

# Roundtable on Urban Ecohydrology Science and Practice



## What decisions are practitioners making, and what research is needed

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And Dr's Welker, Wadzuk, Komlos and many grad and UG students!

# What decisions are practitioners making, and what research is needed

- Philadelphia

- How do we design to reduce volume (1")?

- Performance - Design Life - Maintenance

- PWD - How does this translate to performance?

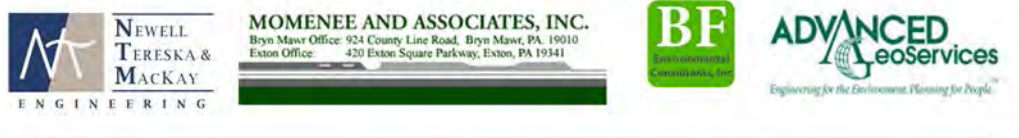
- Simulation
    - Sustainability

- Region

- Add in Quality and Flooding



The mission of the Villanova Urban Stormwater Partnership is to advance sustainable stormwater management and to foster the development of public and private Partnerships through research on innovative SWM Best Management Practices, Directed Studies, Technology Transfer and Education.



# Villanova's ~~BMP~~ SCM Research and Demonstration Park



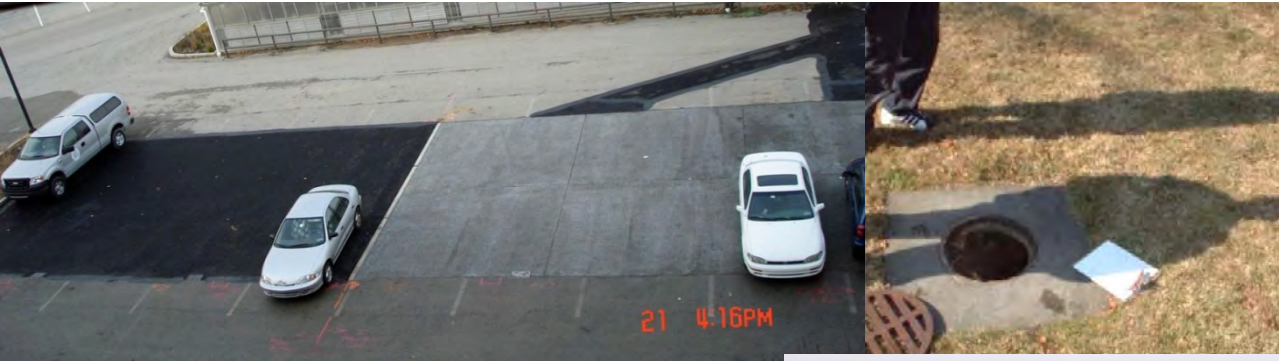
Green Roof

# Villanova's ~~BMP~~ SCM Research and Demonstration Park

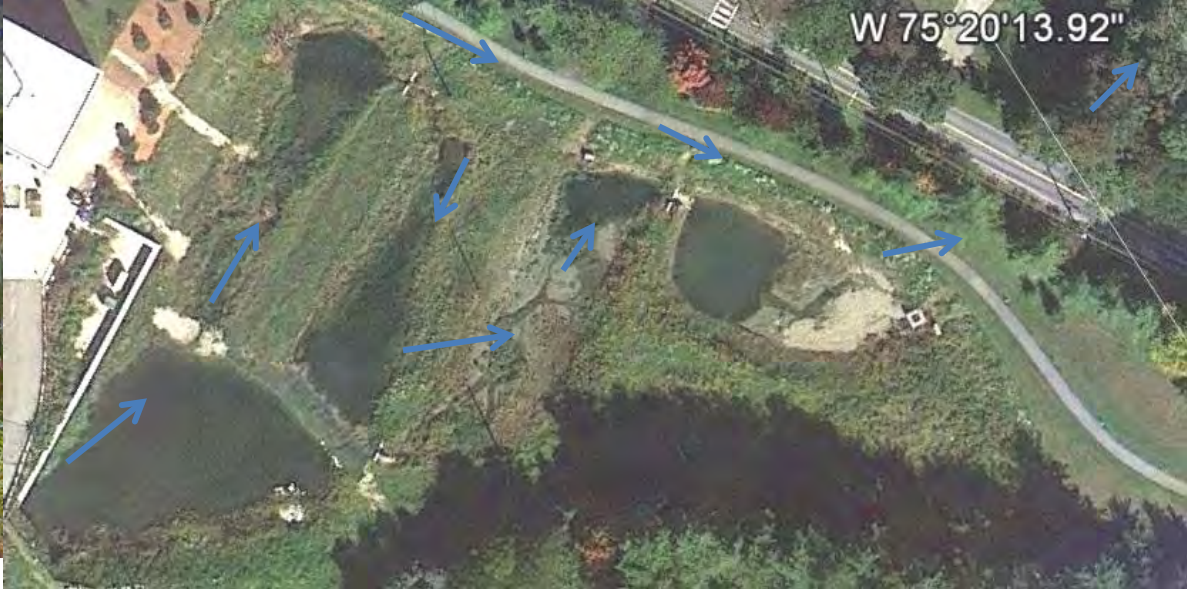


Bio Infiltration (12 – 14?)  
Bio Retention (1)  
Bio Swale (1)

# Villanova's ~~BMP~~ SCM Research and Demonstration Park



Porous Pavements  
Infiltration Trenches



## Stormwater Wetlands

# Hydrologic

Rainfall / Temp.

Inflow

Outflow

Surface

Subsurface

Level

Soil Moisture

# Water Quality

First Flush

Grab Samples

Automated

Lysimeters

# BioInfiltration

# Monitoring Interests





# Texas Rain Gage

FREE shipping



## Texas Rain Gauge

Item condition: **Used**

Time left: 4h 2m 1s (Mar 06, 2012 13:08:00 PST)

Bid history: 3 bids

Current bid: **US \$0.11**

Your max bid: US \$

**Place bid**

(Enter US \$0.16 or more)

Add to Watch list ▾

**BillMeLater**: \$10 back on 1st purchase & 6 months to pay  
Subject to credit approval. [See terms](#)

Shipping: **FREE Expedited Shipping** [See more services](#) ▾ | [See all details](#)

Delivery: Estimated between **Fri. Mar. 9 and Sat. Mar. 10** [?](#)

Returns: 3 days money back, buyer pays return shipping | [Read details](#)



