


Basic Irrigation Design



- <https://www.coronaca.gov/home/showpublisheddocument?id=2132>
- <https://www.rainbird.com/sites/default/files/media/documents/2018-02/IrrigationDesignManual.pdf>
- <https://www.atsirrigation.com/do-you-know-the-6-major-parts-of-a-drip-irrigation-system/>

Controller and Valves



- Controllers allow you to apply the intended amount of water over time
- “Smart” technology communicates with your computer (or phone)
- “smart” technology responds to weather or sensor input

Smart Flow Meter – *Every Drop* Features

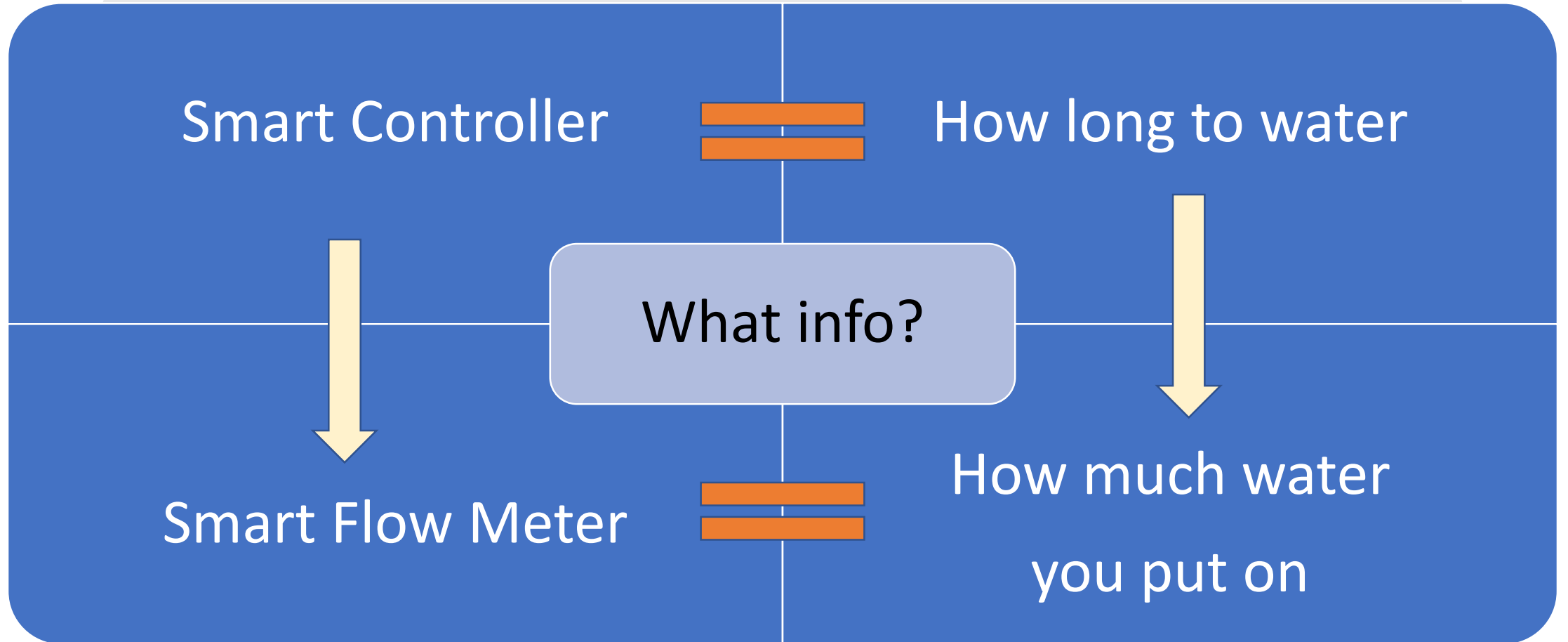


Can add it to an existing system

Collects water use data

Shuts off if a water leak detected

Why use a flow meter?



Every Drop Smart Water Meter Features

🔧 What does my flowmeter with smart controller tell me?



Smart Timer Warning

High Flow Alert!

Low Flow Alert!

