

Drip Irrigation Set Up and Operation

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Irrigation System and Product Improvements



Irrigation System and Product Improvements



Efficient watering is the goal

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We want to give the plants the amount of water they actually need.



Why Irrigate?

- When a plant can't get enough water from the environment
- Four irrigation situations
 - Temporary: after transplanting
 - Temporary: during drought
 - Permanent: Using plants not adapted to available moisture conditions
 - Permanent: in areas that have no natural water source (Pots and indoors)
- Irrigation systems
 - Sprinkler (spray) vs. drip/low volume



Irrigation Hydrozoning

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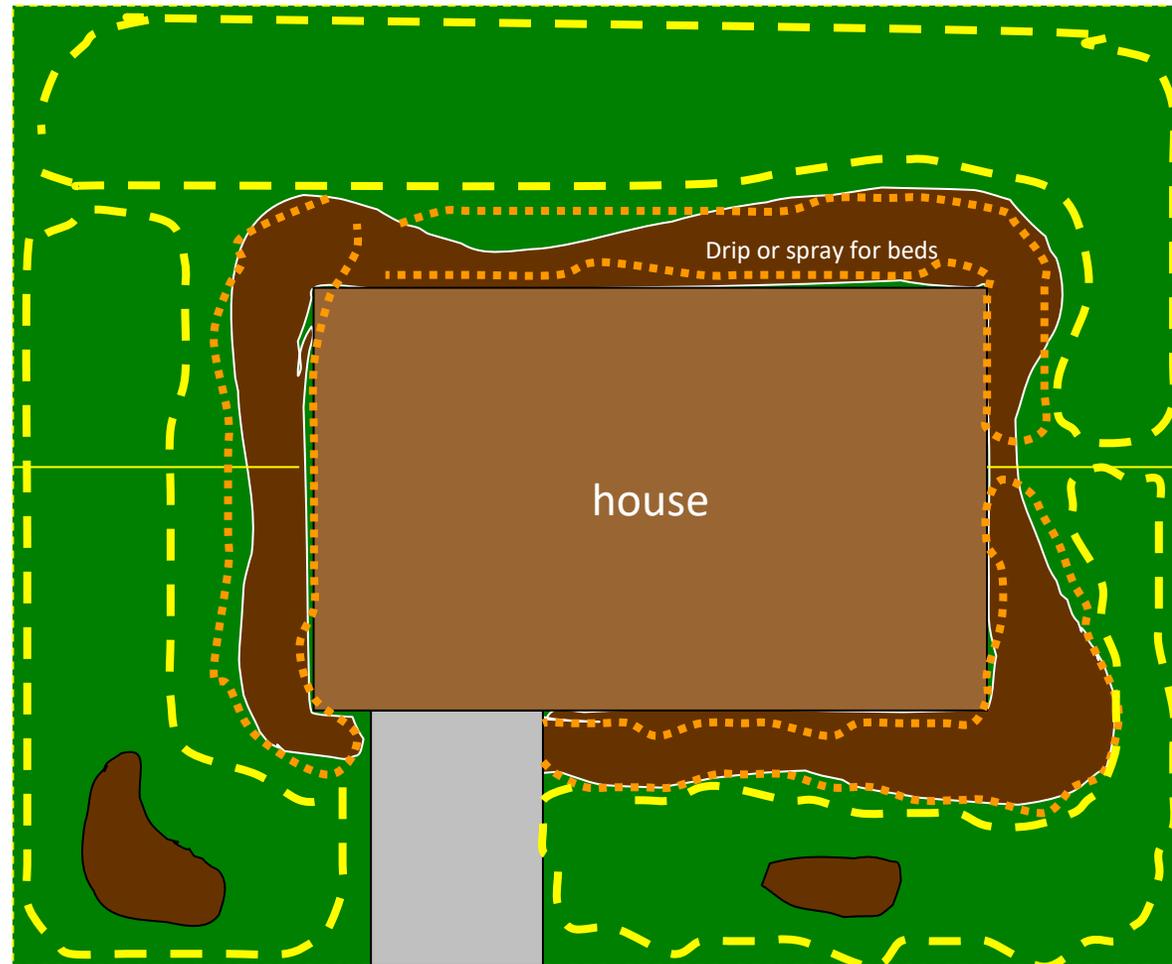