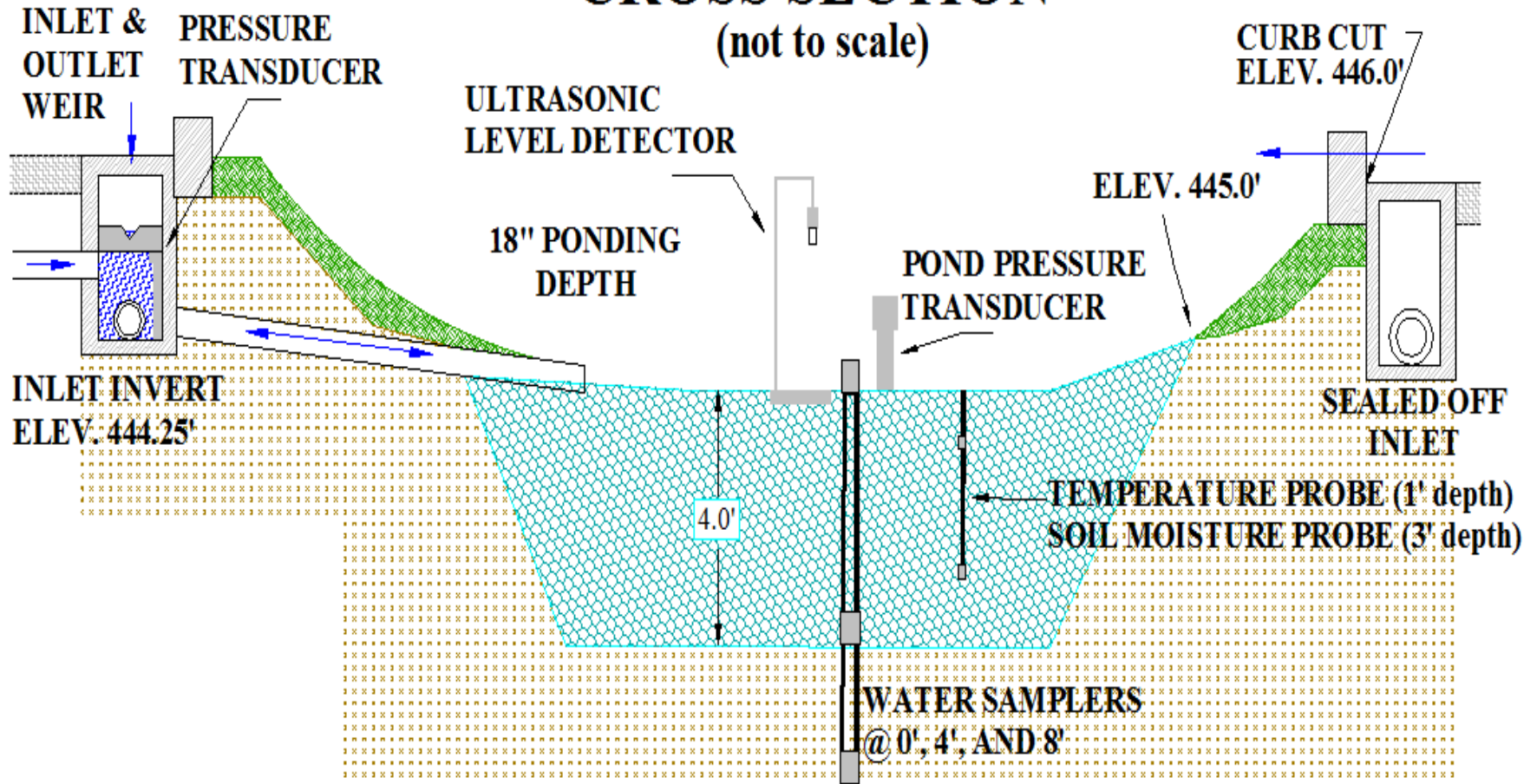
**eBay Buyer Protection**

