



I N N O V A T I V E  
C O N S E R V A T I O N  
P R O G R A M



Metropolitan Water District of Southern California

# 2020 INNOVATIVE CONSERVATION PROGRAM PROJECT SHOWCASE

Sponsored in Collaboration with:



A  Sempra Energy utility®

CalWEP Peer to Peer

June 3, 2021



# 2020 ICP Projects



- 💧 **Standardized Test Method for High Efficiency Sprinkler Nozzles**  
Michael Dukes – University of Florida
- 💧 **Advanced Metering Infrastructure (AMI): Determine Water Savings with Leak Notices**  
Bill Christiansen – Alliance for Water Efficiency
- 💧 **New Technologies for Improved Agriculture Water Use Efficiency**  
Reinier van der Lee – Vinduino
- 💧 **Commercial Food Defroster Water Savings**  
Brett Abrams and Dylan Wolff – CNSRV WTR
- 💧 **Leak Detection and Water Consumption Monitoring in Multi-Family Properties**  
Ruzan Soloyan and Austin Bushur – Burbank Water and Power
- 💧 **Responsive Drip vs. Smart Controllers at the OC Fair Grounds**  
Jan Gould – Responsive Drip Irrigation



# Standardized Test Method for High Efficiency Sprinklers

CalWEP Peer to Peer Conference  
ICP Showcase  
June 3, 2021

Michael D. Dukes, PhD., P.E., C.I.D.  
Agricultural & Biological Engineering  
University of Florida/IFAS

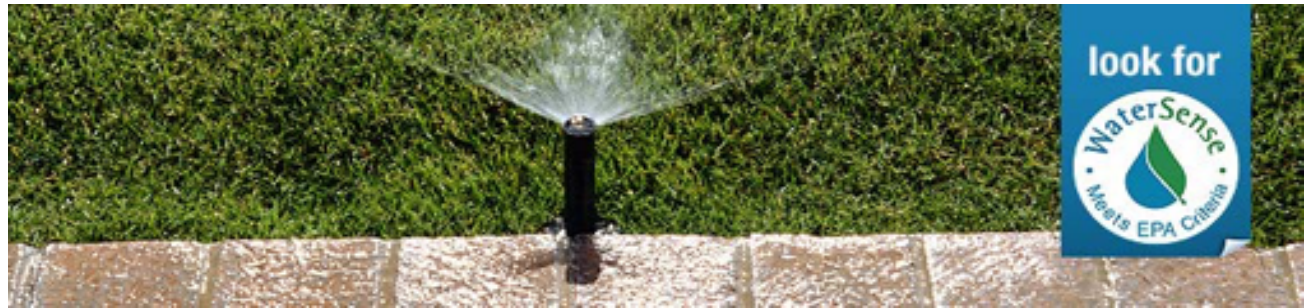
# EPA WaterSense Weather Based Irrigation Controllers (WBICs)

- Performed field testing and analysis
- Provided input on EPA WaterSense specification
- 780+ labeled controllers



# EPA WaterSense Spray Sprinkler Bodies (SSBs)

- Performed beta testing for EPA specification
- Tests pressure regulating sprinkler bodies
- CA mandates EPA WS SSBs since Oct 2020
- Similar legislation in CO, WA, HI, VT
- 340+ labeled SSBs





# EPA WaterSense Soil Moisture-Based Irrigation Control Technologies

- Funded by ICP Program
- Testing used for EPA specification



# High Efficiency Sprinkler (HES) nozzles

**RAIN BIRD**



**MP ROTATOR® MP800**

Radius: 6' to 16'



# Conventional Spray Head

- Misting (supply pressure typically  $>30$  psi)
- Poor spacing
- High instantaneous application rates ( $>1.0$  in/hr)



