Soil Moisture Sensors and Turf Establishment in Pasco County

Chris Dewey
Florida Friendly Landscaping™ Program Coordinator
Landscaping and Irrigation Ordinance

- Feb. 2002 - A maximum of fifty (50) percent of the on-site green space shall be allowed to utilize irrigation techniques other than micro-irrigation.

- 2006 Amendment - A maximum of sixty-five (65) percent of the on-site green space shall be allowed to utilize irrigation techniques other than micro-irrigation when a Soil Moisture Sensor system is used.
Moisture Sensor Permits (MSP)

- 2006 – May 2014
  536 New Home MSP Permits Issued

- May 2014 to Present
  143 New Home MSP Permits Issued
New Home Builders

- IH CENTRAL FLORIDA LLC
- LENNAR HOMES INC
- US HOME CORPORATION
- WILLIAM RYAN HOMES FLORIDA
- MERCEDES HOMES LLC
- LEXINGTON HOMES INC
- WINDJAMMER HOMEBUILDERS
Subdivisions

• Lake Jovita
• Verandahs
• Deerfield Lakes
• Briar Oaks
• Trinity Preserve
• Union Park
• Thousand Oaks East
• Lone Star Ranch
• GreyHawk @ Lake Polo
• Serengeti
• Champions Club
• Summer Chase
• Ashton Oaks
Target Maximum Water Use

- I day per week water restrictions (Pasco)
- ¾” per application = 467 gallons per 1000 sq. ft.
- Monthly irrigation maximum = 1,868 gal./1000 sq. ft.
- Average indoor water use = 1,950 gal./mo./person
- Assume 3 persons per residence
- Assume all pervious area is irrigated turf (high volume)
- Assume 4 irrigation cycles per month

Calculation:
Lot Size minus impervious area = pervious area
Multiplied by 1.868 gal./1000 sq. ft. + (3 X 1950 gal.)
A Quick Estimation of Target Maximum Water Use

- Indoor Use = 2,000 gallons per person/per month
- Irrigation = 2 gallons per square foot/per month

- Note: Additional water savings available during the winter when grass is dormant and during the rainy season.
Net Irrigation Requirements

Diagram showing net irrigation requirements (in month^-1) for Brooksville, with data for 2-in-10 and 5-in-10 events. The requirements vary significantly by month, with May having the highest requirements.
Soil Moisture Sensor Performance

- 15 New Homes
- MSP Irrigation Permits October – December 2013
- Average Lot Size – 11,126 sq. ft. (range 6,187 to 27,768)
- Average Pervious Area – 7,345 sq. ft. (range 3,005 to 23,135)
- Average Target Maximum Water Use – 18,400 gal./mo.
- Range – 9,000 to 49,000 gal./mo.
SMS Water Savings

15 New Homes with SMS
Oct. - Dec. 2013 to Present

Pervious Area - 7.345 sq. ft.

Target Max. Water Use = 18,400 gal./mo.

Building Phase & Turf Establishment

All Homes Occupied
Soil Moisture Sensor Performance

- 26 New Homes
- MSP Irrigation Permits - January – March 2014
- Average Lot Size – 7,652 sq. ft. (range 3,049 to 19,562)
- Average Pervious Area – 4,718 sq. ft. (range 1,659 to 12,831)
- Average Target Maximum Water Use – 11,706 gal./mo.
- Range – 8,000 to 29,300 gal./mo.
SMS Water Savings

26 New Homes with SMS
January to March 2014

Pervious Area = 4,718 sq. ft.
Target water Use = 11,706

Building and Turf Establishment

All Homes Occupied

X 1000 gallons

January 2014
February 2014
March 2014
April 2014
May 2014
June 2014
July 2014
Aug. 2014
Sept. 2014
Oct. 2014
Nov. 2014
Dec. 2014
Jan. 2015
Feb. 2015
New Home Turf Establishment

  - Average – 18 inches  Range – 2.4” to 35.3”
  - 66% > 15 inches
  - 50% > 20 inches

- 26 SMS Homes - Jan. –March 2014
  - Average – 20.1 inches  Range – 4.1” to 48.3”
  - 65% > 15 inches
  - 42% > 20 inches
Turf Establishment in New Homes

- Random Selection from Utility Billing Records
- 5 Different Builders
- 14 homes for each builder
- Reject any with <20,000 gal. in maximum month
- Assume all pervious area is irrigated
- Assume all water use is irrigation
## Average New Home Water Use

### By Builders

<table>
<thead>
<tr>
<th>Builder</th>
<th>Max. Month (inches)</th>
<th>Total (inches)</th>
<th>Gal./Inch*</th>
<th>Total Gal.</th>
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<tbody>
<tr>
<td>1</td>
<td>27</td>
<td>35.8</td>
<td>2,455</td>
<td>87,889</td>
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<tr>
<td>2</td>
<td>27</td>
<td>45.7</td>
<td>2,668</td>
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<td>31</td>
<td>39.8</td>
<td>2,911</td>
<td>115,857</td>
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<td>28</td>
<td>37.6</td>
<td>3,246</td>
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<td>5</td>
<td>13</td>
<td>19.27</td>
<td>3,855</td>
<td>74,286</td>
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</table>

**Average** 25 35.6 3,027 104,402

*Note: Gal./inch = average pervious area X 0.623 gal./sq. ft.*
What is the Cost of Overwatering for Turf Establishment?

Pervious Area = 4,858 sq. ft

Average Potential Savings up to $400 per home
# The Homebuyer Inherits the Bill

## Irrigation and Leak Water Use Analysis

<table>
<thead>
<tr>
<th>Account #</th>
<th>Watering Day</th>
<th>Name</th>
<th>1&quot; irrigation</th>
<th>Pervious Area</th>
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<tr>
<td></td>
<td>Thursday</td>
<td></td>
<td>3,587 gal.</td>
<td>5,757 sq. ft.</td>
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**Profile Dates:** 11/2/14 to 3/12/15  
**Meter Read Date:**

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<td>9-Nov</td>
<td></td>
<td></td>
<td>4,630 @ 9 pm</td>
<td>4,680 X2 @ 7am &amp; 9pm</td>
<td>4,710 @ 7 am</td>
<td>2400 X2 @ 7am &amp; 9 pm</td>
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<td>2380 X2 @ 7am &amp; 9pm</td>
<td>2360 X2 @ 7am &amp; 9pm</td>
<td>2400 X2 @ 7am &amp; 9 pm</td>
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<td>1310 &amp; 2460 @ 7am &amp; 9pm</td>
<td>2440 x 2 @ 7am &amp; 9 pm</td>
<td>2480 X2 @ 7am &amp; 9 pm</td>
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<td>2450 X2 @ 7am &amp; 9pm</td>
<td>2440 x 2 @ 7am &amp; 9 pm</td>
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<td>2530 &amp; 1810 @ 7am &amp; 9 pm</td>
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Questions?

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