Irrigation Audit and Prioritized Plan

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2015 Intern
State of the Arb’s Irrigation and Why it Needs Help

• **State:** The state of the Arb’s irrigation is very unique. The Arb has updated systems, old systems, and systems that are ineffective or not being used.

• **Why take on this project?:** As noted above in the state of the irrigation system, it requires a lot of attention to meet the high standards we set here at the Arboretum. My hope for this project is to help the Arboretum staff gather information about the irrigation system and recognize and prioritize the need of repair and updating of the irrigation system to improve efficiency, plant growth and environmental consciousness.
Objective

- To map the MLA’s irrigation system, approximately identify the age of different irrigation systems, identify the conditions of these irrigation systems; and to prioritize the top 3 areas that require higher maintenance or upgrade.
- Shadowing the staff who work with this equipment on a daily basis will help aid me in this process.
I have found the MLA’s irrigation system to be a complex one. There is a blend of old and new systems scattered throughout the Arboretum. All of these systems feed out of the Green Heron Pond south of the Snyder building. From there, the water is pumped out to the various gardens via the pump house and then through two main water lines.
An Impending Issue

• After 50+ years of using Green Heron pond as a water source for irrigation, the continual additions of gardens and irrigation systems have limited the usefulness of the source. There can be too much demand on the pond and the pumps for the system to be effective. The addition of a Chinese Garden, as well as a new Pollinator Center, will create a stronger stress on the system due to an increase in demand and an even greater decline of water pressure.
A possible alternative to using Green Heron pond as our only water source would be tapping into Wood Duck Pond for future Arboretum expansions. This would allow us to utilize modern equipment and start fresh with new water mains that can handle new additions as well as possibly relieving some of the stress on the original system stemming from Green Heron pond. Continuing to add patches to the quilt that is the old system will likely only lead to greater problems and maintenance.
Assessing the Current Systems’ ages

- Oldest: Quick couples around main building are part of the original irrigation system, as well as some of the impact sprinklers located out near the head house in areas such as the Research Azaleas.
- Next Generation: Most of the irrigation systems in the gardens behind the Snyder building have been in place since the 80s and 90s. These gardens include the Perennial Gardens (Peony, Lily, etc), Home Demo (including Woodland Azalea, Hosta Glade), Japanese Garden and the Front entrance.
- Newest: McMillan/Terrace, Annual garden, Herb gardens, Sculpture garden, Spiegel garden, and the Nelson Rose garden irrigation systems have all been updated since 2000, roughly. These systems are not, however, necessarily the best systems.
Common Problems with Systems

- Low Pressure (ex. McMillan) - small piping, overloaded system demands
- Bad wiring (ex. Front Entrance, Hosta Glade) - commonly due to renovation to the grounds
- Zone work - Making sure sprinklers spray intended areas
- Clearance of plant matter while still maintaining an attractive garden appearance.
- Dirty pond water can clog system filters as well as sprinkler head filters.
Highest Priority areas

- Nelson Rose Garden
  - New Toro drip system not currently being used
- Sensory Garden
  - No automated irrigation systems on inside raised beds, turf area, or outside perennial beds
- McMillan Garden and Terrace
  - Poor pressure, root systems stressing the irrigation lines
Nelson Rose Garden

• **Problem:** The new irrigation system that Toro installed presents a great way of irrigating the Nelson Rose Garden. However, the drip system requires very clean water due to the extremely small sprinkler fixtures. Our water coming from the Green Heron Pond is not clean enough, so extensive filtering is in place in the rose garden. These filters require a lot of cleaning and maintenance that one Mike Orr can simply not efficiently maintain. Also, some of the lines have been damaged in the digging for new rose plants.
Nelson Rose Garden

- **Plan:** For this system to work effectively, I believe the Arboretum should look into pursuing the hire of a second hand to work on irrigation with Mike Orr to help maintain this system -as well as the rest of the Arb’s irrigation- otherwise possibly using city water to run this irrigation system (nearest city/well water from head house).
Sensory Garden

- **Problem:** As one of the most popular gardens at the Arb, the Sensory garden deserves an installment of new irrigation. The raised beds, turf area, and perennial bed on the exterior all require manual watering and would benefit from an automated system.
Sensory Garden

**Plan:** The Sensory Garden is host to a number of raised flower beds. These beds are watered weekly at the least, and in drier conditions, as many as 2 or 3 times a week by hand. A drip system would greatly decrease the cost of labor needed to water these, while maintaining the fabulous look the garden is known for. Also, larger spraying heads would benefit the turf area in the center (host of numerous summer weddings) as well as the turf behind the Therapeutic Center and the Perennial bed that surrounds the Sensory Garden. Water lines already run through the garden, so a project like this can be done rather easily, though there may be damage and replacement to some of the paved areas in the garden.
**Problem:** The McMillan Garden is the very first garden people see when they step out of the Snyder Building (HIGH Priority). It is vital to keep this garden pristine. Much of the irrigation lacks effectiveness due to low pressure. Low pressure results in poor sprinkler performance, flooded and dry spots, and prevents the system from stopping and starting its zones correctly. Trees and shrubs have also “uprooted” many of these lines, as well as the patio stones creating a safety hazard and an unsightly landscape.
Plan: This area may just have to be redone. As it was explained to me, this irrigation system was created with a main line that was too small. This creates the problem of low pressure throughout the whole system right from the get go. Larger lines can provide the system with adequate pressure to greatly enhance performance. Rerunning deeper lines and repairing the patio stonework would also add eye appeal as well as safety.
Quality of Snyder Building’s Spiegel Garden

• What’s to like about it? The perennial garden outside of the Snyder building is one of the most appealing gardens here and are some of our employee’s favorite. What the Spiegel Garden does well starts with its well thought out irrigation system. Through dedication of its donor, the system currently runs superbly with sprinklers that cover every inch of the garden, resulting in a space that looks tremendous all year round.
THANK YOU

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