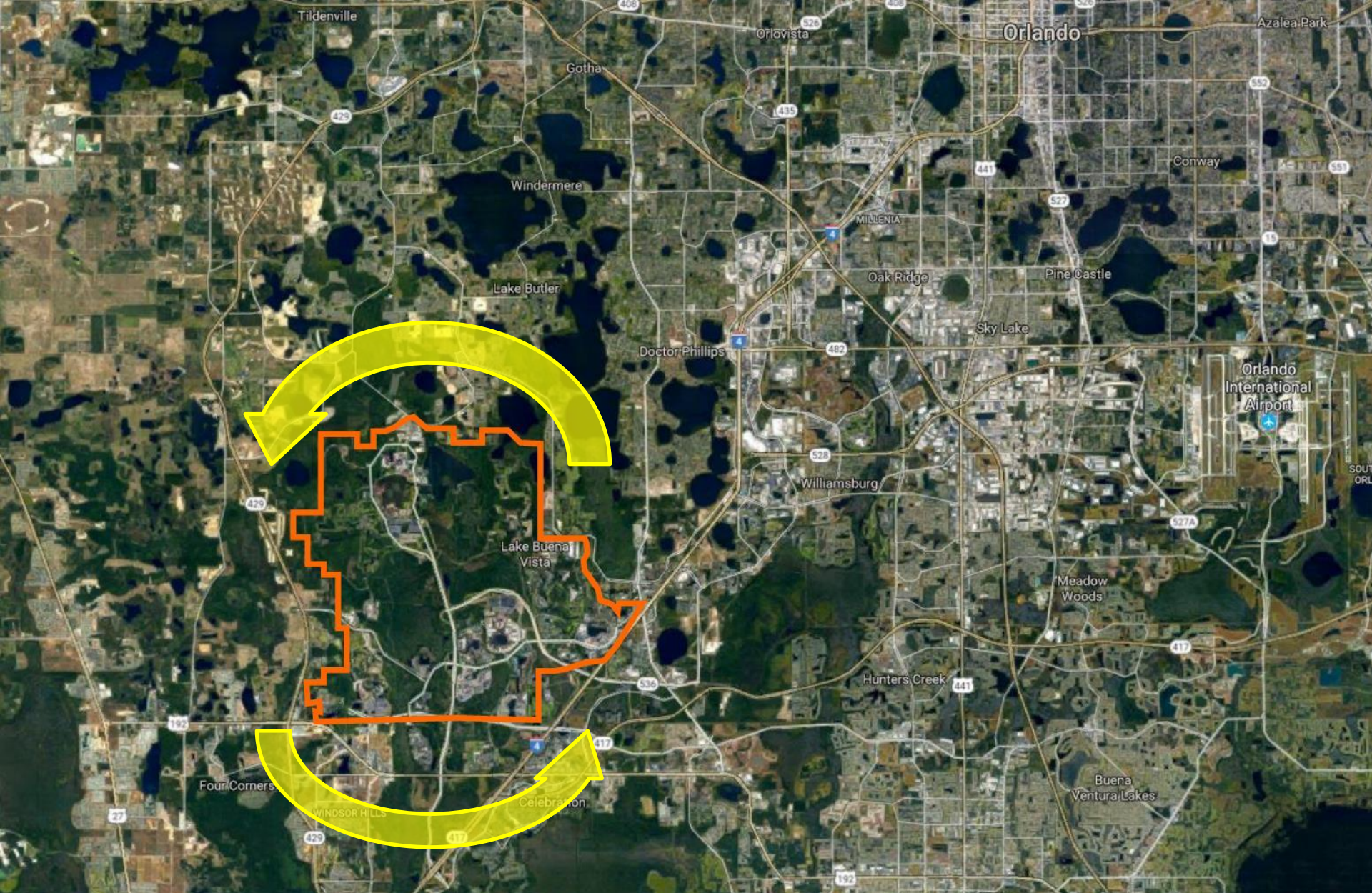


Irrigation at the Walt Disney World Resort





It's Not a Small World, After All...Covering nearly 40 square miles, Walt Disney World Resort is about the size of San Francisco or two Manhattan Islands. Of the nearly 25,000 acres, a third is designated to conservation land.