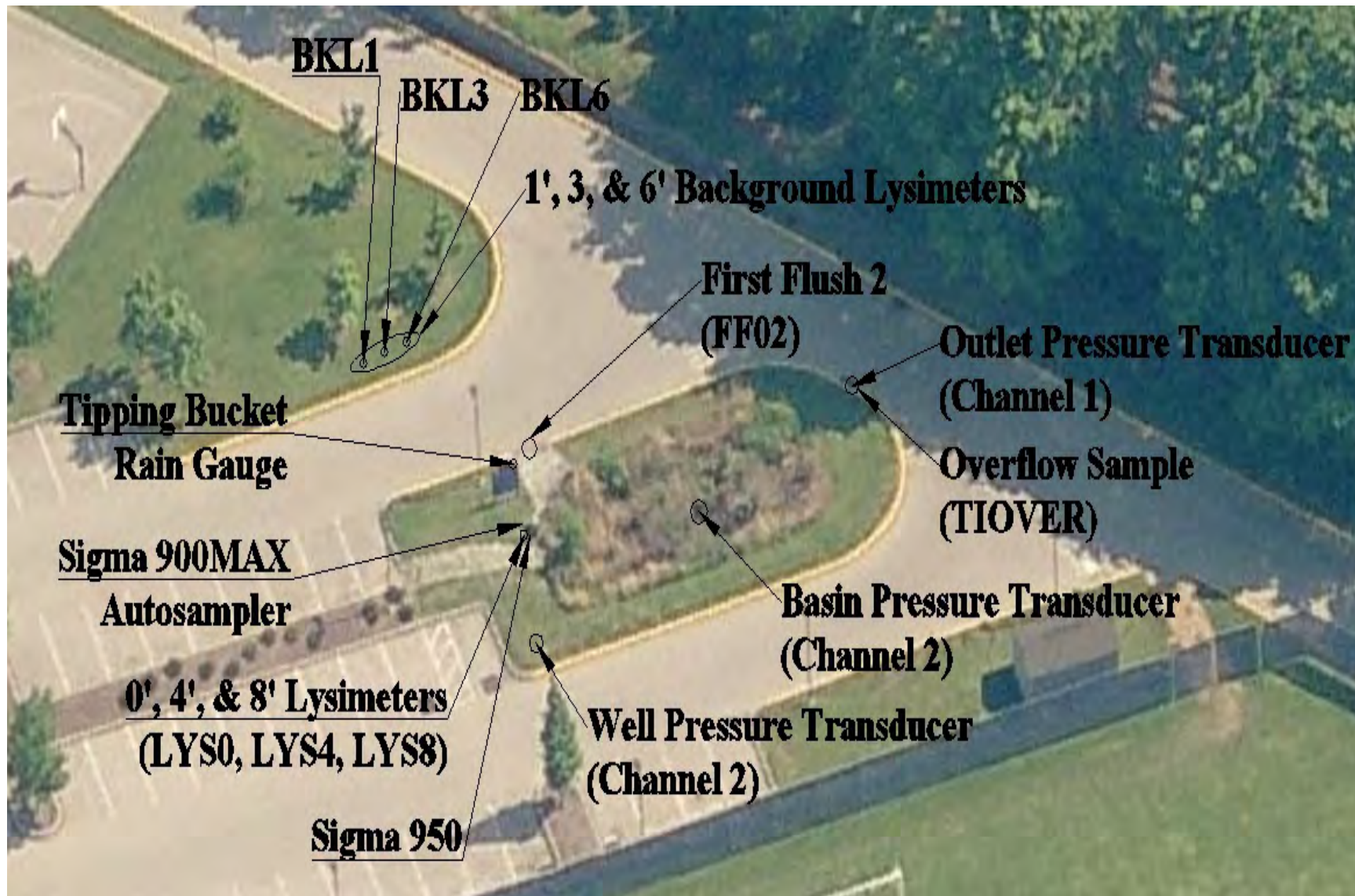
Covers your purchase price plus original shipping.

