



CALIFORNIA
**WATER EFFICIENCY
PARTNERSHIP**

CII DEDICATED IRRIGATION METER MANAGEMENT

WEBINAR – APRIL 23, 2020

Welcome

- The webinar has a Q&A session
- The audio is on a computer monitor
- The webinar is free because we are a non-profit
- Polling is included in the Q&A session
- Let's walk through the Q&A session

Q&A

You asked:18:03

What happens when I raise my hand?

Molly Parker answered:18:04

I can take you off of mute.

Please input your question

☐ Send Anonymously

Send

me for
your
the same time)
presentation
our
tools.

Audio Settings ^

Leave Meeting



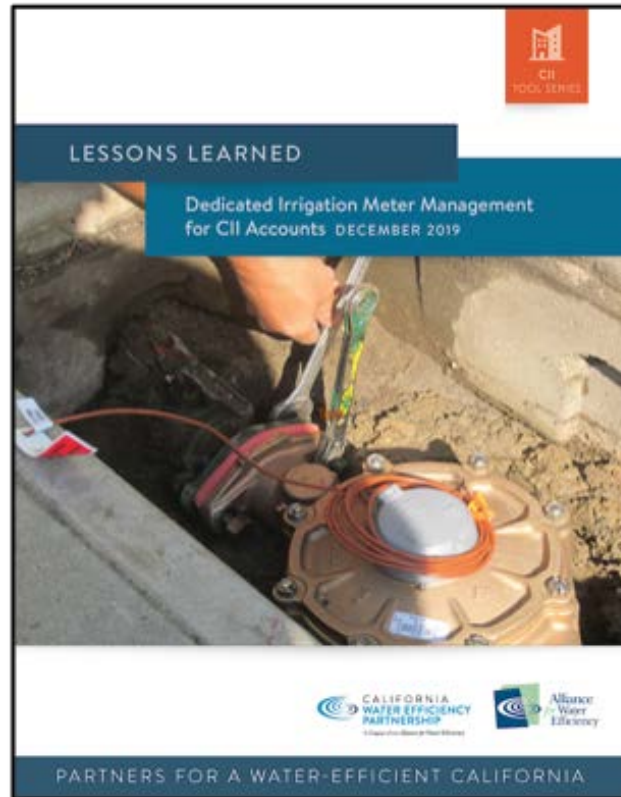
CALIFORNIA
WATER EFFICIENCY
PARTNERSHIP

A chapter of the Alliance for Water Efficiency

NEW RESOURCEAlert



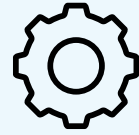
CII
TOOL SERIES



Available now:
CalWEP.org/resource



CALIFORNIA
WATER EFFICIENCY
PARTNERSHIP



Part I: The Framework

Peter Brostrom
Department of Water
Resources



Part II: The Report

Mary Ann Dickinson
Alliance for Water Efficiency



Part III: Lessons Learned

Water agency panel



Part IV: Looking Forward

Industry panel

Implementing the 2018 Water Conservation Legislation-Dedicated Irrigation Accounts

CALWEP Webinar
April 23, 2023
Sacramento, CA

Peter Brostrom, Chief
Water Use and Efficiency Branch



CALIFORNIA DEPARTMENT OF
water resources



BMP 5: Large Landscape



CALIFORNIA DEPARTMENT OF
water resources

Urban Water Use Objective:

Indoor Residential Budget

+

Outdoor Residential Budget

+

CII Dedicated Irrigation Account

+

Distribution System Water Loss Budget



CALIFORNIA DEPARTMENT OF
water resources

Process:

- 1.) DWR conducts studies, develop recommendations by October 2021 for
 - a.) Dedicated Irrigation Account Standards
 - b.) Landscape Size threshold
- 2.) Board adopts regulations (June 2022)
- 3.) Water use tracking begins in 2022.
- 4.) Water suppliers report on water use January 2024





Public Review Draft



MAKING WATER CONSERVATION A CALIFORNIA WAY OF LIFE

Primer of 2018 Legislation on Water Conservation and Drought Planning

PREPARED BY



California Department
of Water Resources

AUGUST 2018



CALIFORNIA DEPARTMENT OF
water resources



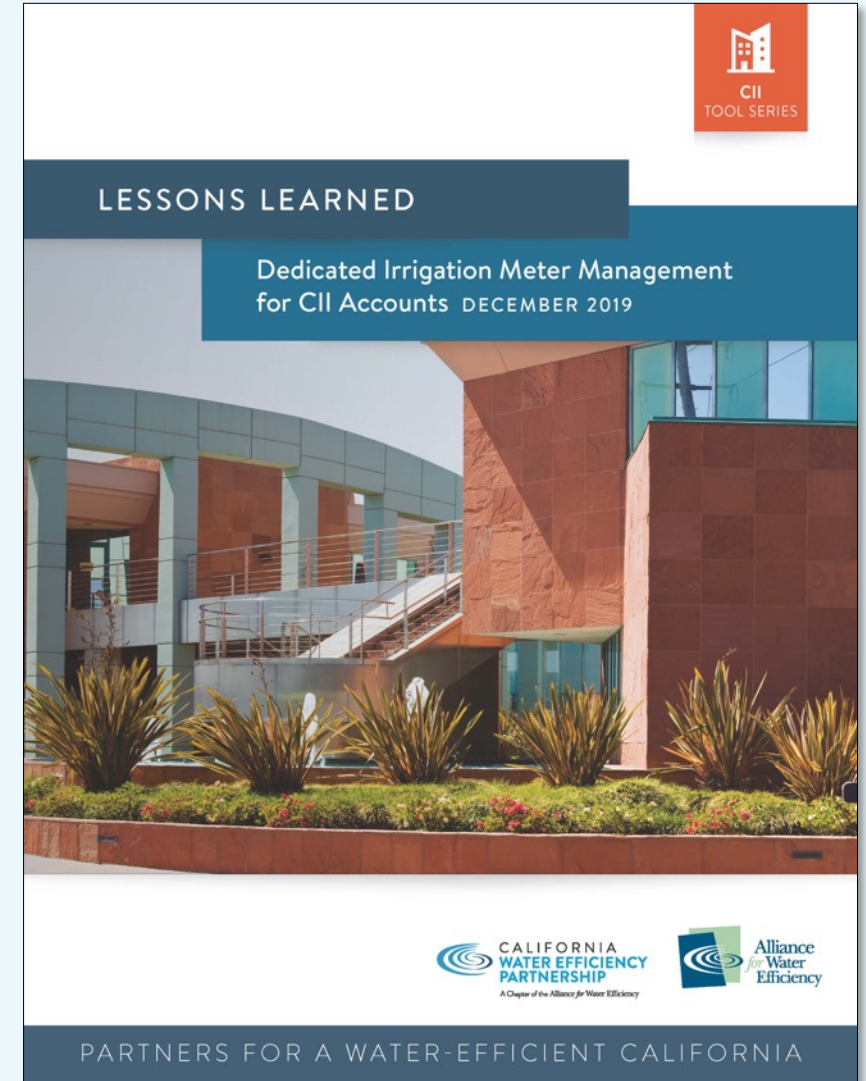
CALIFORNIA
**WATER EFFICIENCY
PARTNERSHIP**