Disney's Horticulture



GUARDIANS OF THE FIRST IMPRESSION

Reclaimed/Potable Breakdown

- Approximately 78% (1,515 acres) of The Walt Disney World Resort is irrigated using reclaimed water based on irrigated acreage
- The remainder, 22% (428 acres), is irrigated using potable water sources.
- Conversions of potable water irrigated properties to reclaimed are constantly evaluated and completed where feasible.
- Redesign of parks or resorts are usually the best opportunity for conversion such as the recent Fantasyland expansion in the Magic Kingdom. This provided opportunity to convert both Fantasyland and Tomorrowland to reclaimed irrigation and wash down.



Reclaimed water usage

- Reclaimed water at Walt Disney World is tertiary treated, it actually meets State standards for drinking water.
- Since we have little manufacturing there are no heavy metals or other difficult compounds to remove.
- There are higher levels of chlorides due to the disinfection process as well as moderate phosphorus levels. Most of the phosphorus is not in a usable form for plants but use is restricted near water bodies.
- Reclaimed water has higher salts content from the treatment process that can build up in the soil but our seasonal rains mitigate that problem.



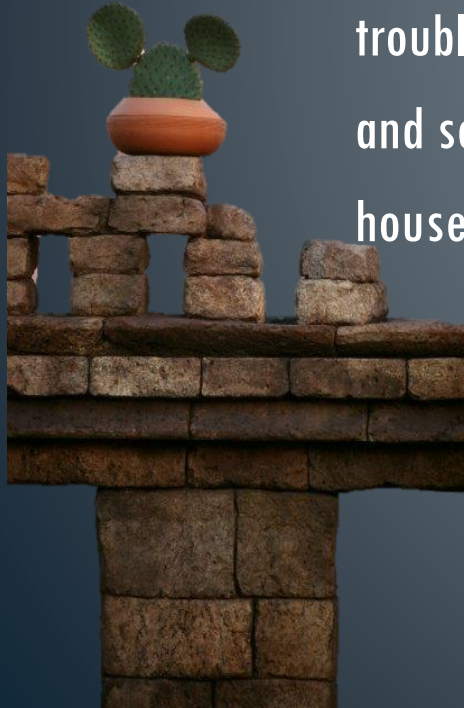
Irrigation Maintenance and Control

- All irrigation operated by Disney's Horticulture (excludes the ESPN Sports complex, Golf Courses and third party properties) utilizes weather based irrigation scheduling
- There are 826 irrigation controllers controlling 10,579 valves (7,192 reclaimed, 3,387 potable)
- Disney's Horticulture maintains approximately 8,050 of the valves, contractors maintain the remainder (primarily RCID roadways).



Irrigation Maintenance

- 28 Irrigation Specialists (2 control, 26 maintenance) maintain the irrigation system
- All valves and heads are inspected approximately 4 times per year for proper operation
- Work identified by the inspections, along with trouble calls, are prioritized and scheduled for repair by in house or contractor labor.



Irrigation Maintenance

- As the landscape matures and irrigation systems age the efficiency and uniformity decreases, therefore just maintaining the system as installed results in increased water usage over time.
- Poor efficiency and uniformity issues are also documented during the inspection cycle. That work is backlogged for completion as time and resources become available.



Irrigation Control

- The Walt Disney World Resort and the Reedy Creek Improvement District were granted a permanent variance to day of the week irrigation scheduling based on the greater opportunity for water savings using weather based irrigation scheduling.



Weather Station

- There are three weather stations at WDW:
 - Tree Farm
 - Disney's Grand Floridian Resort & Spa
 - Hat and Hose Fire Station
- Continuously record weather data (Temperature, RH, Solar radiation, Wind Speed and direction and rain fall).
- Data is used to calculate Evapotranspiration rate (ET), the amount of water the landscape has lost through evaporation and plant use.