[Learn more](#)

# CROSS SECTION

(not to scale)





# BioInfiltration Studies

## Performance

Quality / Quantity

GW – SW

Volume Reduction

GW Mounding / Quality

Metals / Nutrients (Fate?)

Changes in Soil

WTR - Orthophosphate removal

Longevity / Maintenance

Sustainability

Hydrologic Performance Modeling

ET

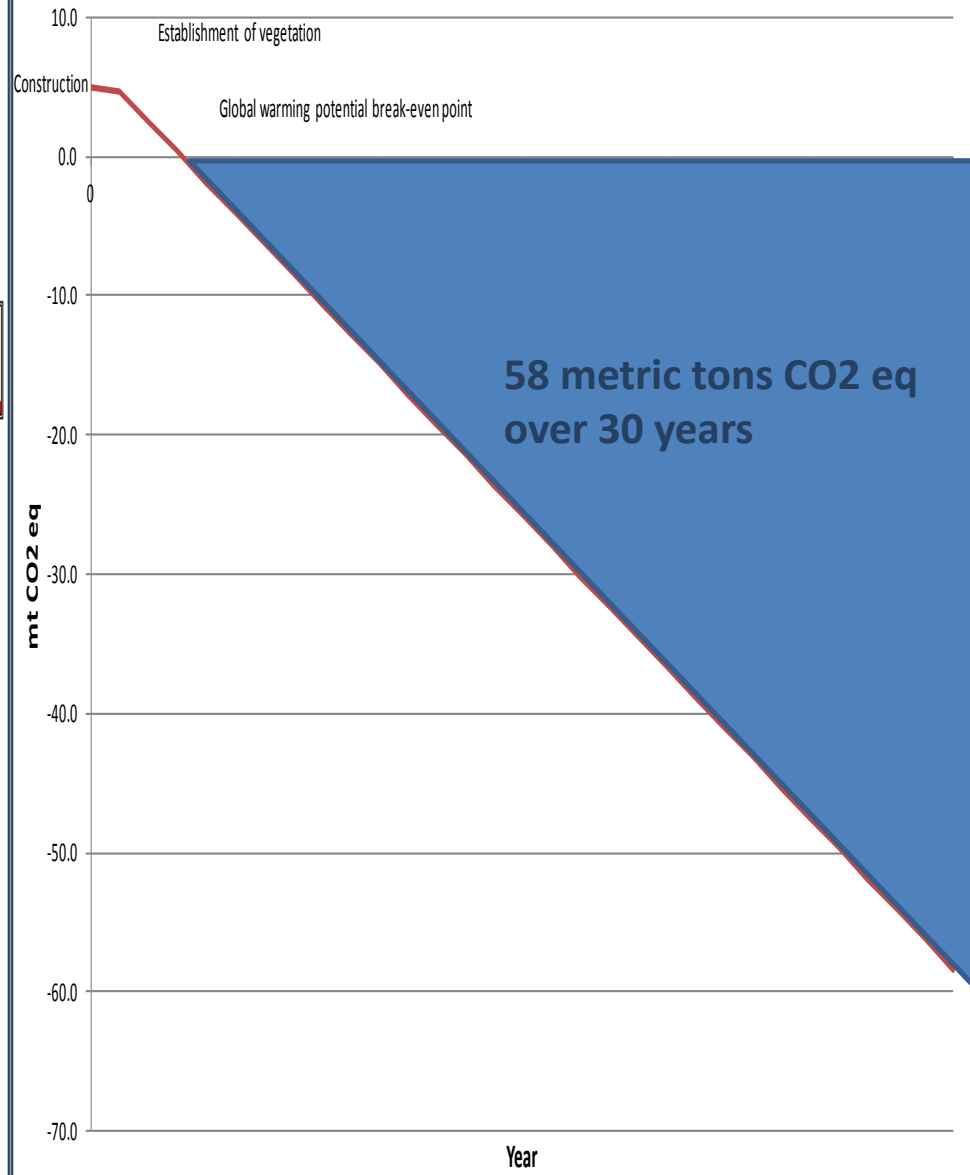
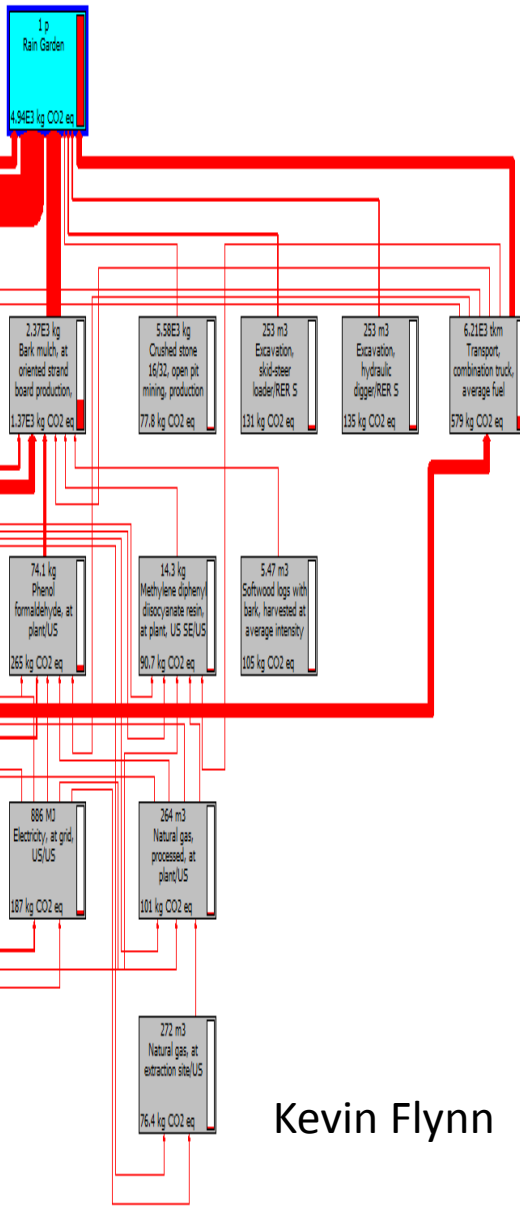
Harvesting?

Compare Underdrain?

Treatment Train?