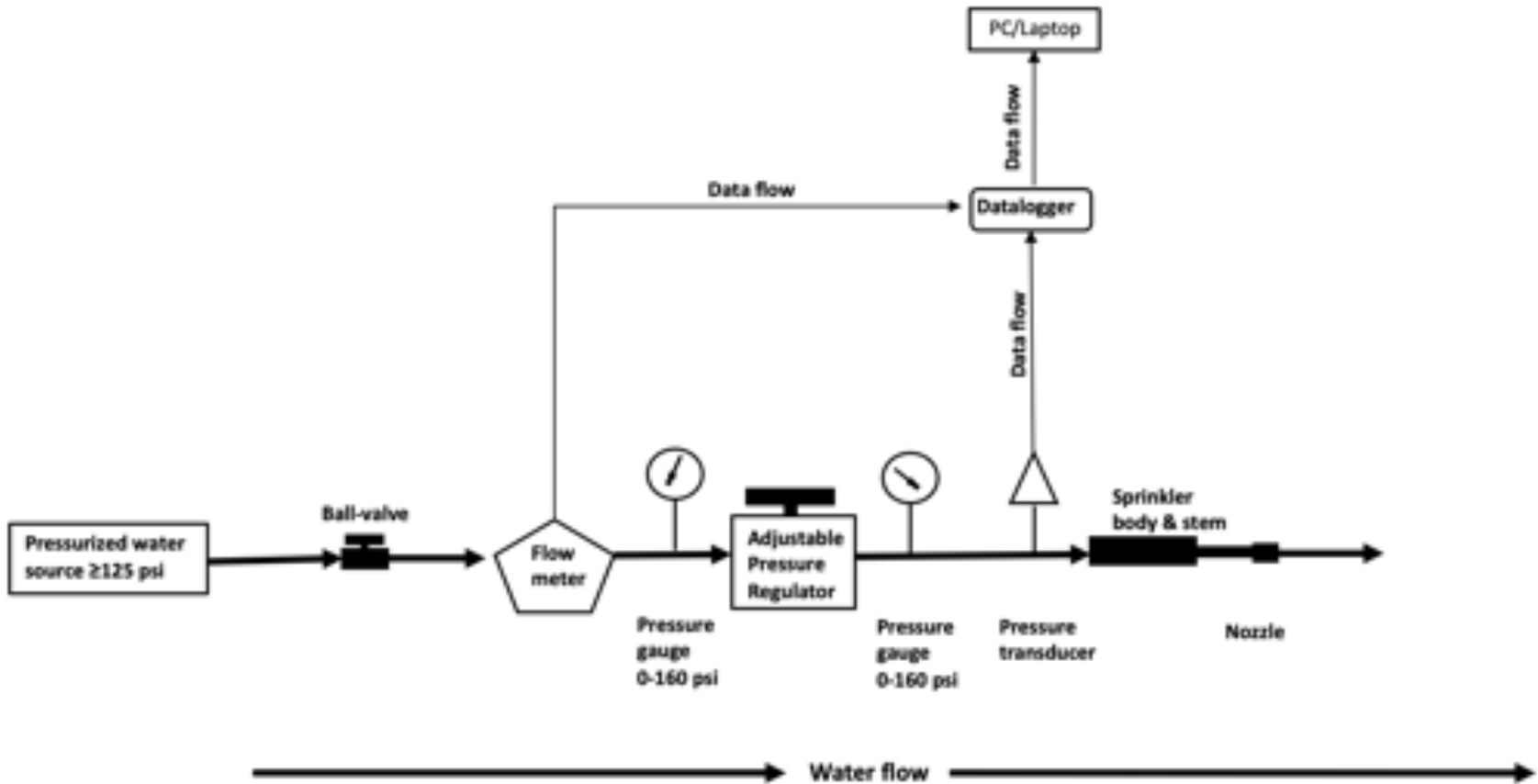
# Misting and Drift



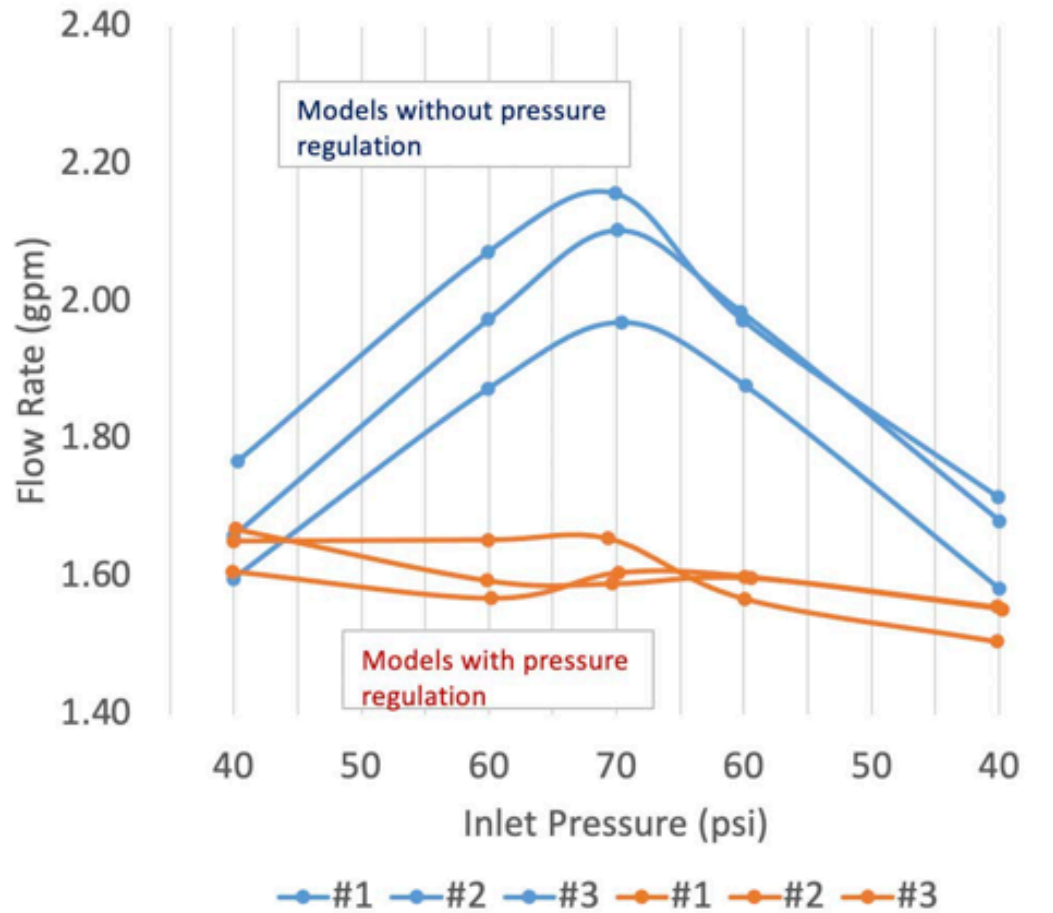
# Runoff



# HES Testing



# Example Data







mddukes@ufl.edu  
<http://abe.ufl.edu/mdukes/>





# DETERMINING THE SAVINGS FROM WATER LEAK NOTIFICATIONS

*Alliance for Water Efficiency*

# A VOICE FOR WATER EFFICIENCY IN NORTH AMERICA

- Our mission is to promote an efficient and sustainable water future
- Over 530+ member organizations in 200 watersheds delivering water to 50 million water users
- Our network and research focus is on smart solutions and Efficiency First



# AMI LEAK ALERT SAVINGS PROJECT

- Project emerged from AWE Research Committee
- Project will estimate water savings resulting from AMI enabled customer leak notifications for five water providers