REPORT SUMMARY

Mary Ann Dickinson
President and CEO
Alliance for Water Efficiency

HOW IT WAS PREPARED

- Detailed interviews with 9 water suppliers
- Online Survey with 56 respondents
- Compilation of data and lessons learned from water agencies who have been conducting DIMM programs for years



WATER SUPPLIER	RETAIL / WHOLESALE	TOTAL NO. OF CONNECTIONS	WATER BUDGET RATE STRUCTURE	WATER BUDGET BASED RATES FOR CII CUSTOMERS	NO. OF COMMERCIAL ACCOUNTS
Contra Costa Water District*	Wholesale/Retail	61,721	No	N/A	2,800
East Bay Municipal Utility District	Retail	390,000	No	N/A	20,000
Irvine Ranch Water District	Retail	127,435	Yes	Yes - All	6,326
Moulton Niguel Water District	Retail	55,121	Yes	Yes	5,628 CII accounts (of which 2,685 are dedicated irrigation)
City of Roseville	Retail	45,675	No	N/A	2,155
City of Petaluma	Retail	20,656	No	N/A	2,507
Sacramento Suburban Water District	Retail	47,455	No	N/A	2,207
Santa Margarita Water District	Retail	57,300	Yes	Only dedicated irrigation meters	5,250 (2,900 of which are irrigation meters)
Western Municipal Water District*	Wholesale/Retail	24,382	Yes	Only dedicated irrigation meters	1,011

*Both a retail and wholesale agency. For the purposes of this interview the answers pertain to the retail area.

PLANNING STEPS

1. Installing Dedicated Irrigation Meters
2. Measuring Dedicated Irrigation Meter Landscape Areas
3. Designing Water Budgets
4. Utilizing Water Budgets
5. Communicating with CII Customers
6. Meter Management Program Effectiveness
7. Lessons to Share Direct from Suppliers



QUESTIONS THE REPORT ADDRESSES

- How many suppliers have already implemented a dedicated irrigation meter management program?
- What were their experiences? What have they learned? What is still unknown?
- Are meter management programs effective in conserving water?
- What were water agency experiences with measurement and verification of the landscape area?
- What was learned about creating budgets for that landscape area?
- What were the best practices in managing landscapes with dedicated irrigation meters?
- What did water agencies find to be the most cost-effective options?

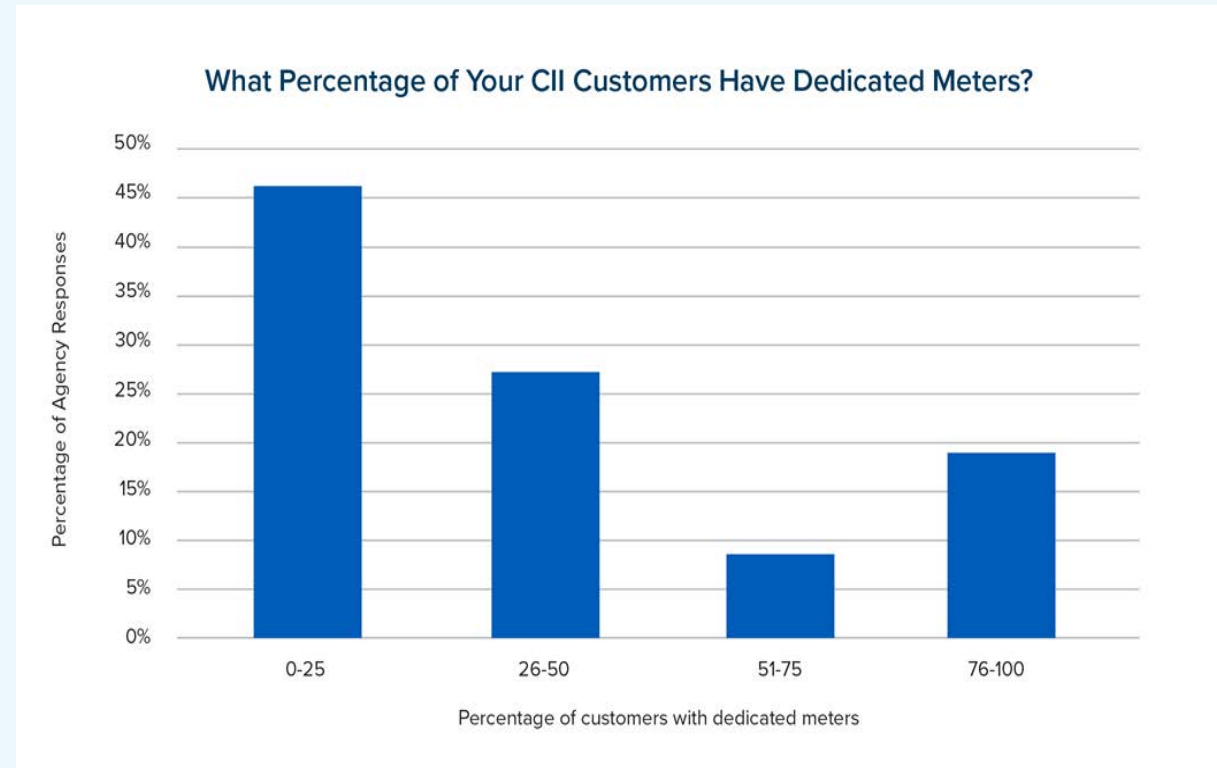
BUILDING ON PAST GUIDANCE

- CUWCC BMP 5 Handbook was first major guidance on DIMM (Appendix 3a)
- CUWCC Landscape BMP Implementation Guidebook (Appendix 3b)
- CUWCC June 2014 BMP Costs and Savings Study Update on Large Landscapes (Appendix 3c)
- This guidebook does not repeat the information in these resources
- Instead it focuses on lessons learned by water agencies in the process of developing their programs



KEY FINDINGS: INSTALLING DEDICATED IRRIGATION METERS

1. The majority of CII irrigation water use is not separately metered.
2. The highest percentages of dedicated irrigation meter installation were in those water suppliers that paired their dedicated irrigation meter accounts with water budget-based rates.



KEY FINDINGS: MEASURING IRRIGATED AREAS

1. Measurement accuracy is vital for fair water budgets.
2. Alignment of parcel information with irrigated area is critical for aerial measurements. In many instances, parcel boundaries do not align with the coverage areas of dedicated irrigation meters.
3. The most accurate method of measurement is “on the ground” field measurements.
4. Field measurement are the most time consuming and costly.
5. Combining aerial imagery with subsequent field measurement is the preferred approach for measuring landscape areas.
6. Most suppliers did not exempt special landscape areas but instead provide an additional budget allocation factor.
7. Nearly all suppliers verified customer-supplied measurement data.

