

Mulberry Grove Secondary Irrigation System

Each lot in Mulberry Grove (MG) has access to a secondary irrigation system that is independent of Moab City water.

Water Source: The water comes from Mill Creek, via the Moab Irrigation Company (MIC). MIC water rights date from the settling of Moab, and are very senior. MIC water is distributed to Moab via a series of pipes and ditches. The flow is not sufficient to service all users simultaneously. MG has access once every four days. The orchard is flood irrigated directly from the MIC system. Distributing water to the lots via this method seemed neither practical, convenient, nor conservative of water.

Pond: MIC water flows into the pond. The pond is lined with thick plastic, which is buried under 6" of soil. A length of slotted pipe, 18" above the bottom, on the west side of the pond acts as an inlet filter to a vertical wet well plumbed to, but separate from, the pond. A GFCI protected submersible pump provides pressurized water to the irrigation system. The wet well was sized to accommodate a second pump if demand dictates. The wet well, and separate vault, are located at the NW corner of the pond. The vault contains pump controls, pressure tanks, valving, and an air compressor for the aerators. Pressure tanks were sized for possible second pump addition. The pond has been stocked with mosquito larvae eating fish. The pond was sized to have a maximum of 2' drawdown during July, at build-out, assuming it is topped off at each MIC 'turn'.

System Capacity: Capital and operating costs are minimized by matching the pump system capacity to need. Maintaining a relatively constant flow minimizes wear and tear on the system. The pump system was sized with the assumption that blocks of lots would take turns using the system; resulting in an orderly, constant, moderate flow. This is easily accomplished with automated irrigation timers. A tentative schedule for postbuild-out is included at the end of this guide.

Mains: 3" mains are located at 4' below grade. Each lot has a 1" curbstop valve connection. Access is via a round valve box, with green lid, adjacent to city water meter.

Individual Lot Irrigation Design: Please design the individual lot system for these criteria:

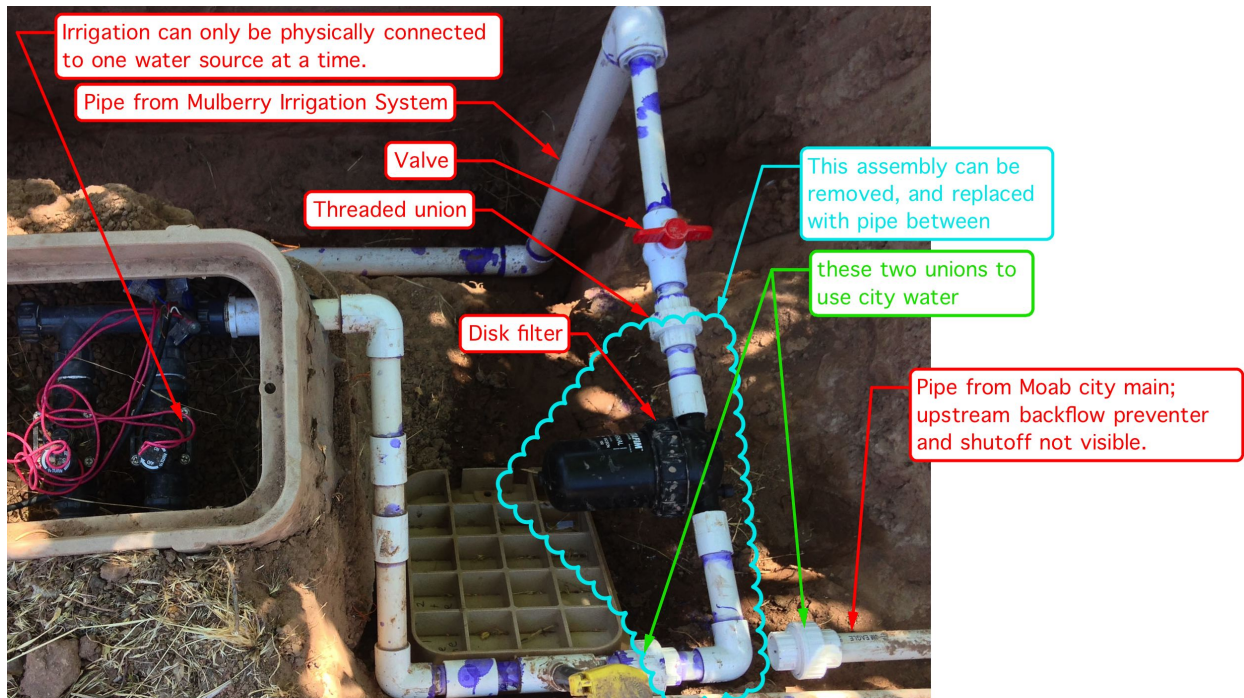
- Maximum Pressure: 40 psi
- Maximum Flow: 7 gpm
- Filtration: higher capacity disk filter recommended
- Timer: Odd/even, interval, and days of week programming will provide maximum flexibility to accommodate the neighborhood irrigation schedule. Automatic weather based adjusting recommended to minimize system use.