- Project will explore barriers to leak notifications in the CII sector
- Project will outline methods other utilities can employ for similar analysis
- In the process of recruiting five participating water providers
- Working with Don Schlenger and David Mitchell





**vinduino™**

***ICP Project: New technologies for improved  
agriculture water use efficiency™***

***Reinier van der Lee***



# WE ARE GROWERS .....



- Labor Shortage & Cost
- Crop Yield & Quality
- Climate Resilience
- **Water, irrigate by intuition**
- Insects and Diseases



# VINDUINO PRODUCTS



**Satellite Crop sensing**

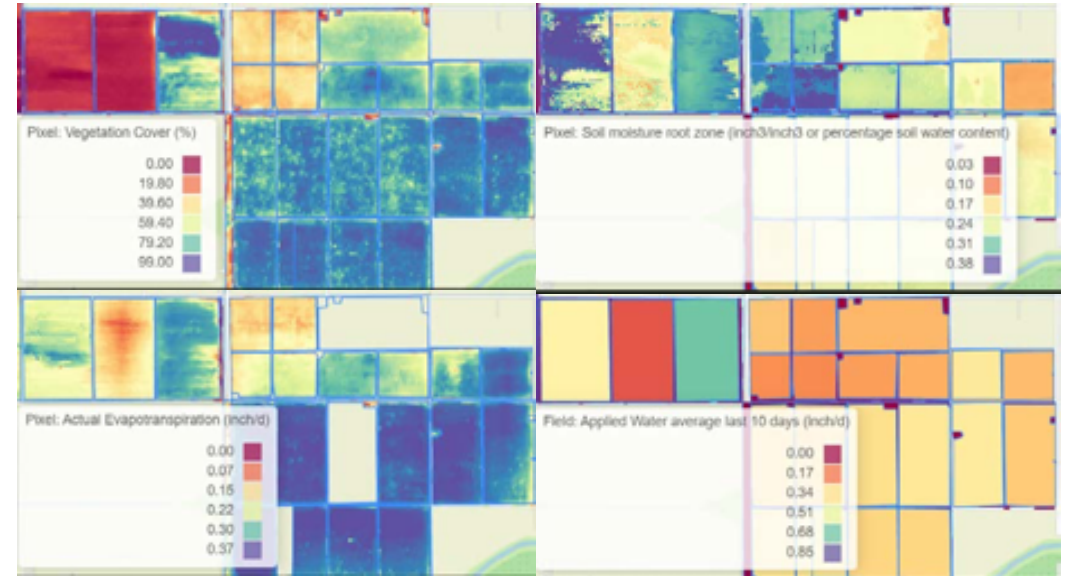
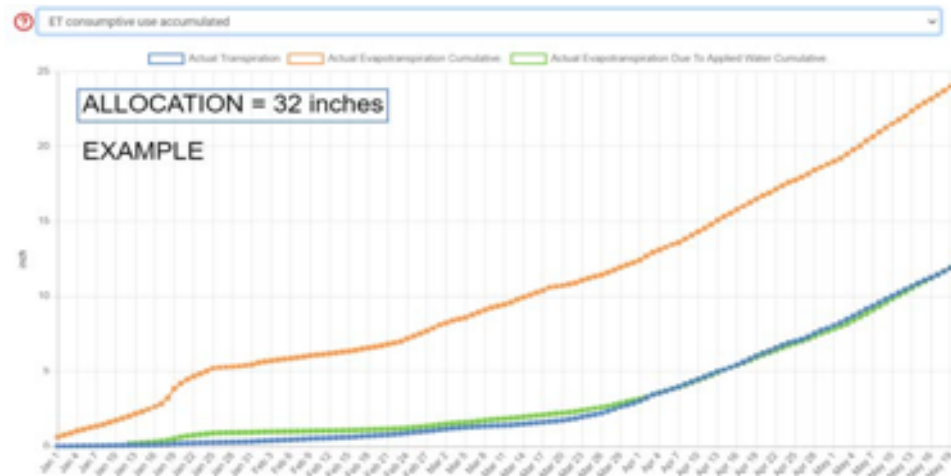
**Soil Moisture**  
wireless sensing