KEY FINDINGS: DESIGNING WATER BUDGETS

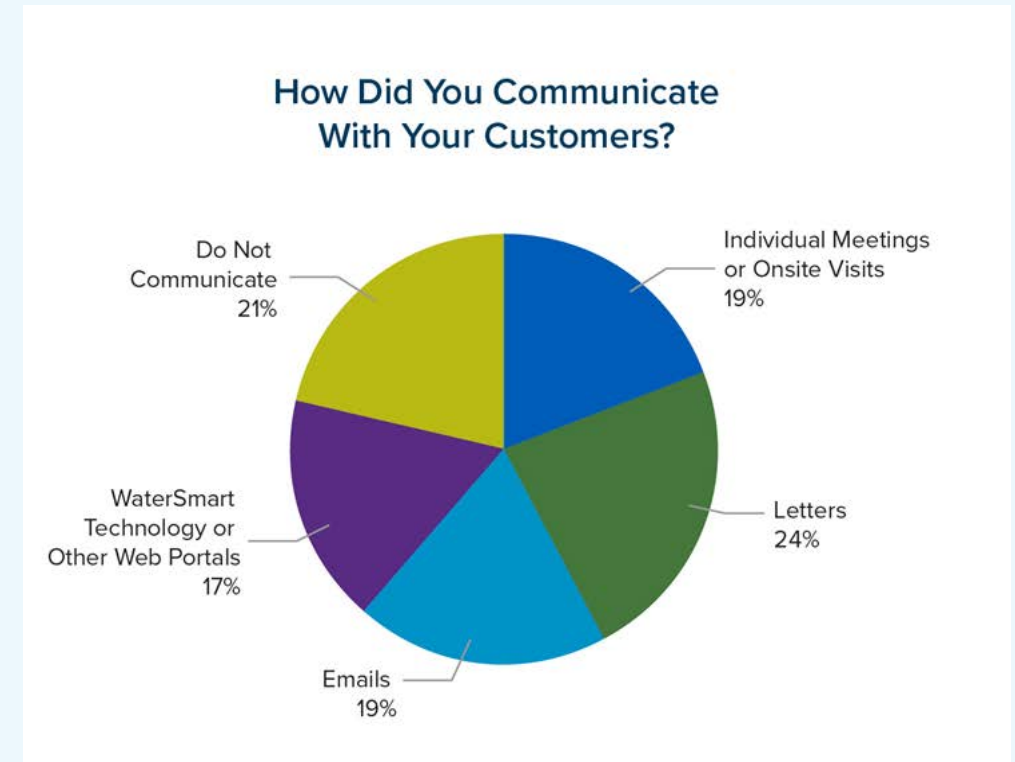
1. Almost half of suppliers contacted do not have water budgets associated with their dedicated meters.
2. All of the budgets used some combination of evapotranspiration, landscape area and irrigated and/or irrigable area.
3. The water budgets are generally not GIS parcel system-driven.

KEY FINDINGS: UTILIZING WATER BUDGETS

1. Very few suppliers automatically flag accounts for using over their water budget allocation – the noncompliance has to be queried by staff and individually tracked.
2. Integration into billing and GIS systems is an effective way to compile a comprehensive customer and site profile.
3. There is a wide variation in the use of customer alerts when a dedicated irrigation meter water budget is exceeded.
4. The most common form of data storage for dedicated irrigation meter accounts is a database keyed to premise-specific number

KEY FINDINGS: COMMUNICATING WITH CII CUSTOMERS

1. Water budgets -- and performance against those budgets -- provides an opportunity for on-going communication with customers and landscape managers.
2. There are multiple players involved in managing CII landscapes. Each plays a unique role and requires involvement at some level.
3. Identifying and getting the attention of the right people to communicate with can be difficult and time consuming.



KEY FINDINGS: COMMUNICATING WITH CII CUSTOMERS

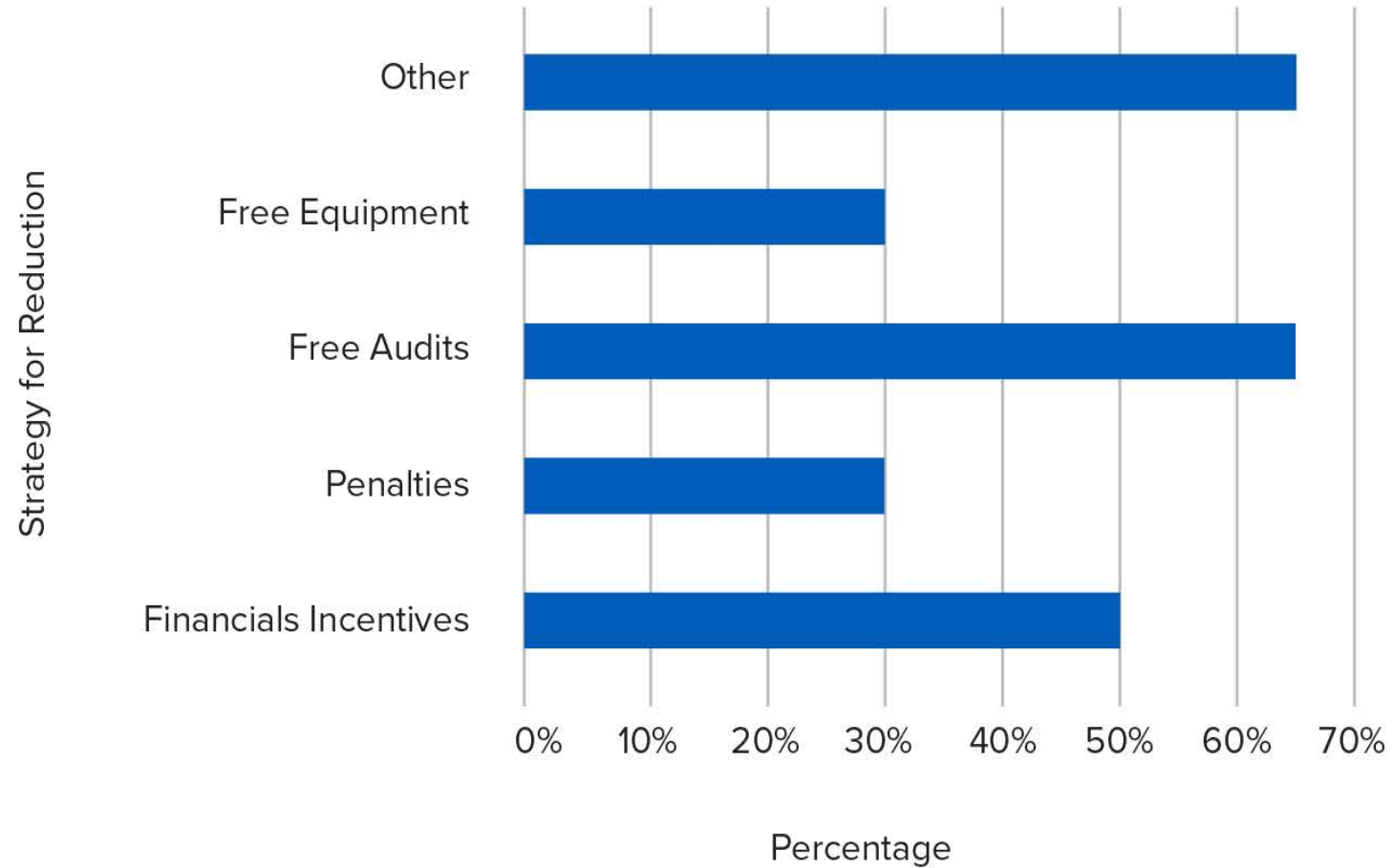
4. It is necessary to create a relationship with the customer to build trust.
5. Communicating with all stakeholders improves results.
6. Educate the customer on the value of including the landscape service providers, even if it means initial out of pocket expense.