Separate irrigation zones should be based on:

- Turf
- Shrub/Flower beds
- Exposure/Micro-climate conditions
- Soil types

Run time is based on:

- **Seasonal changes in temperature.**





Determining Flow Rate

- Use an empty bucket.
- *Fill the bucket for a minute and you have your number.*
- *You can also...*
- *Fill for half a minute and double the gallons.*
- *Fill it for 15 seconds and x by 4.*



			Assume Gravity to Low Pressure. About 6f/s flow velocity, also suction side of pump		Assume Average Pressure. (20-100PSI) About 12f/s flow velocity		Assume "High Pressure" PEAK flow. About 18f/s flow velocity*	
Sch 40 Pipe Size	ID (range)	OD	GPM (with minimal pressure loss & noise)	GPH (with minimal pressure loss & noise)	GPM (with minimal pressure loss & noise)	GPH (with minimal pressure loss & noise)	GPM (with significant pressure loss & noise)	GPH (with significant pressure loss & noise)
1/2"	.50-.60"	.85"	7 gpm	420 gph	14 gpm	840 gph	21 gpm	1,260 gph
3/4"	.75-.85"	1.06"	11 gpm	660 gph	23 gpm	1,410 gph	36 gpm	2,160 gph
1"	1.00-1.03"	1.33"	16 gpm	960 gph	37 gpm	2,220 gph	58 gpm	3,510 gph
1.25"	1.25-1.36"	1.67"	25 gpm	1,500 gph	62 gpm	3,750 gph	100 gpm	5,940 gph
1.5"	1.50-1.60"	1.90"	35 gpm	2100 gph	81 gpm	4,830 gph	126 gpm	7,560 gph
2"	1.95-2.05"	2.38"	55 gpm	3300 gph	127 gpm	7,650 gph	200 gpm	12,000 gph

Water Pressure

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- *Water pressure that is too high or too low can cause problems.*
- *Misting spray heads and water hammer are signs of high pressure*
- ***Heads that don't pop up and dry spots are signs that pressure is too low***
- *Drip Irrigation- 10-30 psi*
- *Spray Irrigation- 30-50 psi*



Backflow Preventer (culinary systems)

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Prevents contaminated water from being siphoned into the house.

Required by most city ordinances.



Pressure Regulator (PRV)

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Keeps system pressure
within optimal range.

Reduces wear on
equipment.

Improves system
efficiency.



PVC vs Poly Pipe

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PVC

Poly Pipe



PVC vs Poly Pipe

The logo for Localscapes.com is located in the top left corner. It features the word "Localscapes" in a white, cursive-style font, with "Localscapes.com" in a smaller, white, sans-serif font directly below it. The logo is set against a dark green circular background. To the left of this circle are two smaller circles: a light blue one above a grey one. To the right of the dark green circle is a circular inset showing a close-up of brown mulch. Below the dark green circle is another circular inset showing a close-up of grey gravel.

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PVC

- Rigid/Inflexible
- Can break if water is frozen inside
- More available in warmer climates
- Fittings are secured with glue