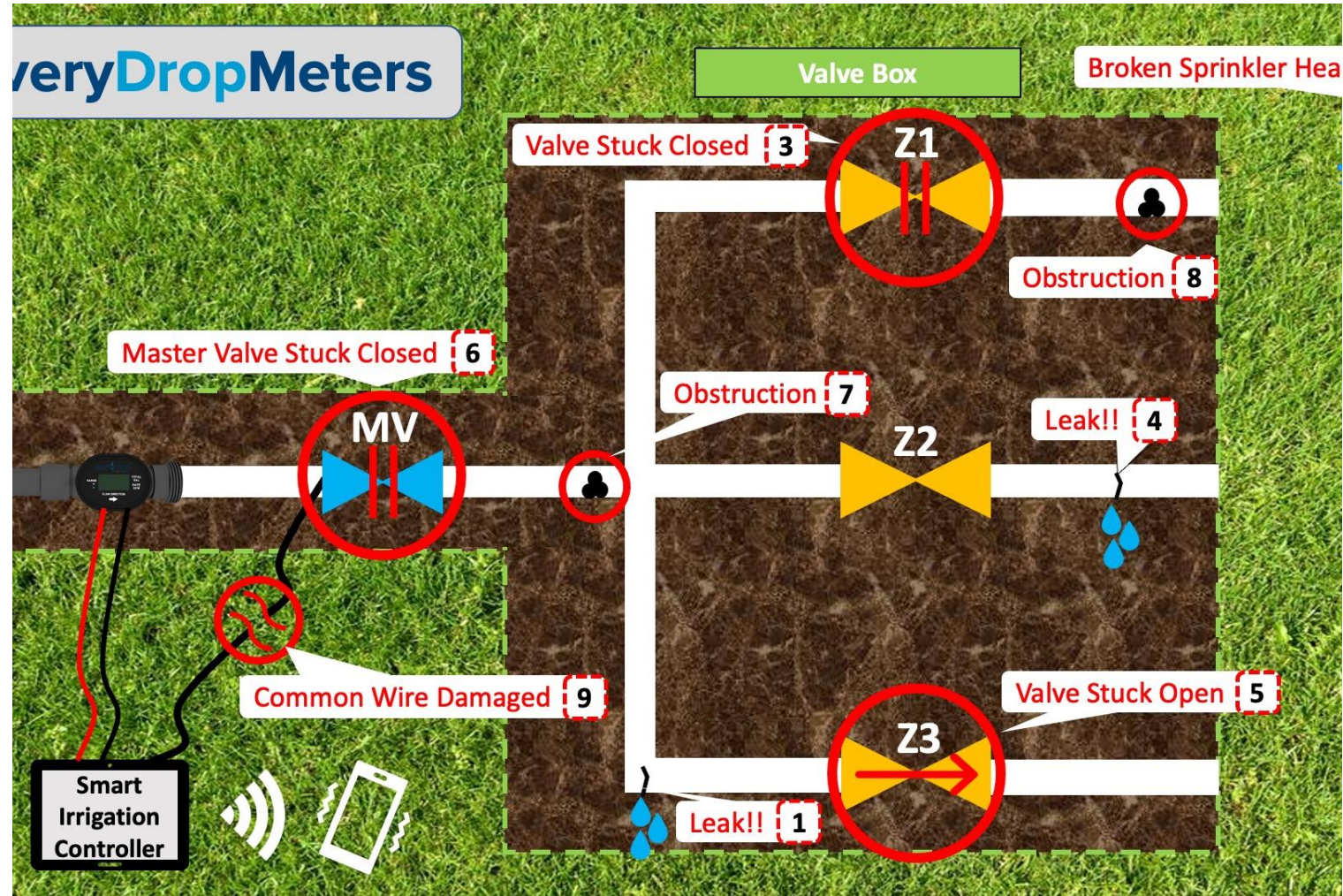
No Flow Alert!

	1 Zone	All Zones but 1	All Zones
High Flow Alert!	Head/nozzle popped off or leak on zone x 2 4	Valve stuck open On zone NOT Reading High 5	Leak in the system before valve box 1
Low Flow Alert!	Stuck or fluttering valve on zone x Obstruction in zone x line 3 8	N/A	Obstruction in line before valve box 7
No Flow Alert!	Stuck valve on zone x 3	N/A	Master Valve stuck shut Common wire(s) damaged 6 9

EveryDropMeters

- Affordable vortex technology
- Digital display
- Leak detection
- Connects with PVC pipe
- Water pressure must be below 30gpm
- Can be used in residential watering or on small acreage farming

everyDropMeters



Typical Failures in a Sprinkler System



Soil Stewards Farm Data

Credit: Tadd Wheeler



Example of one of the control systems being utilized. Capable of controlling Water delivery with traditional fixed programming or regulated By climate station data or soil moisture data



The flow meter communicates with the controller to log water Usage by zone and can also monitor for flow issues such as a leak Or no flow and shut the system down.