**Irrigation & Fertilizer**  
wireless Automation

Labor	Yield and Quality	Water Efficiency	Pest Management
✓	✓	✓	✓
✓	✓	✓	✓
✓	✓	✓	✓

# SATELLITE WATER BALANCE DATA

- Vegetation cover
- Soil moisture root zone
- Actual evapotranspiration
- Applied water average
- Crop coefficient



Madera County selected IrriWatch for measuring, monitoring and reporting ET from Applied Water for 10,000 fields (200,000 acres)

# NEW TECHNOLOGIES COMPARED

- Irrigation water efficiency (yield/gallon)
- Reduction of applied water
- Reduction of labor

	Purpose	Technology 1	Technology 2
Soil moisture	How often to irrigate	In situ sensors	Satellite remote sensing
Crop water use	How much to irrigate	CIMIS ETo x Kc	Satellite remote sensing
Irrigation	Crop yield and quality	Manual operation	Automated

# SETUP PHASE 1

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## 1. LOCATIONS

- 8 x vineyard blocks, 3 x avocado blocks

## 2. DATA COLLECTION

- Evapotranspiration (CIMIS and Satellite)
- Controlled irrigation: 1 x, 2 x, 4 x per week
- Plant water stress (pressure bomb)
- Soil moisture (in situ + satellite)
- Plant sap analysis, bi-weekly
- End of season: yield + fruit quality





# [WWW.VINDUINO.COM](http://www.vinduino.com)

**Reinier van der Lee, CEO & founder**  
**Vinduino LLC**  
**43200 Business Park dr, Ste 110**  
**Temecula, CA 92590**  
**[www.vinduino.com](http://www.vinduino.com)**



# CNSRV WTR

*(PURPOSE)* **SAFELY DEFROSTS FROZEN FOOD**

*(CONSERVES)* **WATER + MONEY + TIME**



Confidential

PATENTED | NSF51

**Dylan Wolff**  
**Founder & CEO**  
[dylan@cnsrvltd.com](mailto:dylan@cnsrvltd.com)



**(PROBLEM)**



# The Old Method to Defrost: Running Cold Water For Hours And Hours

## **A Medium Sized Commercial Kitchen:**

- Spends up to 8 hours defrosting daily
- 200,000+ gallons of water wasted each year
- \$3,000.00+ on water bills
- Food Quality Issues: Broken skin, water logged food, shelf life issues with over-defrosting.





(SOLUTION)





## CNSRV WTR Food Defroster : A Better Way To Defrost



The **CNSRV WTR Food Defroster** safely recirculates and regulates the temperature of water while defrosting frozen food using 98% less water than the running faucet method.



The average kitchen faucet dispenses 2.2 gallons of water per minute.  
The average kitchen defrosts food under running water for 4-5 hours daily.  
The average kitchen is using **660 gallons of water** to defrost per day.

**CNSRV WTR cuts that down to just 8 gallons per day.**



240,900 gallons of water used annually per kitchen = **\$4,818**

**CNSRV WTR (2,900 gallons) per kitchen = only \$58.40**



The average kitchen defrosts food under running water for 4-5 hours daily.

Utilizing full submersion, agitation, and temperature control:

**CNSRV WTR cuts that time in half.**





Food Scientists have proven that the faster food is defrosted, the more intact the flavor profile and texture remain.\*

Our customer's have proven this also.