KEY FINDINGS: PROGRAM EFFECTIVENESS

1. Irrigation meter management programs reduce water usage.
2. Financial incentives (e.g. increased rates or penalties) are a significant factor in successfully utilizing water budgets to drive down usage.
3. The highest water saving was achieved when coupled with water budget-based rates.
4. Implementing irrigation meter management programs can be costly, but most water suppliers did not specifically assess cost effectiveness.

How Did You Achieve Reductions to Meet the Budget?



CHECK OUT THE ONLINE APPENDICES!

<https://calwep.org/resource/lessons-learned-dedicated-irrigation-meter-management-for-cii-accounts/>

Appendix 1: Summary Data from the 55 online survey respondents

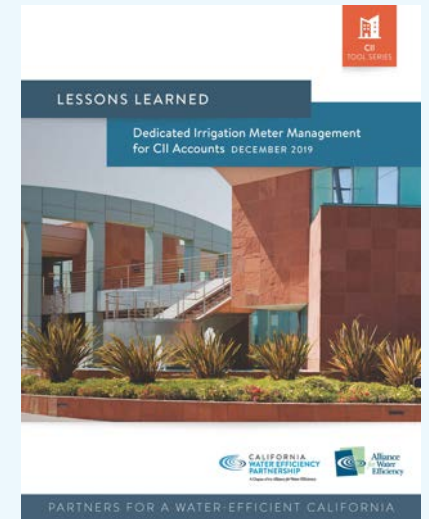
Appendix 2: Water Agency Detailed Interviews (anonymized)

Background Resources

Appendix 3a: CUWCC BMP 5 Handbook was first major guidance on DIMM

Appendix 3b: CUWCC Landscape BMP Implementation Guidebook

Appendix 3c: CUWCC BMP Costs and Savings Study Update on Large Landscapes



LESSONS LEARNED PANELISTS



Nate Adams

Santa Margarita Water
District



Amy McNulty

Irvine Ranch Water District



Bob Eagle

Contra Costa Water District



Moderated by Tia Lebherz

California Water Efficiency Partnership

LESSONS LEARNED: WHAT WE'LL COVER

Approaches to
Measurement

Classification
and Billing

Getting &
Giving Data



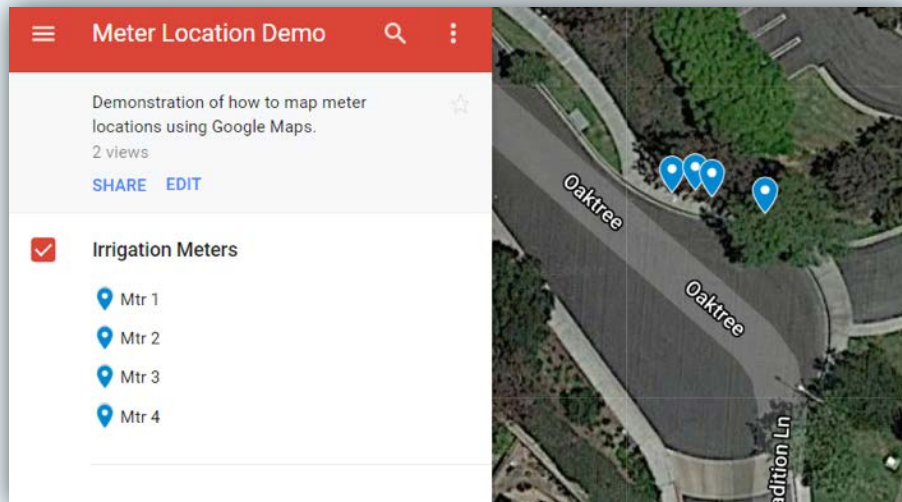
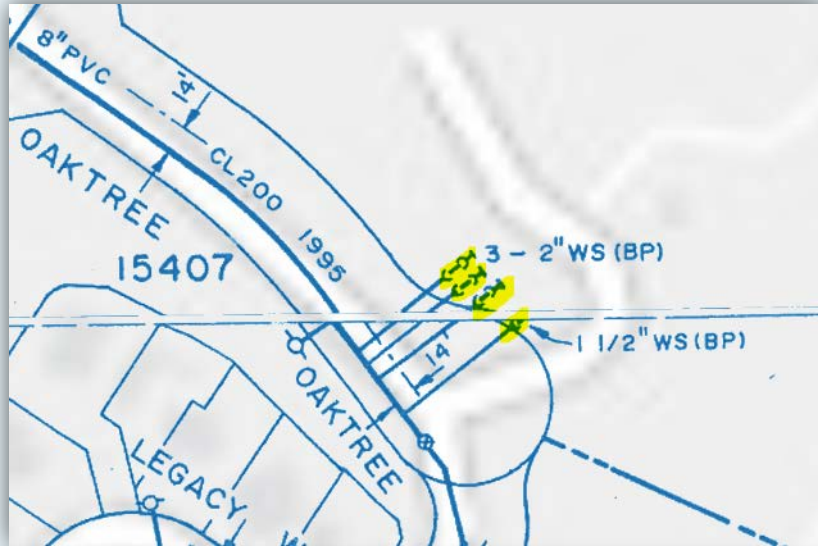
APPROACHES TO MEASUREMENT

Irrigation Meter Location & Coverage Areas

- Find, Map, Measure, & Use
 - Tools: Grid Maps; Google Maps/Earth; GPS; GIS

Availability, Resources, Labor, & Cost

MAPPING IRRIGATION METER LOCATIONS (LOWER COST VERSION)



- What meters to capture and map?
- Use existing Grid (Atlas) Maps & Record Drawings
 - EX: three 2" irrigation meters & one 1.5" commercial meter
- Map them in Google Maps or Earth
 - Google Maps: routable directions & can export as KML/KMZ files for use in GIS
 - Basic information storage/retrieval
 - Map points, lines, & polygons