2020-08-09
to
2020-09-09



12804 gallons



73 hours

10 day change: 08/30 - 09/09
vs
08/20 - 08/30



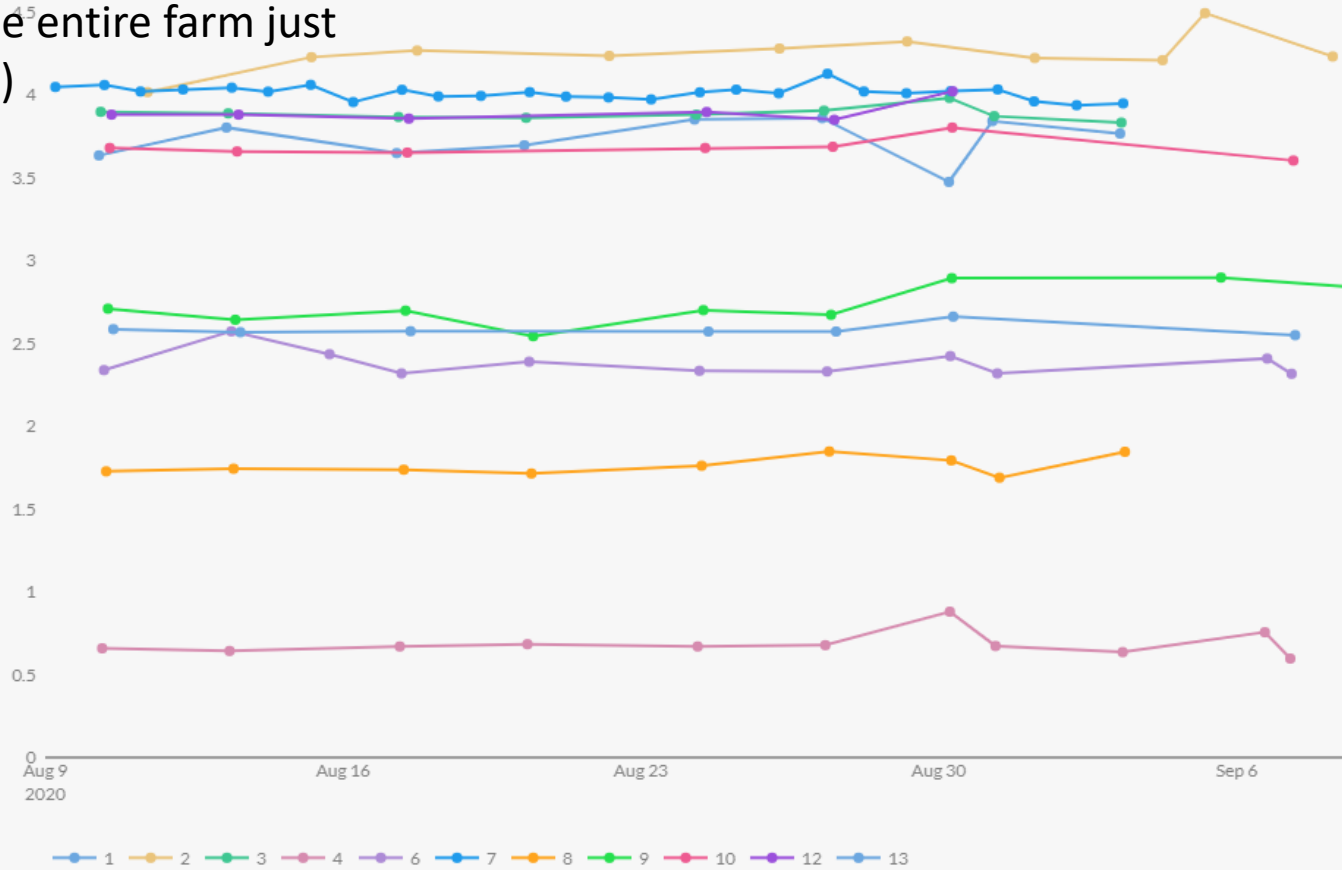
-31% Water usage



-28% Watering time