\*SP Technical Research Institute of Sweden in Gothenburg

**CNSRV WTR maintains quality.**



**(STUDY THE WATER)**



# Metropolitan Water District Grant



In February of 2021, CNSRV LTD. was awarded an Innovative Conservation Program Grant (ICP) by the Metropolitan Water District.

The Metropolitan's ICP provides funding in cooperation with the Southern California Gas Company for research that will document water savings and reliability of innovative water savings devices.

The study will be run by the Adept Group Inc. and UCLA to capture the quantifiable data of active commercial kitchen's water usage when defrosting frozen foods. The study will commence April of 2021.

The Adept Group Inc will lead the research effort with assistance from students from both the UCLA School of Engineering and UCLA IoES (Environmental Science).

Ultrasonic flow sensors will be installed on commercial kitchen sinks where defrosting takes place. To qualify the readings, a camera will also be placed near the sink to ensure the reading is capturing “defrosting data”.

We will be able to quantify the amount of water being wasted and at the end of the study, will share the findings with each commercial kitchen that participated and provide them with the tools needed to save substantial amounts of water in their kitchens moving forward.

# SAVE WATER, MONEY, TIME.



## Join Us.

We are UCLA students working with the Adept Group inc. and CNSRV LTD. conducting a study to measure water usage during food defrosting.

By participating you will improve your bottom line, upgrade your defrosting practices, and make the world a better place.

## What We Do.

We install completely non-intrusive measuring instruments on/near your sink to capture water usage stats when defrosting frozen food for up to ten days. That’s it. All collected data will be shared once the study is complete.

## What Do You Get?

At the end of the study you will receive a water conservation kit consisting of one CNSRV Defroster and one Platescrape. (over \$1,000 in value)

*“We are saving 1-2 hours on the process and able to not miss a step in prep or service. My team likes using the defroster so much that they've nicknamed it, 'Thawmaster 5000'. Thanks to CNSRV WTR.”*

**-Craft House**  
Dana Point, CA

*“Not only do they support a sustainable method of thawing while reducing operational costs, but also adhere to food health and safety standards. I recommend CNSRV for anyone operating in the retail food or restaurant sector.”*

**-Santa Monica Seafood**  
Santa Monica, CA



**THE ADEPT GROUP, INC.**



For more information about the study and how to participate please contact Samantha Draghi at: [Sdraghi@ucla.edu](mailto:Sdraghi@ucla.edu) to join.



Thank  
You.

For more information please visit: [www.cnsrvtr.com](http://www.cnsrvtr.com)  
[dylan@cnsrvltd.com](mailto:dylan@cnsrvltd.com) | 818.914.1156

Burbank Water and Power Pilot Project:

# H2Know Device for Multi-Family Water Leak Detection and Monitoring

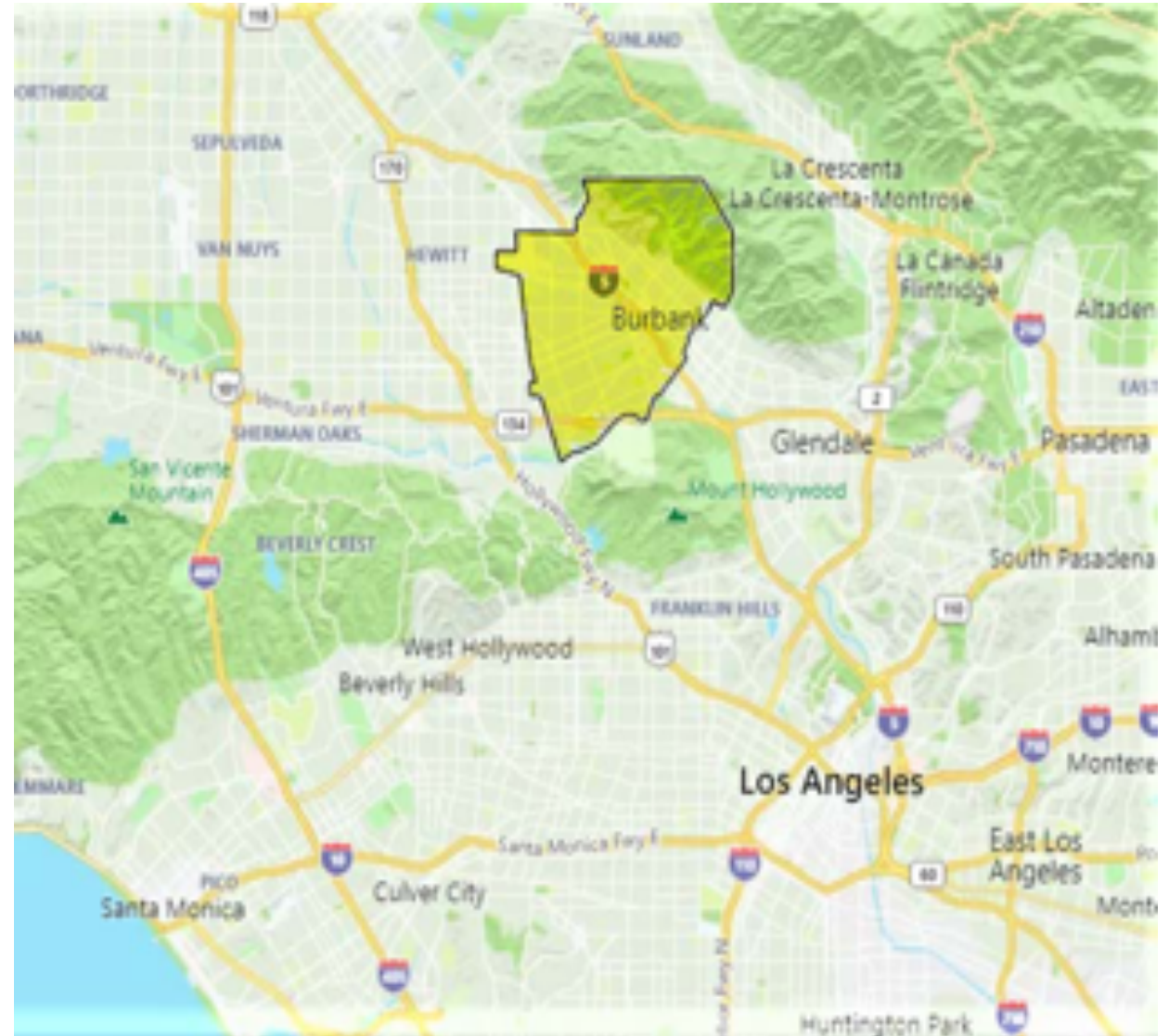
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# BURBANK AT A GLANCE