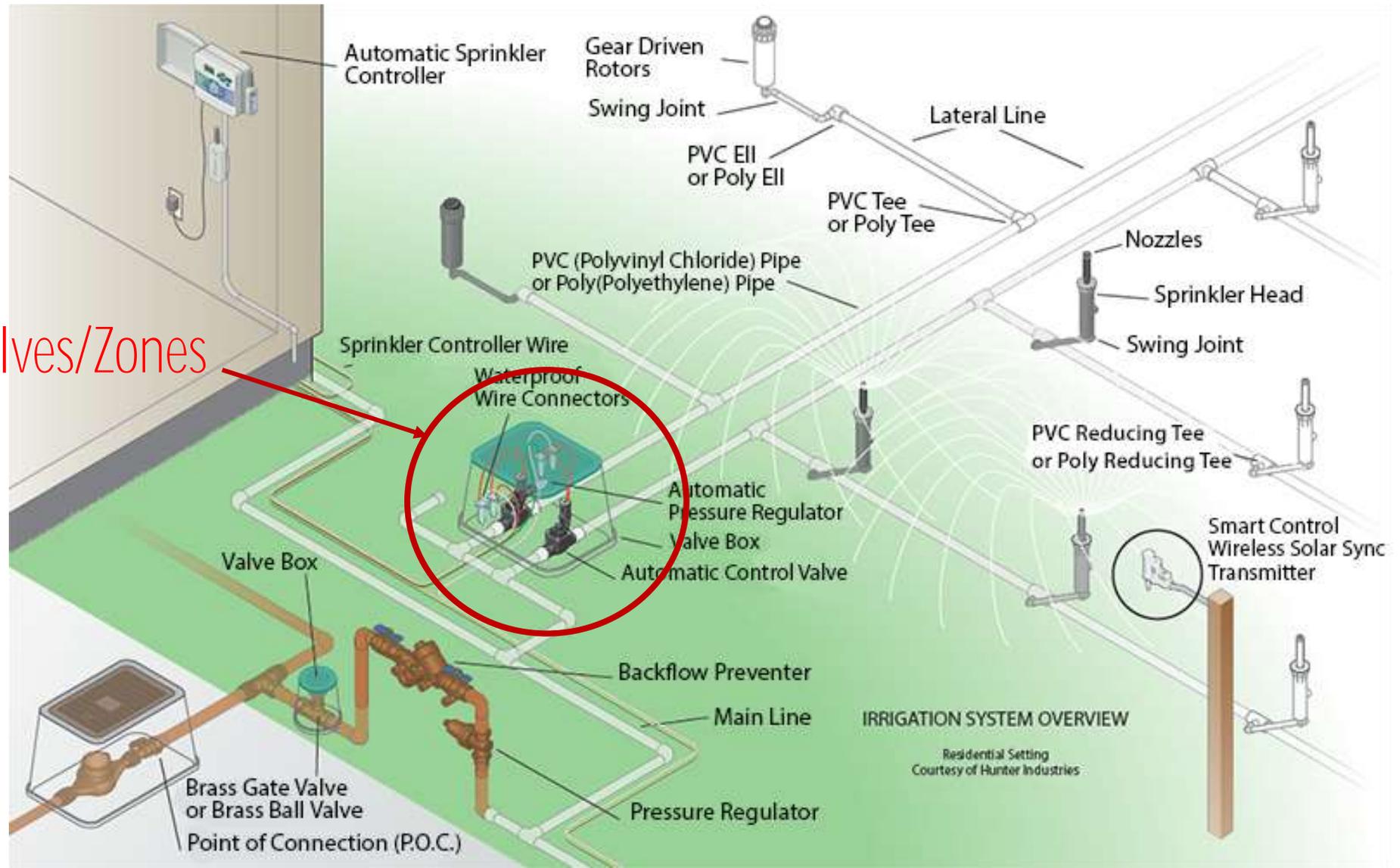
Poly Pipe

- Flexible
- Expands to allow freezing without breakage (can still split)
- More available in colder climates
- Fittings secured with barbs and clamps