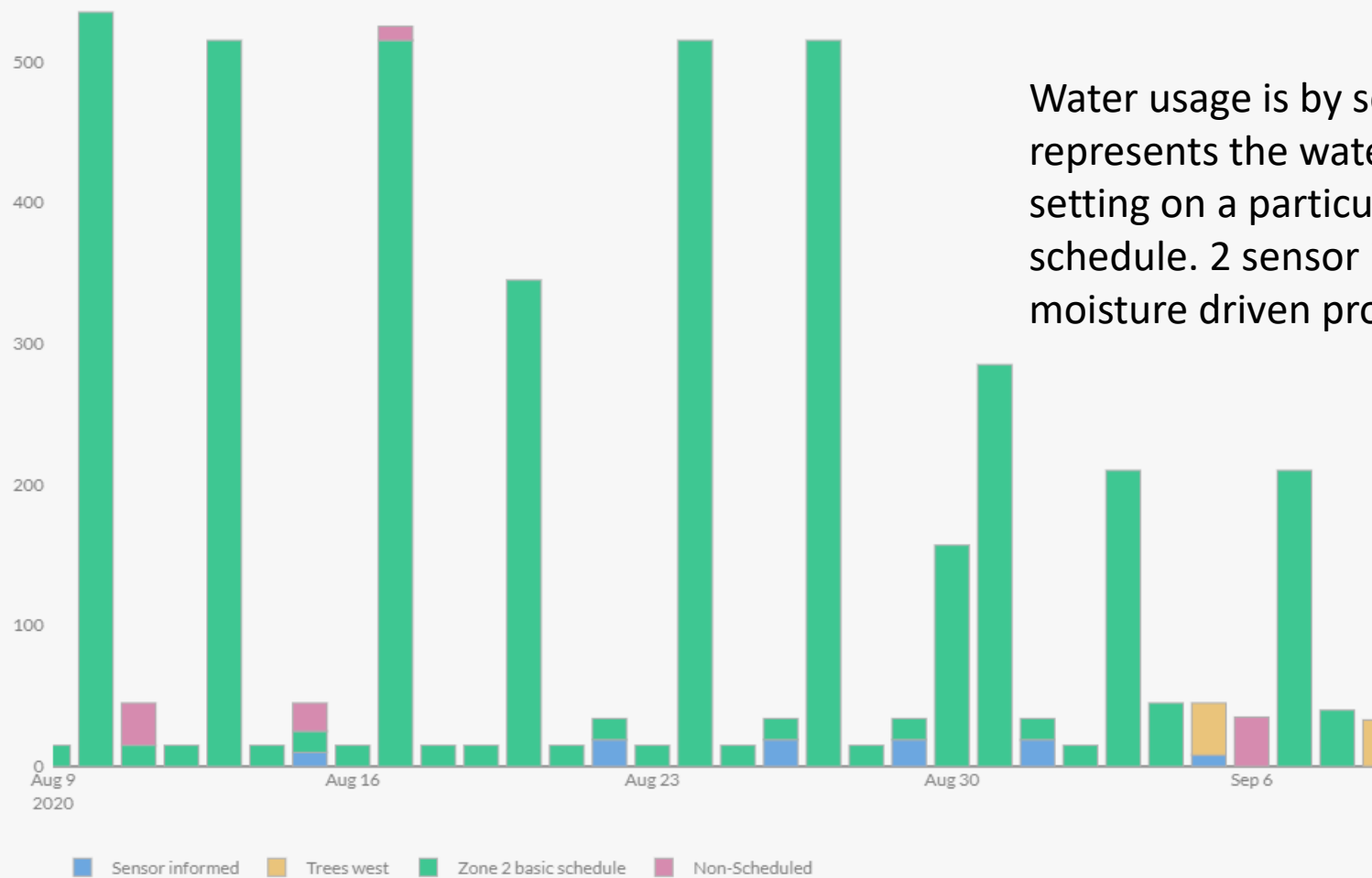
A collective total of 12,804 gallons were utilized by these zones from 8/9-9/9 (this isn't the entire farm just beds 2 and part of 3)

