

Step 7: Irrigation Plan

Now you will use the master plan sketch (with hydrozone information) that you created in Step 5 along with the planting plan you developed in Step 6 to design an efficient irrigation system.

Why Do We Need to Irrigate?

The Colorado Springs area is described as semi-arid foothills and plains that receive an average of 13.2 inches of precipitation from April to October, the normal growing season. Much of that precipitation occurs in the form of thunderstorms and occasional hailstorms. During the same period, evapotranspiration, or the amount of water that has evaporated from the soil and transpired through the leaves of a plant, can be 40 inches or higher. Since the amount of irrigation required by a landscape is the difference between the water required (40 inches through evapotranspiration) and water available (13.2 inches by precipitation), irrigation is required for the majority of landscapes planted, **including those based on the Xeriscape principles**. To conserve our water resources, the design of landscape irrigation systems should be designed with water efficiency in mind.

Basic components of manual or automatic irrigation systems.

Manual above ground - a system using water hoses and hose-end sprinklers. The homeowner controls sprinkler time.

Manual below ground - a below ground system with main shut off valve, backflow prevention device, sprinklers, low-flow irrigation components and pipe. The homeowner controls sprinkler time.

Automatic above ground - generally a system using either low-flow or water hose irrigation components with an automatic controller.

Automatic below ground - a system consisting of numerous components: main shut-off valve, backflow prevention device, controller, sprinklers, low-flow irrigation, pipe and wire.

Water Saving Irrigation Design

Studies have shown that those systems for which the homeowner must evaluate whether the landscape needs water and then sets the amount of time that the water will be applied are water saving systems. Such a system could be a manual or automatic system where the homeowner either turns the water on and sets a timer or manually sets the time each cycle. However, no matter which system homeowners use, when they use the equipment properly and match it to the landscape's needs,

they can achieve watering efficiency.

Flexible and reliable irrigation control is a very important part of a water efficient irrigation design. Whether the controller is the homeowner or an irrigation clock, the key components are the same.

- The manual system controlled by the homeowner is of the most flexible.
- If an automatic controller is used, the features which will maximize efficiency are the following:
 1. The ability to accurately time water application.
 2. Multiple hydrozone and program options which allow individual areas to be watered according to their needs.
 3. A 7- or 14-day program calendar to provide programming flexibility.
 4. Multiple repeat cycles to minimize run-off. For example, the ability to program a station that waters a slope to do so in several short cycles rather than one long one.

Type of Emitters

- Spray sprinkler heads work well in small, irregular shaped areas.
- Rotary sprinkler heads are better suited for large open areas.

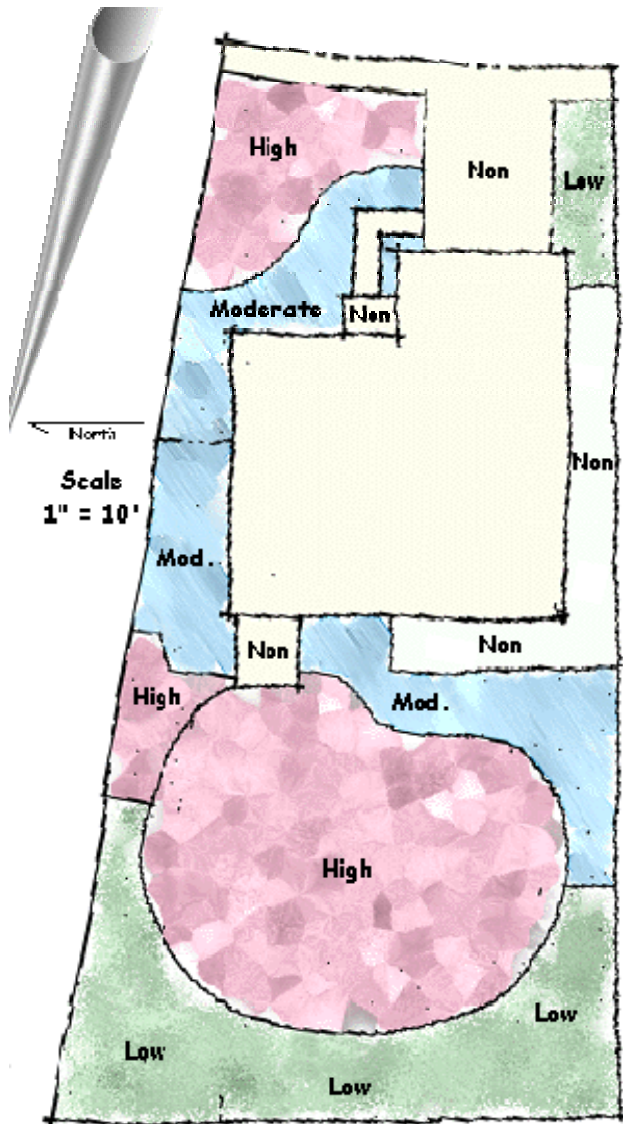
Low-flow irrigation applies water to individual trees and shrubs.

- Bubblers will apply water at a faster rate than either drip or microsprays.
- Drip and microspray irrigation systems operate at lower pressure and lower flow rates, which may require a pressure regulator and filtration.

It is generally acceptable to mix drip and microsprays on the same zone but not drip and spray.

Creating Zones in an Irrigation Design

When zoning an irrigation system, it is important to separate zones of different equipment, areas with plant materials having different water requirements, and areas of differing micro-climates. Revisit the hydrozone sketch you did in Step 5.



For example, a south-facing turf area using spray sprinklers will have different water requirements from a turf area on the north side of a building. Similarly, the irrigation of landscaped slopes that are steep enough to result in run-off should have separate zones for sprinklers at the top and bottom of the slope. The cost of adding extra zones to the landscape is worth it because less water will be wasted, and plants watered correctly will be healthier.

Need More Help?

There are many books on designing irrigation systems. Also, many irrigation suppliers will help you in your design. Begin with your hydrozone sketch from Step 5 and an idea of how you will control the

irrigation.