Anatomy of a sprinkler system

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Valves/Zones



Graphic courtesy
Hunter Industries

Zone Set Up - Manifolds and Valves



Sprinkler Valves

Standard Valve



Valve w/
pressure
regulator/ filter

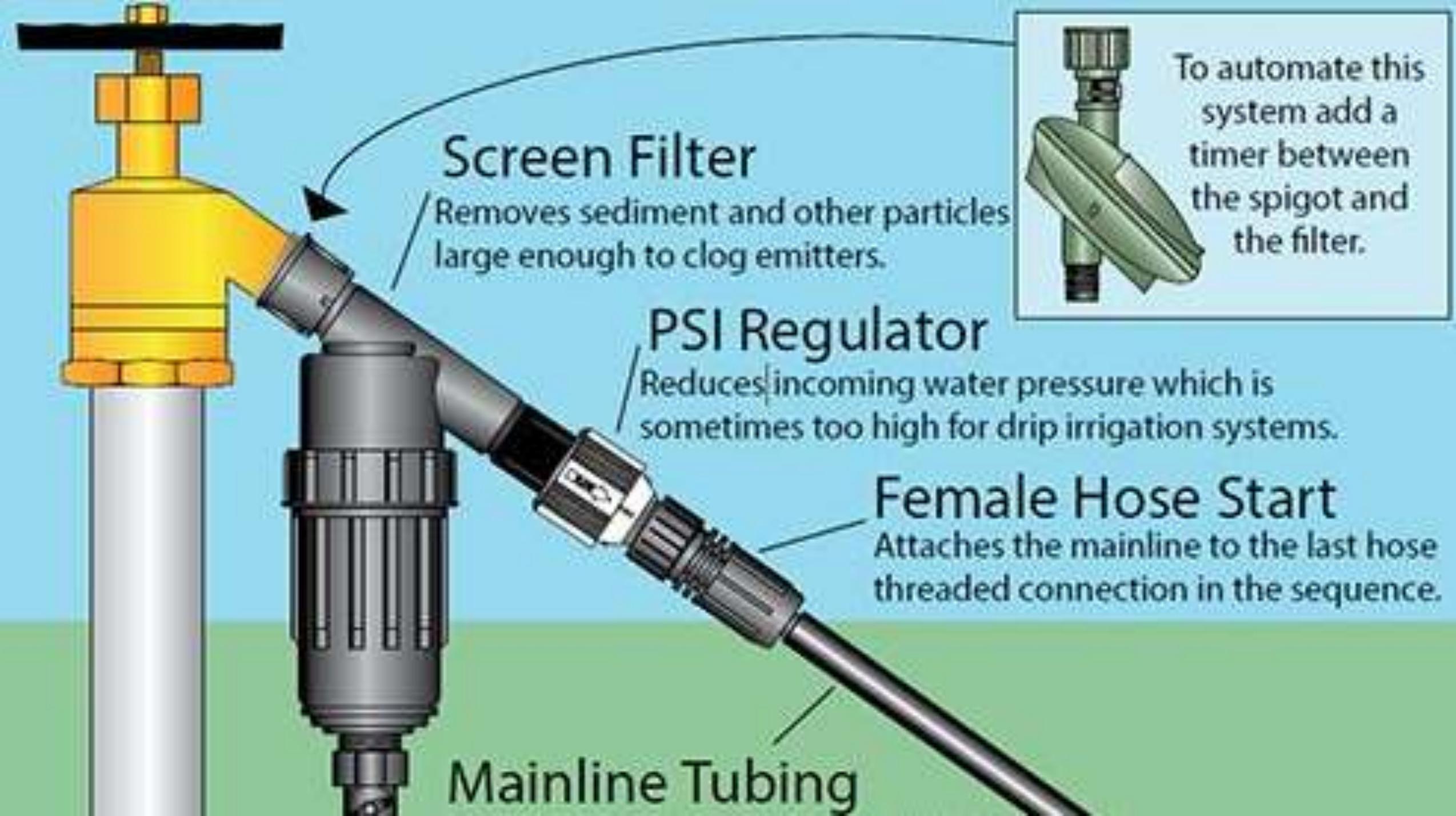


Valve considerations

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- Location
 - Should be near area being irrigated, but not IN the lawn
- Each valve should water a zone with drip or spray but not both.
- Valve manifolds help with later repair and replacement (using unions)





Screen Filter

Removes sediment and other particles large enough to clog emitters.

PSI Regulator

Reduces incoming water pressure which is sometimes too high for drip irrigation systems.

Female Hose Start

Attaches the mainline to the last hose threaded connection in the sequence.

Mainline Tubing



To automate this system add a timer between the spigot and the filter.

Filtration- a necessity with secondary water



Filter
Pressure
Reducer

For Drip a mesh/screen size of 150 is probably adequate. The higher the number the finer/higher the filtration.