Flow Meter GPM, by Zone



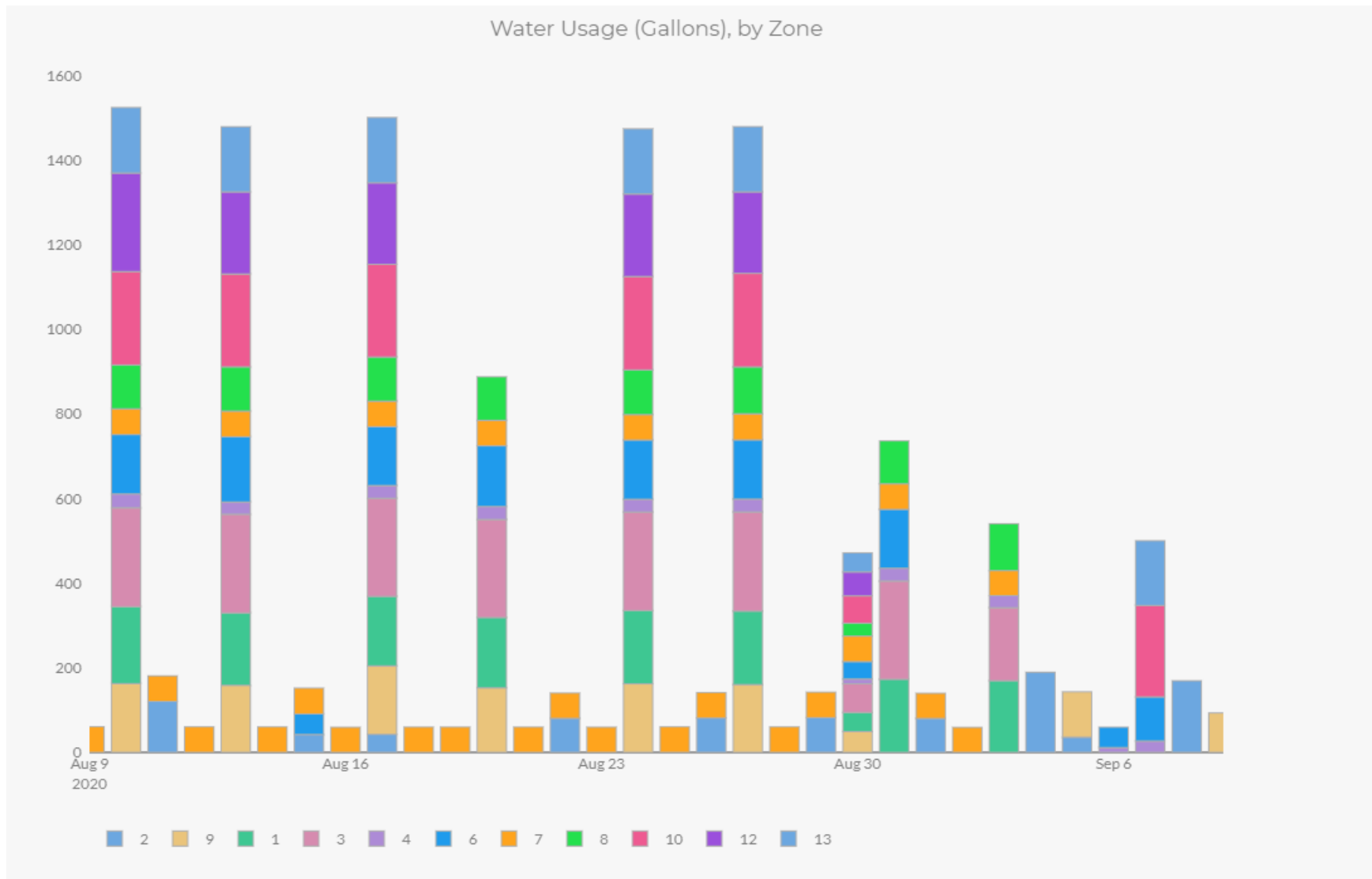
The controller has logged the water usage for each zone, each time that zone was run. The water usage is a function of the size and number of drippers per zone and the amount of time the zone was programmed to run. Variability within a zone was either due to being moisture sensor informed or someone manually watering.