- Burbank: the Media capital of the world
- BWP was formed in 1913
- Burbank service area: 17.35 sq mi
- Population: ~ 104,000
- End Users : ~ 53,000
  - ~ 53,000 metered electric connections
  - ~ 27,000 metered water connections



# OUR CUSTOMERS



45,913  
Residential



5,907  
Small Commercial



1,274  
Medium Commercial



216  
Large Commercial



156  
Extra Large Commercial

49% SF

51% MF

Only 13% of MF  
end water users  
are metered



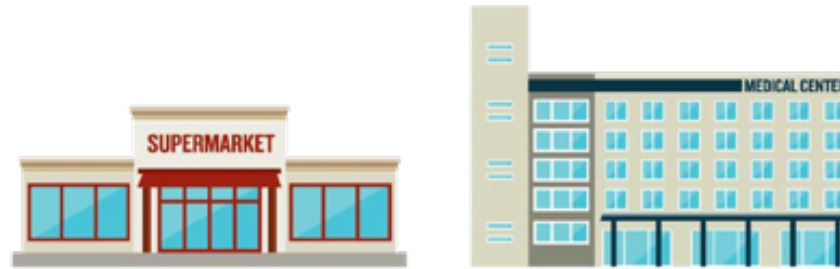
27,000  
Water meter  
connections



# ANNUAL WATER CONSUMPTION



**18,000 AF**



**Residential**

**Commercial**

**Recycled**

**65%**

**18%**

**17%**

**43% SF**

**23% MF**

# BWP PROGRAMS PORTFOLIO



WATER AND  
POWER

## Energy Efficiency

- AC Replace Before it Breaks
- Refrigerator for Low-Income
- Residential Rebates
- Shade Tree Program
- Business Bucks
- Business Rebates
- Upstream HVAC

## Energy and Water Efficiency

- Home Improvement Program
- LivingWise Educational Program
- MWD Funded Programs

## Resource Conservation and Education

- WaterSmart Software
- Water Waste Enforcement Program
- Retrofit Upon Resale
- Education, Engagement, Awareness

# BWP: MWD'S MEMBER AGENCY



- **Imported Water**
- **MWD Regional Programs**
- **MWD Member Agency Administered Programs**
- **ICP Grant**

# WATER CONSUMPTION METERING



- **Advanced Metering Infrastructure (AMI)**
- **Lack of submeters for multi-family units**
- **Failing AMI communication modules**





# BWP AND CONSERVATION LABS PARTNERSHIP

- **Evaluate** the plumbing schematics and installation feasibility
- **Identify** potential eligible buildings
- **Install** H2Know devices
- **Register**, group the H2Know devices in the Water Monitor App
- **Provide** software and on-site support for H2Know devices
- **Obtain** monthly data and reports for:
  - Leaks identified
  - Troubleshooting Issues
  - Leak alerts sent to customers
- **Remove** the devices after the pilot project if requested by BWP
- **Evaluate** water-savings and reliability of the H2Know

# BWP ICP PILOT STUDY OBJECTIVES



- 1. Provide information** to multi-family customers
  - Water usage
  - Leak notifications
  - Customized conservation tips to unit tenants
- 2. Evaluate water savings**
  - Install 200-250 H2Know devices at each unit level of selected multi-family buildings
  - Collect data for a 7-8 month period

A large blue diagonal graphic on the left side of the slide, transitioning from a darker blue at the top to a lighter blue at the bottom.