Mapping Meter Locations *(higher cost version)*

CIS, GPS, & GIS

1. Obtain list of meters to map from Customer Information System (CIS)
2. Capture meter locations in field (GPS)
3. Map, edit, & link data using Geographic Information System (GIS)



Aerial Imagery

3" 4-band; June 2017

Blue Polygons

APN Parcel Boundary

Irrigation Meter Locations

-  Domestic Water
-  Recycled Water



Mapping & Measuring Irrigation Meter Coverage

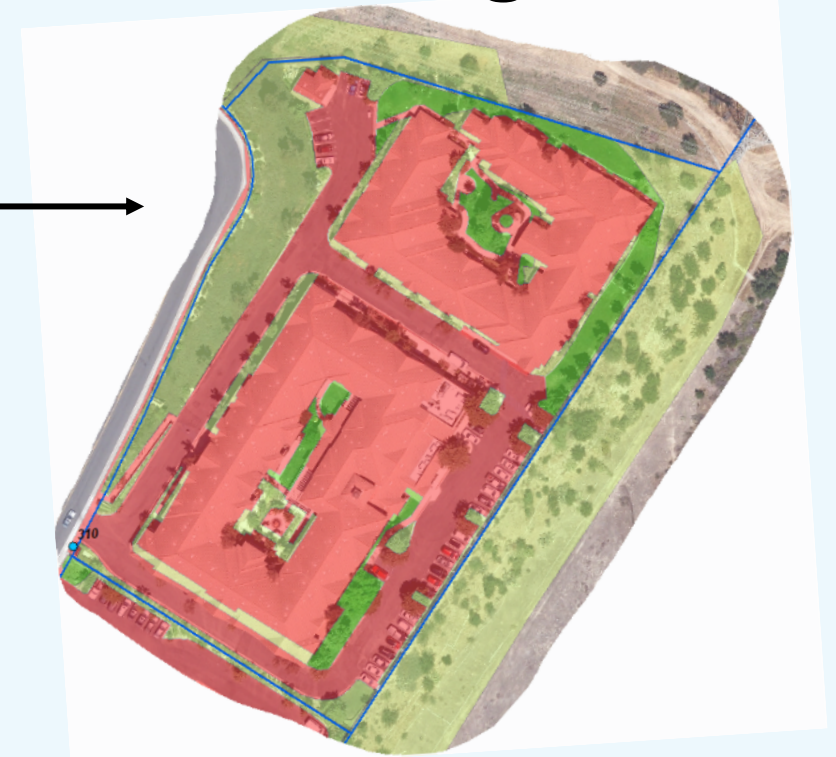
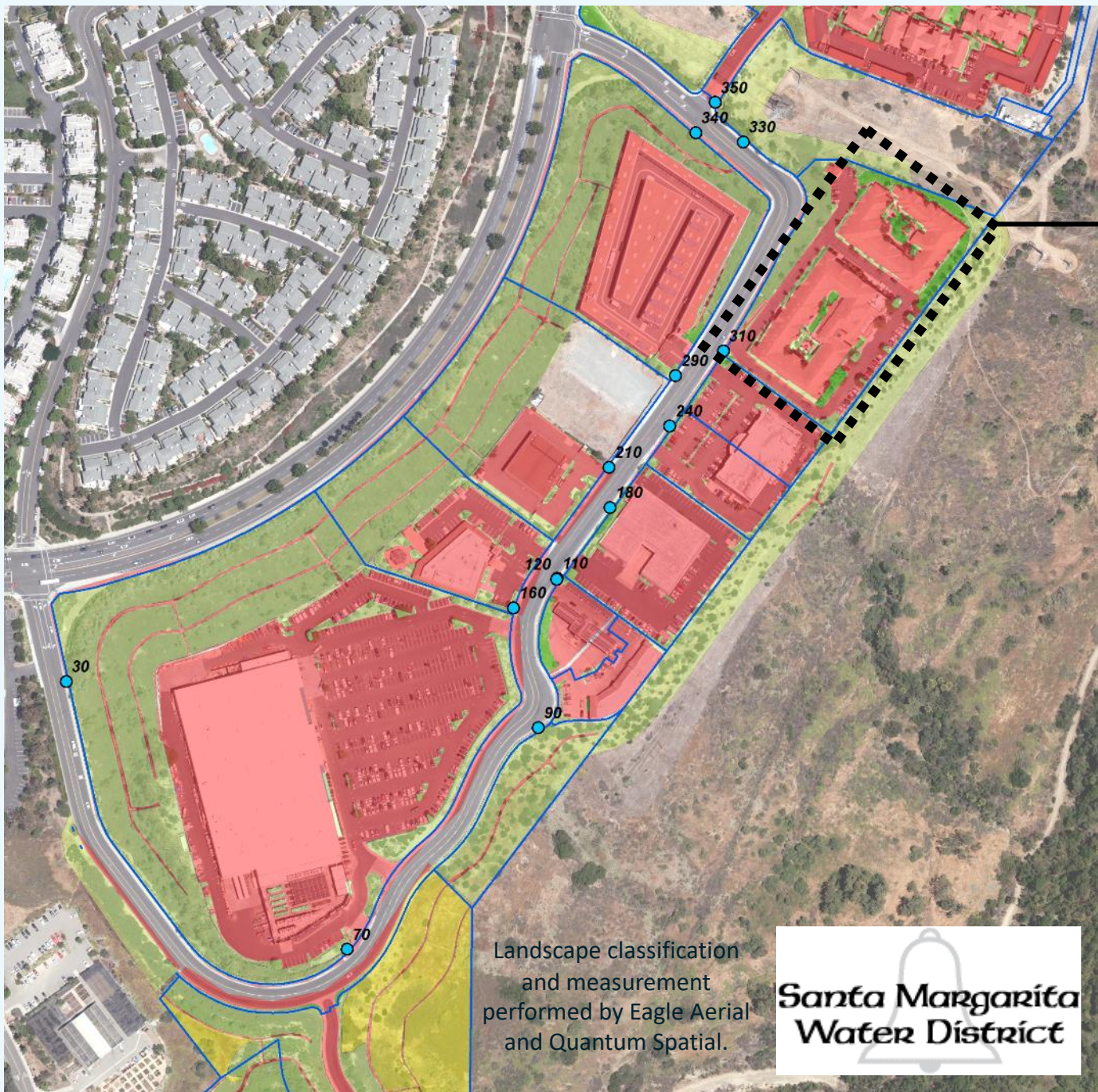


How to Figure Out Coverage Areas?

- Lots of coordination & phone-tag
- In-person field visits
- Crowdsourc! Irrigation techs...