Water Usage (Minutes), by Schedule

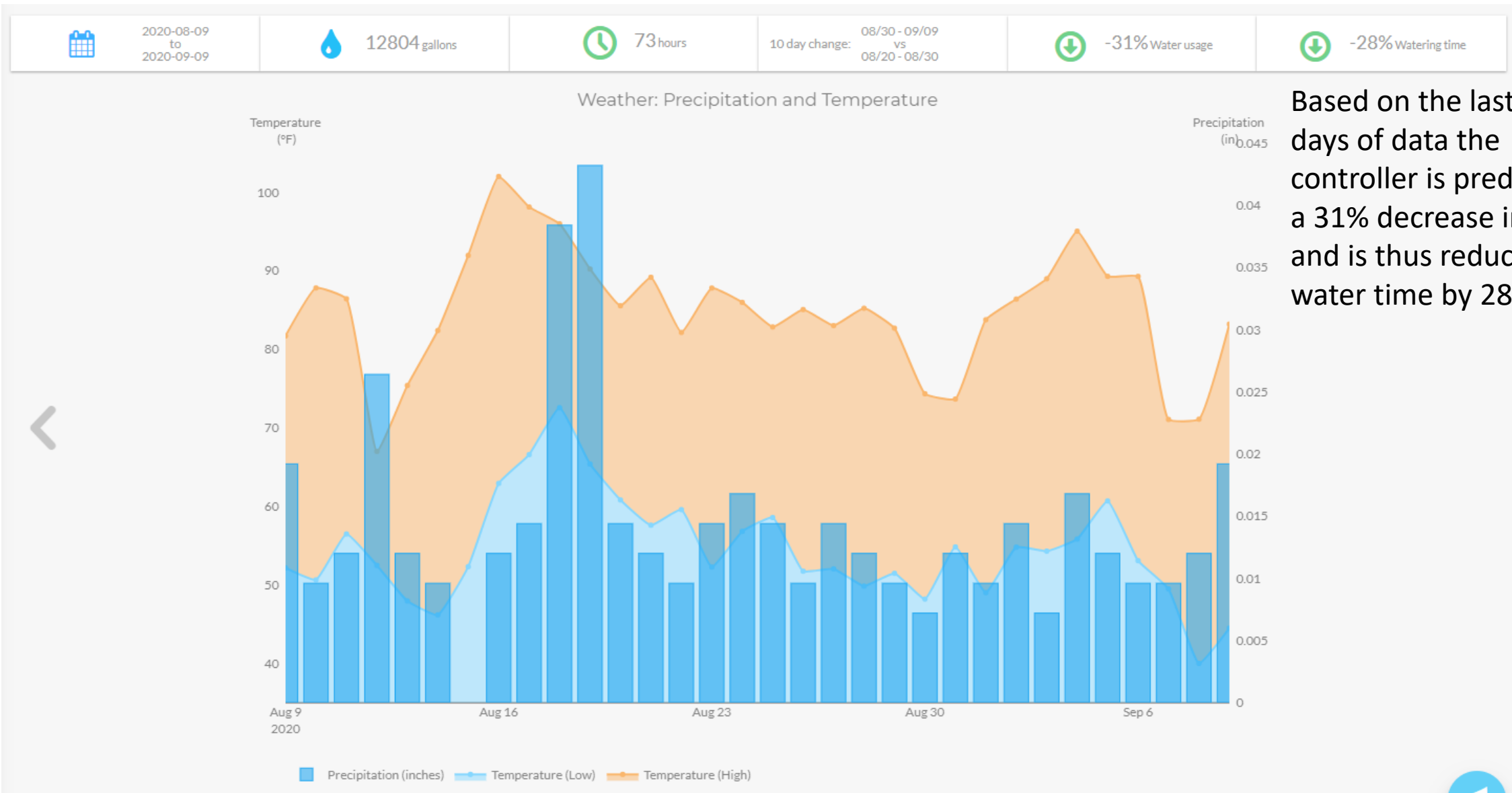


Water usage is by schedule rather than zone. Each bar represents the water of all the zones for a given program setting on a particular day. ~ 12 zones for the basic schedule. 2 sensor informed and trees west on their own moisture driven program.

Most of the zones were traditionally programmed this year as we worked out the bugs but there is a stark difference in the water frequency between those zones operating under sensor informed programs (blue and yellow) and those set to a fixed schedule (green). The non schedule I believe is when zones were manually watered for some reason. Some trials could be set up next season to better compare water usage by management method.