## FOR MORE INFORMATION PLEASE CONTACT:

Ruzan Soloyan, CEM  
Marketing Associate  
[Rsoloyan@burbankca.gov](mailto:Rsoloyan@burbankca.gov)

Austin Bushur  
Customer Service Representative  
[Abushur@burbankca.gov](mailto:Abushur@burbankca.gov)

The background of the entire advertisement is a photograph of a wide, paved walkway in a park, likely Grant Park in Chicago, with the city skyline visible in the distance under a clear blue sky. The walkway is flanked by green lawns and trees. In the foreground, there are some stone pillars or markers.

# RDI

RESPONSIVE  
DRIP  
IRRIGATION

## GrowStream

- CITIES & MUNICIPALITIES -

**THE WORLD'S FIRST AND ONLY  
PLANT-RESPONSIVE  
WATER DELIVERY SYSTEM**

**THE SMARTEST  
MOST WATER EFFICIENT  
IRRIGATION SYSTEM EVER MADE**



All previous irrigation technologies "force" water into the soil, attempting to uniformly distribute moisture and ideally match evapotranspiration rates (ET). New "smart" controllers and sensor technology allow for greater insight into crop environments - but can still only estimate the need of a broad area of plants.

GrowStream™ ushers a new generation for water delivery - the world's first system able to interact with plant roots to deliver exactly what EACH plant calls for, minute-by-minute, plant-by-plant.



SPRINKLER / SPRAY



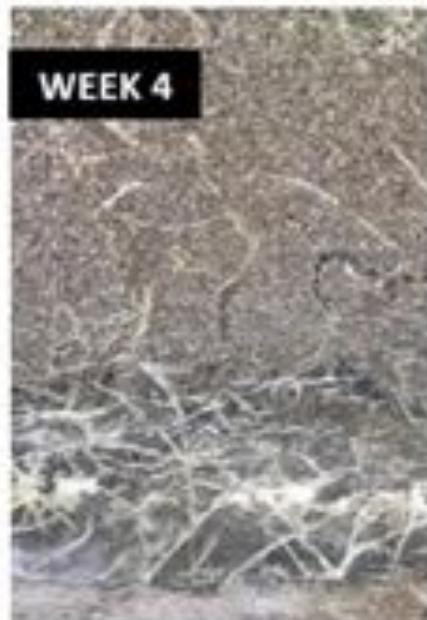
DRIP / MICRO



SOAKER, HYDROPONICS

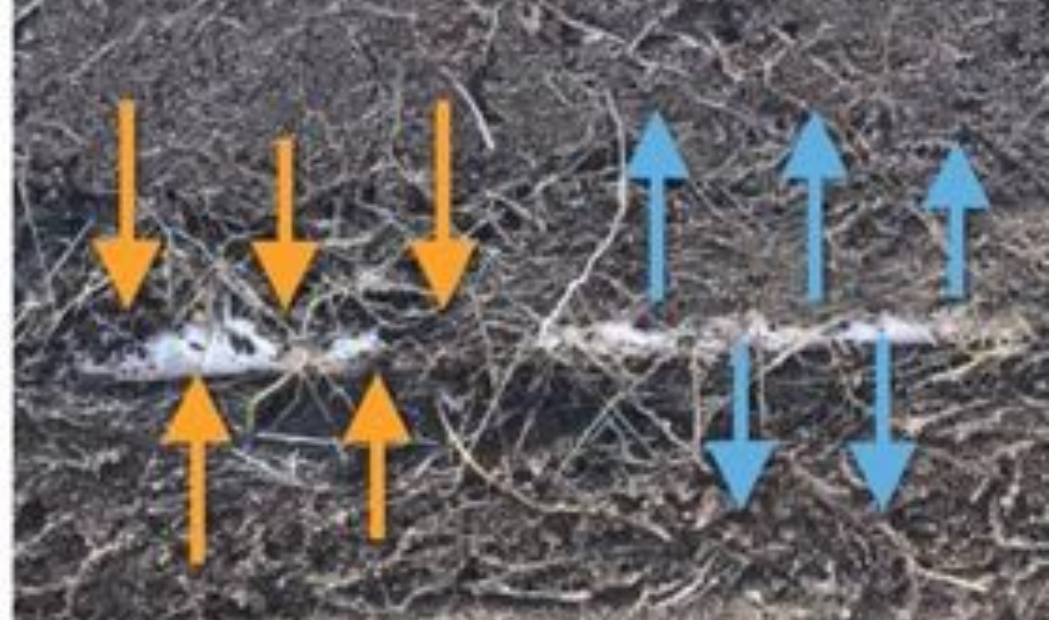






Roots release natural exudates that travel towards GrowStream™ tubing

GrowStream™ responds to the exudates and releases water & nutrients on demand.