Measuring Area

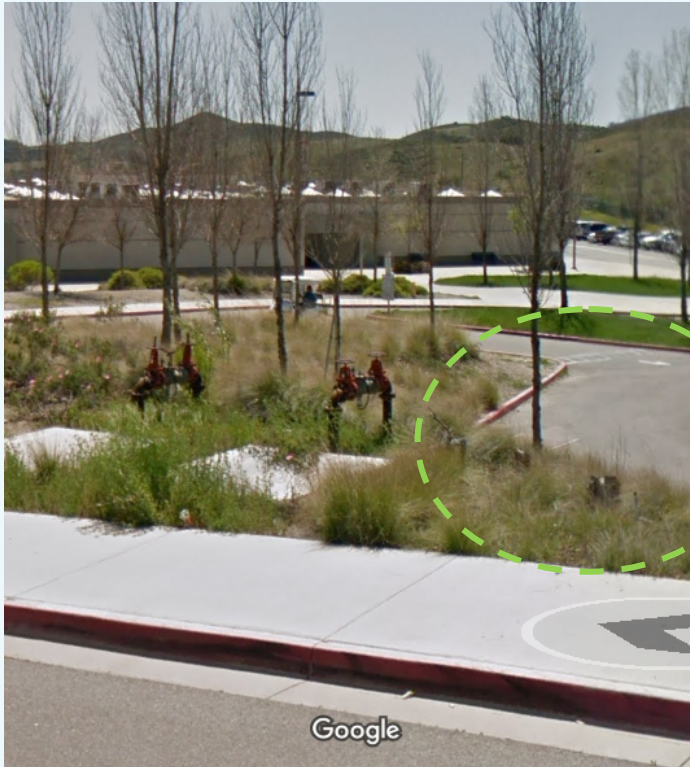


Area (sq.ft.)	LANDSCAPE CLASSIFICATION
117,431	Impervious Surfaces
33,632	Swimming Pools
14,270	Other Irrigated Vegetation (Non-Turf)
	Irrigated Turf
	Non-Irrigated/Natural Vegetation
	Potentially Irrigated
	Open Water
	Horse Corrals and Arenas
	Artificial Turf

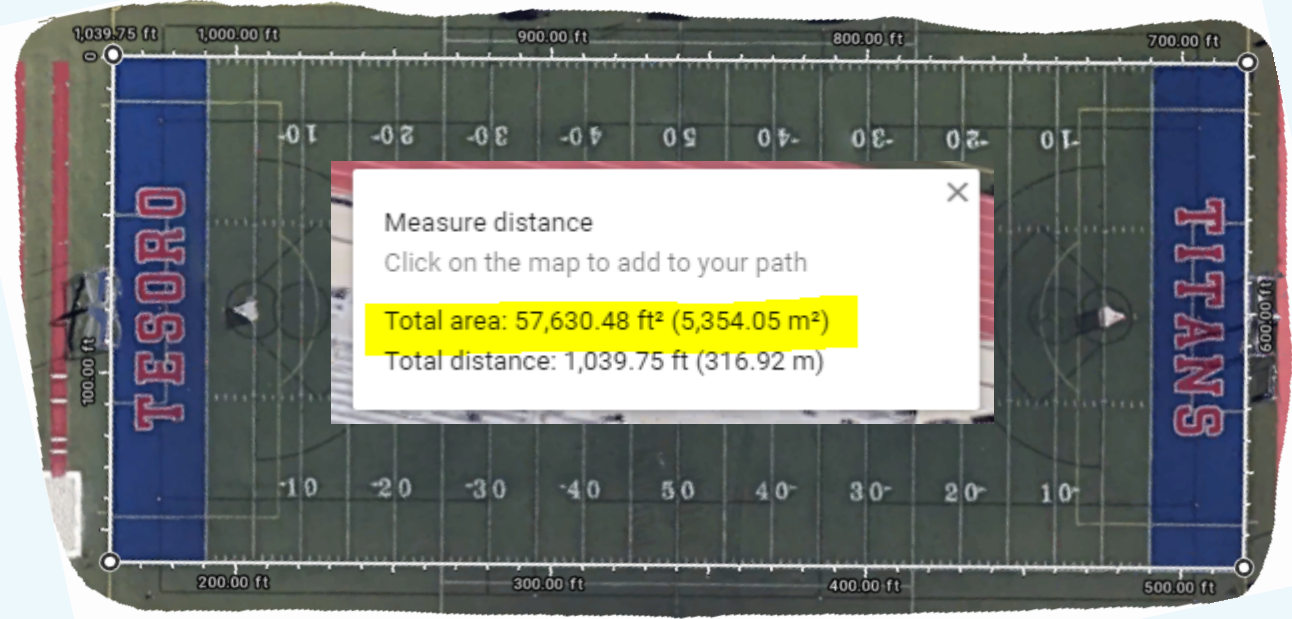
47,902 square feet, irrigable area

“FREE” TOOLS: GOOGLE MAPS & EARTH

- Google Maps:
 - right click “measure distance”
 - Street view to field check



Backflows confirm irrigation meter locations



Goal for Measuring Area:
Accuracy vs. Perfection

“FREE” TOOLS: GOOGLE MAPS & EARTH



Tips/Tricks:

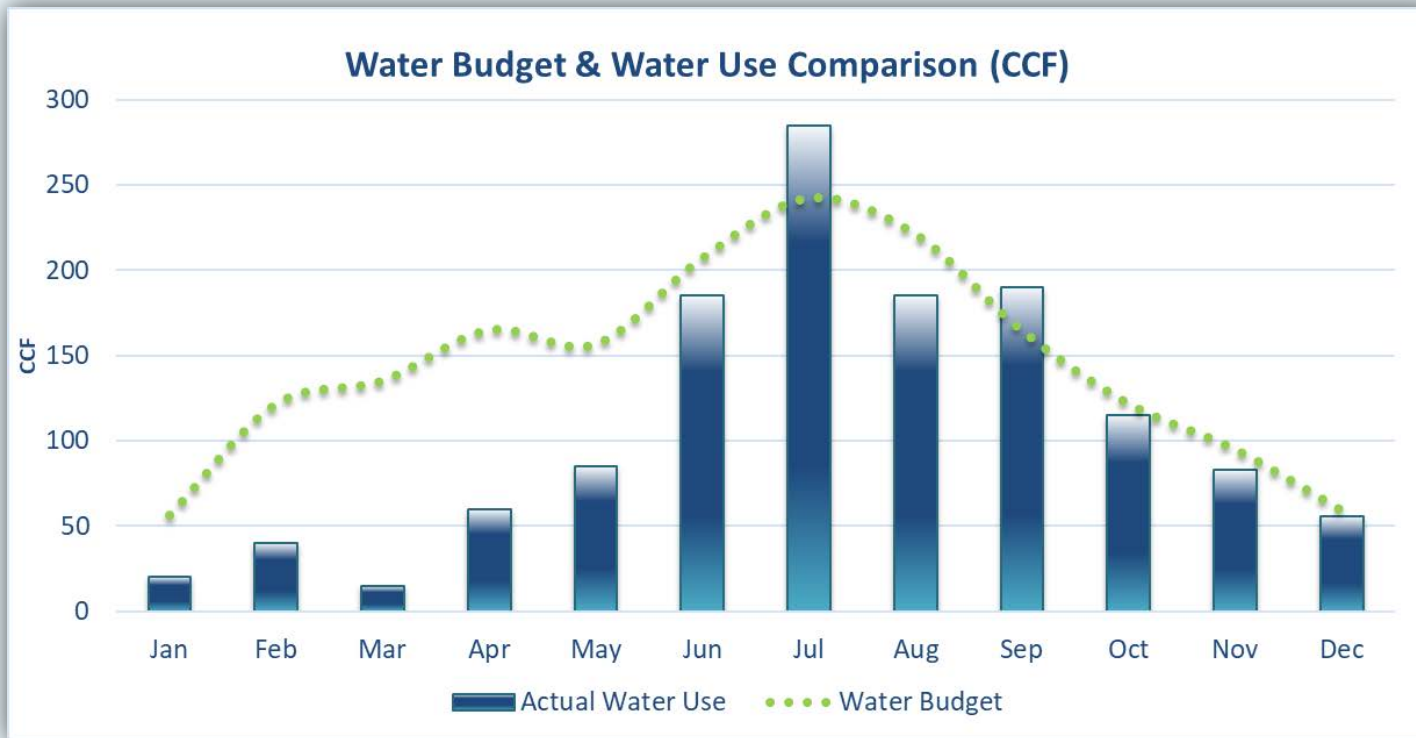
- Historical imagery in Google Earth; find boundaries
- V-ditches = designed/engineered slopes = irrigation