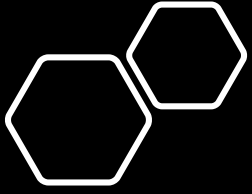


With proper record keeping in the future we will be able to tease out water usage by irrigation management strategy, zone, crop, etc.



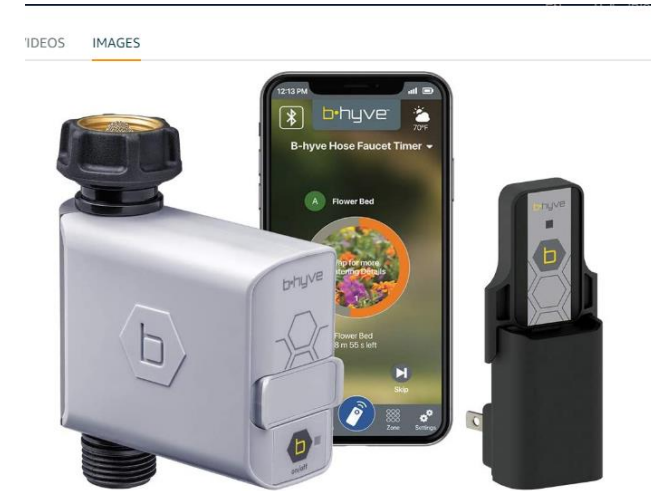
Based on the last few days of data the controller is predicting a 31% decrease in ET and is thus reducing the water time by 28%

The spruce controller communicates with a local weather station (Pullman in our case) and the data used if permitted to alter water duration and frequency.



Other Options

- b-hyve – uses weather data but does not link to sensors in your field
- Gardena – tracks water but does not “communicate” with your computer or phone



business prime All smart water meter for irrigation

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1-48 of 281 results for "smart water meter for irrigation" Sort by: Featured

Amazon Prime
 prime





Seller Type
 Business Seller

Department
 Patio, Lawn & Garden
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 Flowmeters
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 See All 12 Departments

Avg. Customer Review
 ★★★★★ & Up
 ★★★★★ & Up
 ★★★★★ & Up
 ★★★★★ & Up

Brand
 BLACK+DECKER
 AmazonBasics
 Weber

Price and other details may vary based on size and color

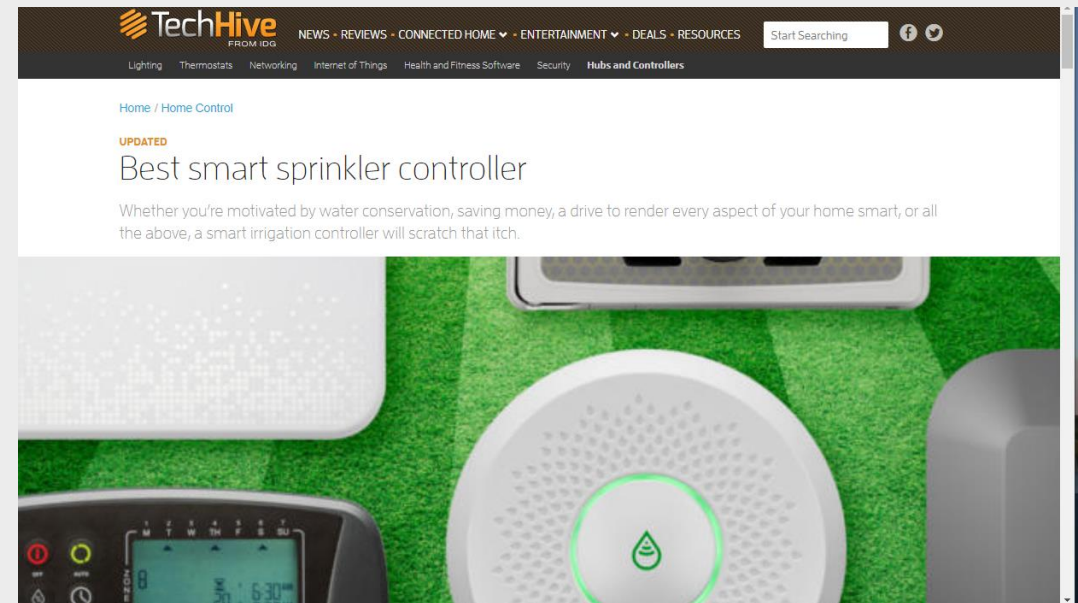
 <p>Orbit 21004 B-hyve Smart Hose Faucet Timer with Wi-Fi Hub, Compatible with Alexa ★★★★★ ~ 3,087 \$44⁹⁵ \$79.99 Unlock up to 50% with Progressive Discounts prime FREE Delivery Thu, Jan 21</p>	 <p>LinkTap G2 Wireless Water Timer & Gateway & Flow Meter - Remote Hose Timer for Lawns & Gardens - Easy... ★★★★★ ~ 393 \$139⁰⁰ prime FREE Delivery Thu, Jan 21 More Buying Choices \$112.55 (4 used & new offers)</p>	 <p>Orbit B-hyve 8-Zone Smart Indoor Sprinkler Controller ★★★★★ ~ 722 \$59⁹⁸ \$79.99 FREE Delivery by Tue, Jan 26 for Prime members Only 4 left in stock - order soon. More Buying Choices \$44.53 (32 used & new offers)</p>	 <p>Best Seller DAE AS200U-75P Water Meter with Pulse Output, 3/4" NPT Couplings, Measuring in Gallons ★★★★★ ~ 87 \$75²⁴ \$76.00 \$67.72 with quantity discounts prime FREE Delivery Thu, Jan 21</p>
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Sources