# CO2



- Parking Deck (~0.1 ha, 10,000 ft<sup>2</sup>)
- (2) Vegetated swale
- Two rain gardens in series
- Infiltration trench
- Six monitoring points

# Treatment Train





# Temple – Villanova Sustainable Stormwater Initiative

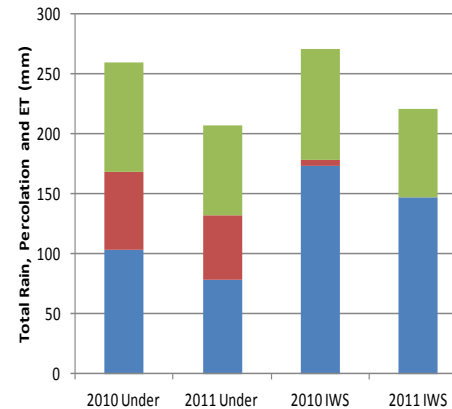
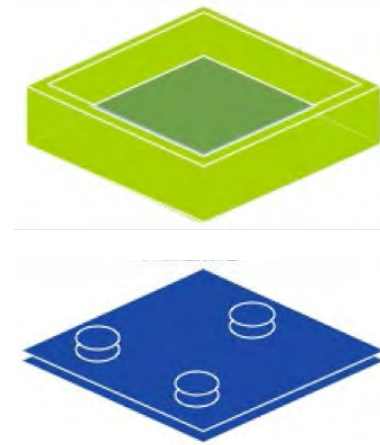
**Mission Statement - *To advance the practice of stormwater management through cross-disciplinary research, demonstration, and outreach.***