All drip systems need:

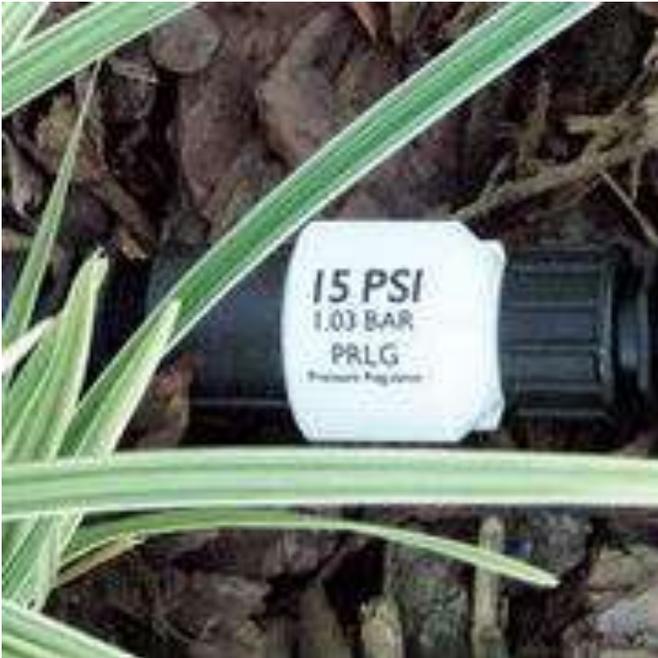
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Filter



Pressure
Reducer

pressure regulator/reducer



Uni Flo

Hi Flo

Pipe types and terms

- PVC (schedule 40)
- Poly
 - 1 inch, $\frac{3}{4}$ inch or $\frac{1}{2}$ inch.
 - Used for main lines or lateral lines.
 - Thickness varies depending on use (drip applications have thinner walled pipe)
- Main Line- supplies water to valve assembly (always pressurized) - **Main Line Poly is Thicker**



Flower Bed Best Practices

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Planting beds should always be watered with drip irrigation.



Watering Best Practices

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Use only one type of irrigation per zone. Don't mix spray and drip lines on same zone.



Drip irrigation retrofit kits



New technologies make switching from overhead spray to drip much easier.



Spray to Drip Conversion



For Vegetables in Rows or Raised Beds

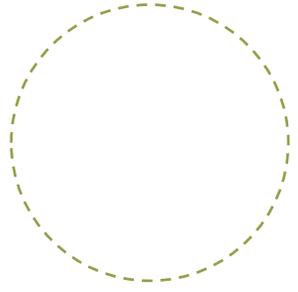


Drip Tape (T-Tape)



In-Line Drip Tubing





Discussion about other drip fittings or helpful parts



How do traditional controllers work?

- Valves turn on and off at specified times for specified duration.
- Need to be reprogrammed (at least seasonally) to ensure water application matches plant requirements





How do weather-based irrigation controllers (WBICs) work?

- Calculate ET
- Analyze field data, plant water requirements, soil type and slope to determine how frequently and how long to water.



Smart Controller Rebate Program

Receive a \$75 rebate for EPA WaterSense certified smart controllers that run on weather or soil moisture based operation.

Apply at www.utahwatersavers.com



Utahwatersavers.com



It Pays to Save

Ready to start saving water on your landscape or in your home? Create a Utah Water Savers account to view cash rebates and programs available in your area.

Programs and Rebates

Discussion and Set Up

The logo for Localscapes, featuring the company name in a stylized font and the website address below it, all contained within a dark green circular graphic.

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- Drip Irrigation for Veggies/Raised Beds
- Leaks
- Repairing broken items
- Relocating Heads as Turf is removed
- Conversion from Spray to Drip
- Scheduling over the summer
 - (Consider your soil reservoir and how often it needs filled/ how fast it drains for the plants/evaporation/transpiration)
- Fittings and Glue
- All other issues and parts

Questions ?

The logo for Localscapes, featuring the word "Localscapes" in a stylized font with "Localscapes.com" underneath, all within a dark green circular background. A partial image of mulch is visible in the top left corner.

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- You can do this!
 - Water Management is our personal responsibility
 - Proper irrigation will result in healthy landscaped and a reduction in landscape water use.
-
- Thank You for coming- Go help others with your knowledge when you can.