IN THE BALLPARK? COMPARE WATER USE TO BUDGET

- Use MAWA or ETWU as a guide
 - $\text{Area} \times \text{ETo} \times \text{ET Adj Factor} \times \text{Volume Conversion Factor}$

Example Budget Calc:

- 47,900 sq.ft.
- 0.8 ETAF
- ~55" ETo



Re-Visit Area Measured if:

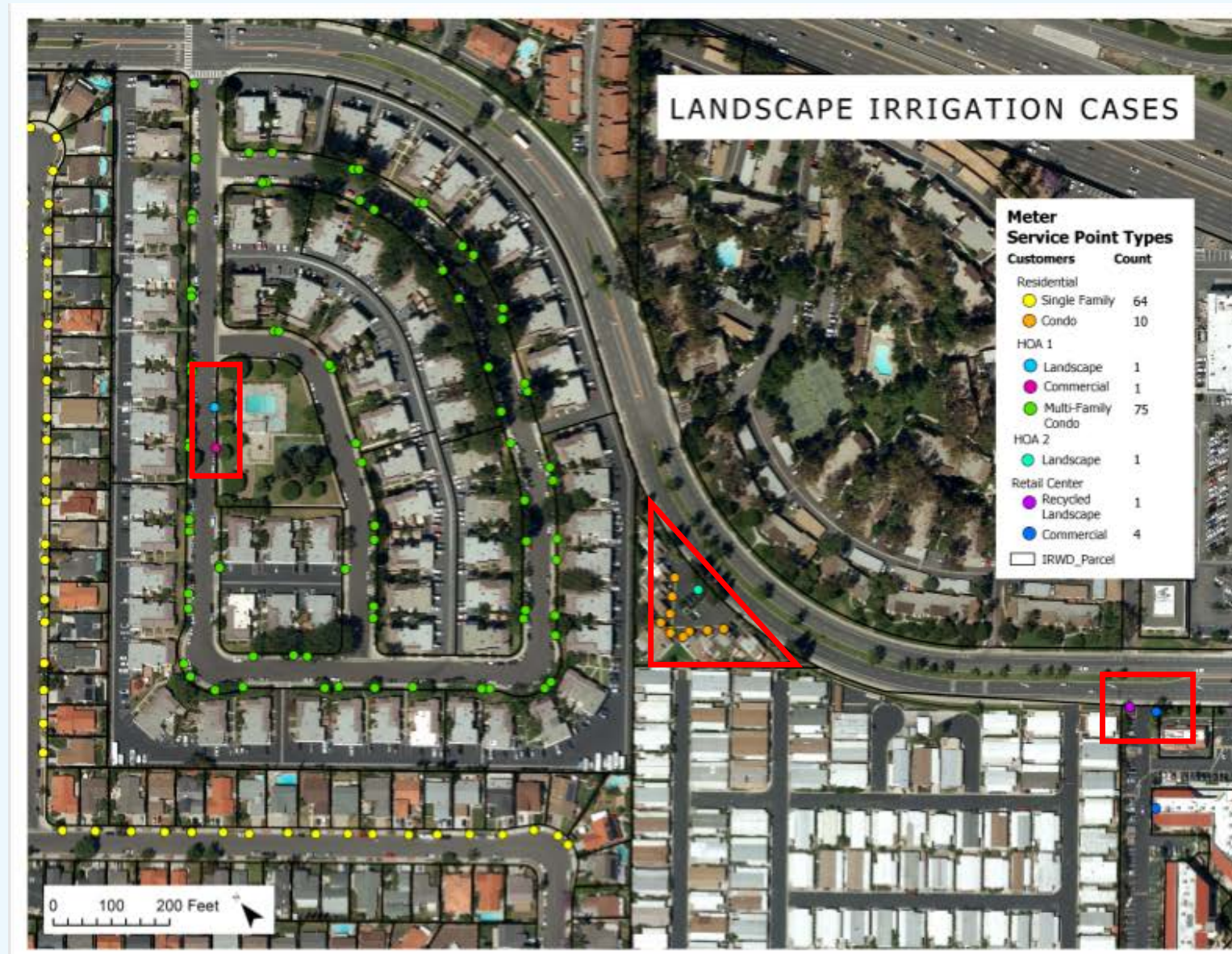
- Water use drastically over/under budget



Photo courtesy of DWR

CLASSIFICATION AND BILLING

SERVICE TYPE AND METERS



SERVICE TYPE AND LANDSCAPE AREA



SERVICE TYPE AND BILLING SYSTEM DATA

- Dedicated Irrigation meters:
 - Separate service types
 - Potable and Recycled
 - Different budget formulas
 - Serve various types of sites
 - Parks
 - Schools
 - Golf Courses
 - Retail Centers
 - Office Complexes
 - HOA Common Areas
 - Single-Family (front yards)
 - Multi-Family Properties

What the billing system shows:

METERS BY SERVICE TYPE	
RESIDENTIAL SINGLE-FAMILY	61,682
RESIDENTIAL MULTI-FAMILY	39,313
COMMERCIAL, INDUSTRIAL, INSTITUTIONAL	6,326
IRRIGATION - POTABLE	1,840
IRRIGATION - RECYCLED	5,741

CONSUMPTION BY SERVICE TYPE (Acre Feet)	
RESIDENTIAL SINGLE-FAMILY	20,328
RESIDENTIAL MULTI-FAMILY	11,633
COMMERCIAL, INDUSTRIAL, INSTITUTIONAL	15,278
IRRIGATION - POTABLE	4,690
IRRIGATION - RECYCLED	26,687