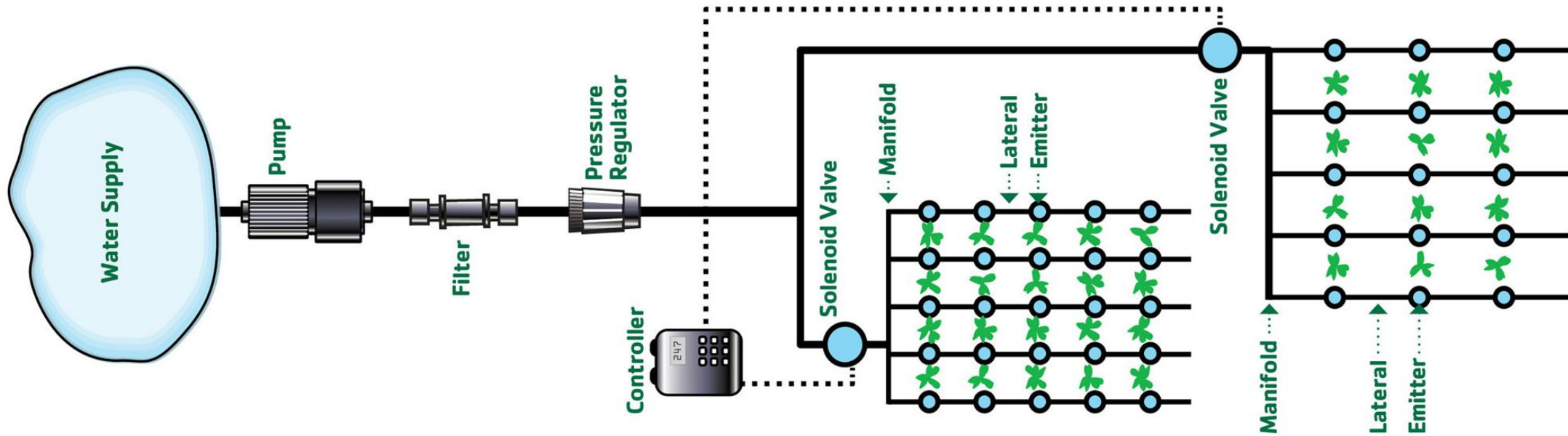
- Amazon
- Drip Works
- Every Drop
- Rain Bird
- Spruce

Reviews

- <https://www.techhive.com/article/3220478/best-smart-sprinkler-controller.html>
- <https://gardeningfreak.com/best-water-meter/>



Installation Next Steps



1. What do I need to learn more about?
2. Evaluate Existing System
 - Do I have a power source?
 - Do I need a new faucet?
 - Do I need additional supplies or equipment?

3. Plan new system elements
 - Draw system elements on a plan
 - What power source will I use?
 - How many sensors do I need?
 - Where will the flow meter be located?
 - Is this good for my soil type?

- We will post a link!

Homework: Video Tour of Soil Stewards Student Farm Irrigation System





Questions and Answers