## ULTIMATE EFFICIENCY - ULTRA EASY

- **30 – 90% LESS WATER USE**
- Completely variable emission rates to support mixed plantings
- No controller, electric valves or wiring needed
- Fewer, larger zones

## SET IT AND FORGET IT

- No complicated controller to program & support
- Automatically adjusts for weather conditions and plant maturity
- No wiring to go bad, no valves to break, no root intrusion or clogging

**SMARTER THAN  
THE SMARTEST  
CONTROLLERS**

**GROWSTREAM  
WORKS WITH  
NATURE, NOT  
AGAINST IT.**



HOLLYWOOD HILLS - BEFORE



AFTER 6 MONTHS





ORANGE COUNTY, CA POLLINATOR GARDEN



AFTER 30 DAYS





## MWD's Innovative Conservation Program

Through its participation in the Metropolitan Water District of Southern California's (MWD) Innovative Conservation Program, RDI's goal is to demonstrate that GrowStream™ is a water saving technology, equal or better than existing approved technologies.

Once RDI has successfully demonstrated its water-efficiency, as the system is adopted it will have a substantial impact on water conservation efforts in the region and help provide solutions to California's pressing water security issues in the context of irrigation.

1. RDI will be conducting a data-driven, comparative trial between the GrowStream™ system and an MWD-approved smart controller and a leading drip irrigation system.
2. Each irrigation system will be installed on a plot of land opposite of each other at the OC Fairgrounds. The side with the standard drip system will measure 1,750 sq. ft. in size and the GrowStream™ side measuring 3,500 sq. ft.
3. Each side will be planted with an identical mix of plants per sq. ft., and water usage will be compared accordingly per sq. ft.
4. This mix will include a variety of plants with different water-use requirements, ranging from plants with low water use to higher water use, which will help to determine the system's performance using diverse plant types with varying water requirements.
5. Plant health observations will be made weekly, and water usage data will be collected daily.
6. A final report with compilations of data, analysis and findings will be completed by an outside, independent agronomist and submitted to the MWD.

## Plant Design for RDI Section

*The RDI GrowStream™ section measures 3,500 sq. ft.*

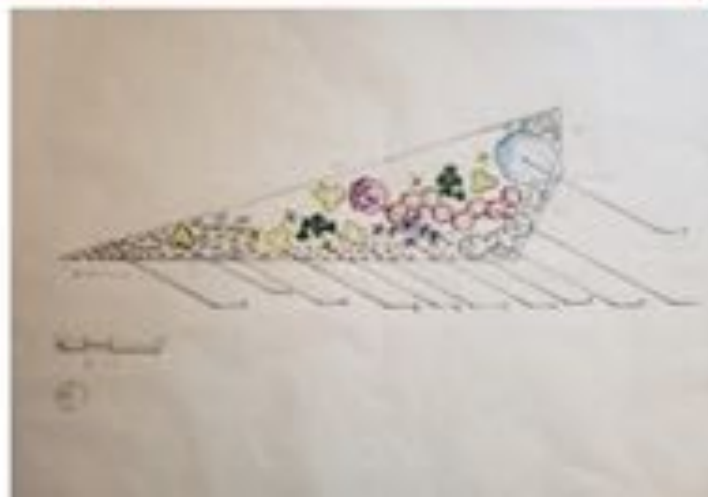


### RDI System Configuration Measurements & Tubing Placement



## Plant Design for SSDI Section

*The subsurface drip system measures 1,750 sq. ft.*





## Comparative Trial: RDI System versus SSDI

- Plants installed on May 18
- Irrigation installed May 21
- Water measurements started May 24

- RDI System
- Water Usage: 2,351.68 gallons



- SSDI System
- Water Usage: 24,594 gallons



SSDI section has significant weed growth





**RDI**  RESPONSIVE  
DRIP  
IRRIGATION

*GrowStream* 

**PRESERVING WATER...  
THE ESSENCE OF LIFE**

[www.responsivedrip.com](http://www.responsivedrip.com)





# Questions?

ICP info:  
[www.mwdh2o.com/ICP](http://www.mwdh2o.com/ICP)



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