Safety: The irrigation water is not potable. It is important that it not be consumed, or contaminate the city water system. The installer is responsible for confirming and following all Moab City requirements. In the past the city has required:

1. A double check valve backflow preventer upstream of irrigation manifolds connected to city water.
2. Secondary irrigation water supply shall not be plumbed to piping supplied by city water. A backflow preventer and valve(s) is not sufficient to meet this requirement.
3. If it is desired to conveniently supply city water to the irrigation system (for example, if the secondary irrigation system required time consuming repairs) then a hookup that only physically allows one of the supplies at a time to be connected to the irrigation system should be used. Consult with qualified professional.
4. Do not connect hose spigots (that could be accidentally drunk from).to the secondary irrigation.

Questions: Kalen has significant experience with residential irrigation design, and was the project manager for the pond and pump system design and installation. If you have questions he can be reached at kalen@withgaia.com or (435) 259-7073.

Example connection from irrigation water, with city backup



Irrigation equipment suggestions:

Design

In Moab all plants need supplemental water, except for established natives. Irrigation is essential to a successful garden. Planning the plantings and irrigation at the same time will result in the greatest likelihood of success, and the least future compromises or modifications to either.

Overhead Irrigation

Standard spray heads, commonly used for small to medium areas, are one of the most inefficient ways to water. This is because:

- They distribute water without great uniformity, and we tend to water for the driest area, and so overwater everywhere else;
- The spray has fine particles subject to evaporation and wind drift;
- They irrigate fast ("precipitation rate"), which may be faster than the clay in the Mulberry soils can absorb, and so there is runoff.

There are products that solve many of these problems:

- Stream sprays, such as the MPRotator from Hunter, and equivalent from other manufacturers, provide great uniformity, larger droplet size, and lower precipitation rate.
- Small rotors may work, and provide many of the above benefits, although they are likely a poorer match for the size of irrigated areas likely found on Mulberry lots.
- Toro Precision Series Spray Nozzles have tested very well in uniformity, and have no moving parts, unlike the above two options.
- In the right location subsurface drip is also a possibility; Netafim products have a better than average track record for this application.

Drip Irrigation

The drip lines used in the parking lot landscape are Netafim Techline EZ, chosen for its lower visual impact (smaller than 1/2", and brown), simple and easy to use connection fittings, and recycled plastic content. For small beds 1/4" drip tubing with integral emitters is available, which is much less visible than the 1/2" tubing commonly used.

Smart Controllers

Irrigation controllers which respond to the weather or soil conditions typically save 30+% of water relative to other controllers, with no difference in plant growth. Weather based controllers are available that base their decisions on either a very small on-site weather sensor, or data provided over the internet, typically on a subscription basis. Given the highly site-specific rainfall and cloud cover that parts of Moab experience, and the ongoing cost of subscriptions, we have chosen to use site-based controls. Hunter (X-CORE + SOLAR SYNC), Rainbird (ESP-SMT), and others make affordable controllers of this type.

Mulberry Grove Irrigation Schedule; Draft

		Lot Cluster:					Open	Comments
	Time	A	B	C	D	E	Space	
Even Days	8 pm - 12 am	■						Each lot gets a 4 hour block every other night to deeply water established plants.
	12 am - 4 am		■					
	4 am - 8 am			■				
Odd Days	8 pm - 12 am				■			
	12 am - 4 am					■		
	4 am - 8 am						■	
All Days								Each lot gets 1/2 hour block every three hours, every day, to water young plants, or as they see fit.
8:00 AM	8:30 AM	■						
8:30 AM	9:00 AM		■					
9:00 AM	9:30 AM			■				
9:30 AM	10:00 AM				■			
10:00 AM	10:30 AM					■		
10:30 AM	11:00 AM						■	
11:00 AM	11:30 AM	■						
11:30 AM	12:00 PM		■					
12:00 PM	12:30 PM			■				
12:30 PM	1:00 PM				■			
1:00 PM	1:30 PM					■		
1:30 PM	2:00 PM						■	
2:00 PM	2:30 PM	■						
2:30 PM	3:00 PM		■					
3:00 PM	3:30 PM			■				
3:30 PM	4:00 PM				■			
4:00 PM	4:30 PM					■		
4:30 PM	5:00 PM						■	
5:00 PM	5:30 PM	■						
5:30 PM	6:00 PM		■					
6:00 PM	6:30 PM			■				
6:30 PM	7:00 PM				■			
7:00 PM	7:30 PM					■		
7:30 PM	8:00 PM						■	