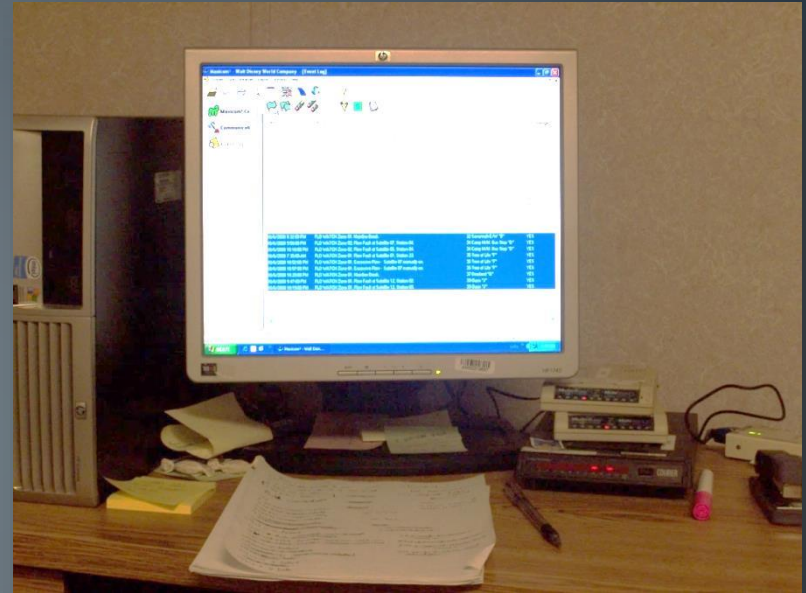
Rain Sensors

- 86 real and virtual rain sensors monitor local rainfall
- Rain is subtracted from the weather station measurement to determine the net irrigation requirement
- Rain sensors also act as the rain shut off device required by State statute

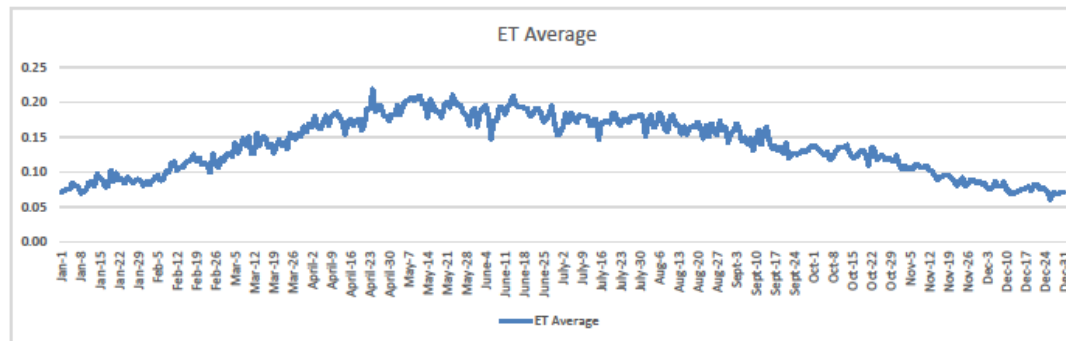


Run Time Calculation

- Computer calculates irrigation run times based on weather information, sprinkler head type, plant type, slope, aspect, etc.
- As weather changes, irrigation run times automatically adjust to the plant's need.



Gross ET (no rain)



Soil Moisture

- Plants can only use water that is located in the soil where the roots are located.
- Sandy soils can hold very little water - .08" per inch of soil.
- Root depth of turf, flowers and shrubs average approximately 6" deep.
- Therefore, sandy soils can only hold about .5"



Irrigation Frequency and Constraints

- Generally, due to operational and infrastructure restraints, irrigation systems at WDW we can only apply a maximum of .5" per night. Some properties are significantly less due to infrastructure issues or constrained time window.
- When net ET averages more than .14" per day (primarily late February to early June and September through mid-October) two day a week watering is insufficient to sustain the landscape. This is why our SFWMD variance was so important.
- The highest daily recorded net ET at WDW was .27". The average daily ET is .14"



Benefits of Weather Based Irrigation Scheduling

- With weather based irrigation the end result is the least amount of water necessary to sustain the landscape is used.
- Industry averages are 20%-30% water savings over previously well managed systems.
- There are significantly greater savings to this type of system when compared to the typical homeowner's system, some estimates are as high as 80%.