- Regional BMP Projects
- Workshops
  - (BMP Maintenance / Inspection)



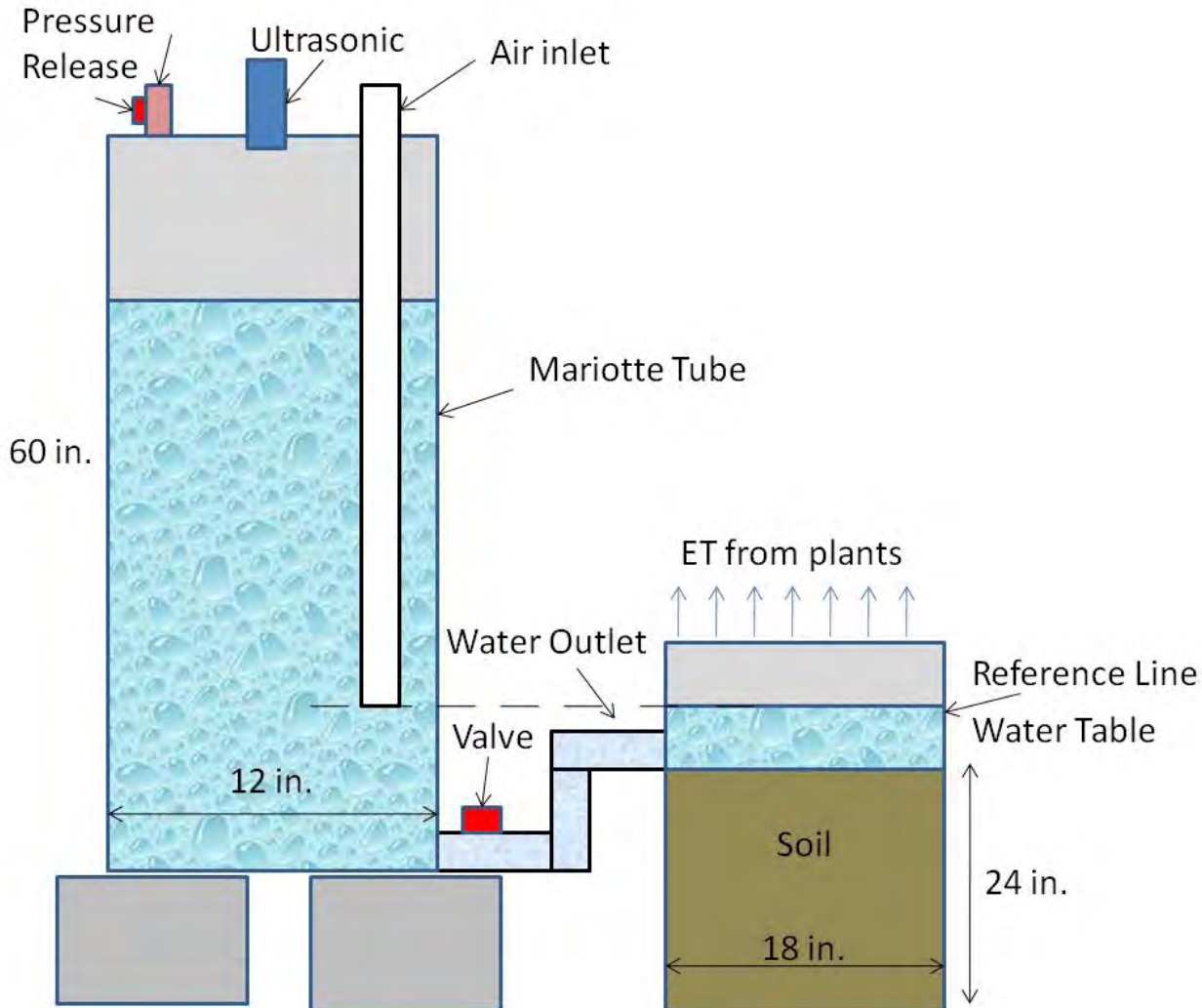
# ET

## Roof - Uncontrolled underdrain Lysimeter - No underdrain



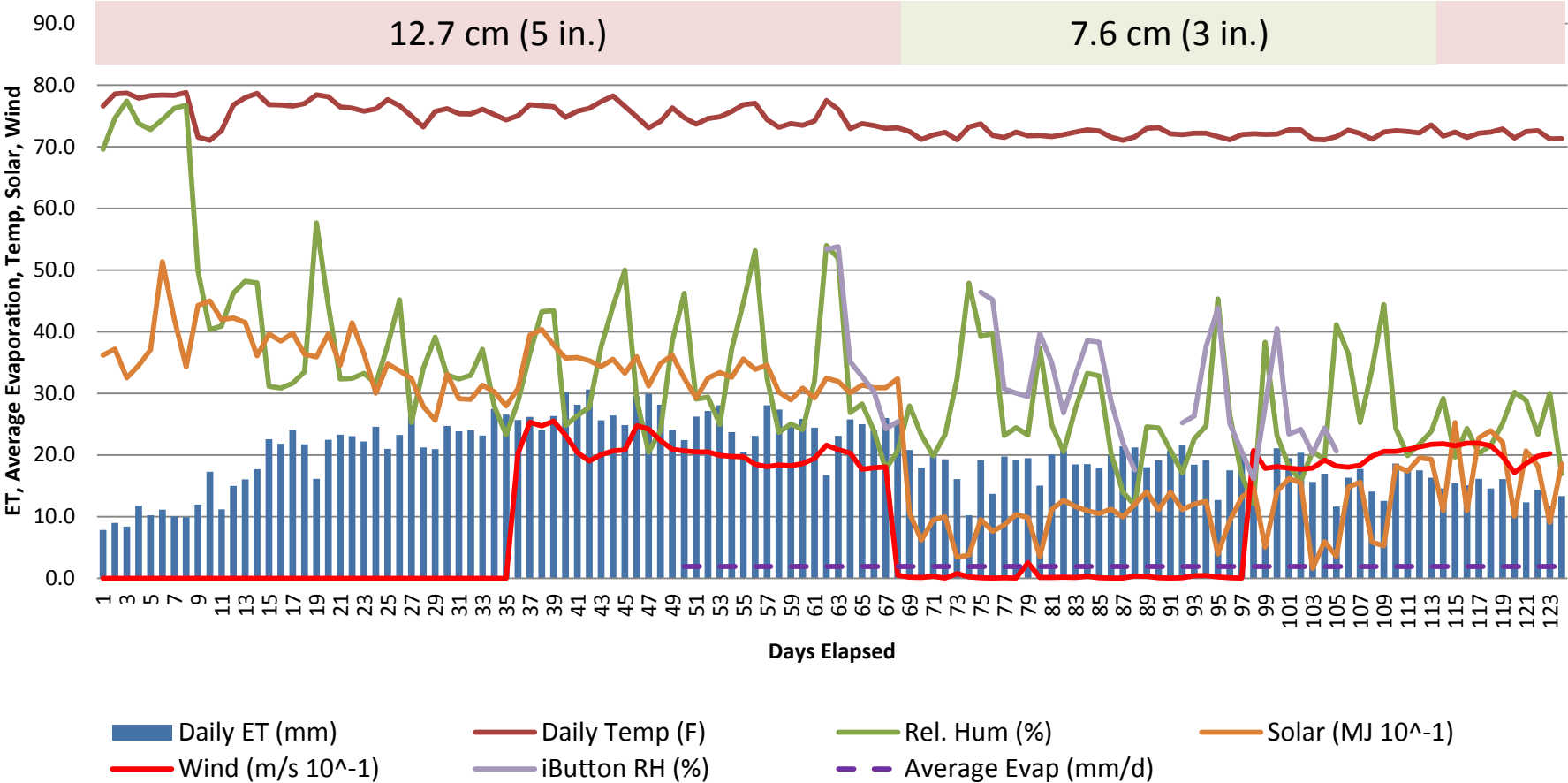


# Constructed Stormwater Wetland



# Constructed Stormwater Wetland

12.7 cm and 7.6 cm [5 in & 3 in] Water Table Daily Data (9/21/11 - 2/7/12)



Thank you for putting this together!