Includes some residential usage



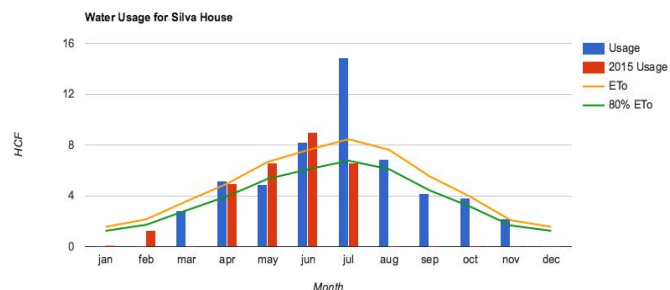
Site Managed By
CLCA
1491 River Park Dr #100
Sacramento, CA 95815
916-830-2780

Site Manager
David Silva

Site Location
Silva House
11832 Loisdale Way
Rancho Cordova, CA 95742

Landscaped Area
1170 square feet

WSLEP Contractor Goal
Historic Average Not Available to
determine WSLEP Goal.



2012 Water Use History			
Month	ETo (inches)	Water Usage (HCF)	% ETo
jan	1.59	0	0
feb	2.20	0	0
mar	3.66	2.85	79.87%
apr	5.08	5.18	104.58%
may	6.83	4.85	72.83%
jun	7.80	8.18	107.56%
jul	8.67	14.85	175.67%
aug	7.81	6.85	89.96%
sep	5.67	4.18	75.61%
oct	4.03	3.85	97.98%
nov	2.13	2.18	104.97%
dec	1.59	0	0
total	57.06	52.97	95.21%
ytd	57.06	52.97	95.21%

Site Notes

Date	Subject	
05/28/15	Leaky Toilet Detected May 2015	

GETTING & GIVING DATA: DEDICATED REPORTS AND CUSTOMER PORTALS

Dedicated Water Meters

Uses

- Interior vs Exterior
- Less Essential
- Water Budgets
 - Tool
 - Rates



Water Management Tool

Waterfluence

- Data
- People
- Insights

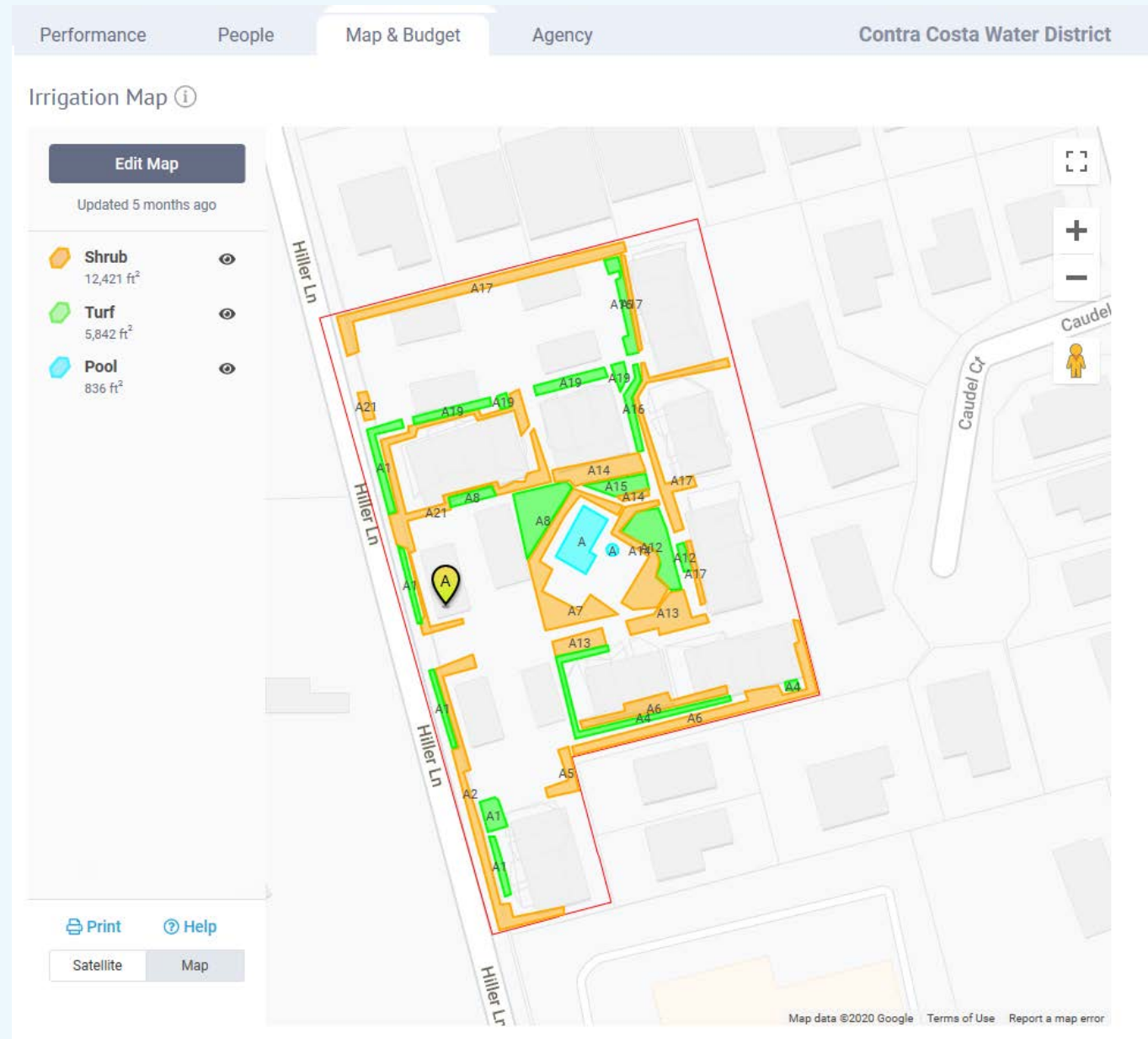


Data

- Sq. Ft.
 - GIS
- CIMIS
- Formula
 - KI
 - Rain



CONTRA COSTA
WATER DISTRICT



People

- Water Agency
- Property Owner
- Landscaper
- Property Manager



Insights

- Fall Overwatering
- Shrub Overwatering
- AMI
 - Days of Week
 - Daytime



Alerts

Monthly Spike

Add Landscaper

Community Badge

Active Leak

Day Spike

Daytime Irrigation

Sites

Summary

45 sites

Sites

Sort by: Main Contact

Annual Performance

Budget

Seasonal

Score

\$ Lost

Alerts

Admin Only

<div>Concord Blvd in Contra Costa</div> <div> <div>City of Concord, Mike Alley</div> <div>116%</div> <div>65%</div> <div>25</div> <div>\$1.2k</div> <div></div> <div> <div>CCWD</div> <div>ID: CCWD-6124</div> <div>Code: 44 Pub</div> <div>Active: yes</div> <div>Type: Streetscape</div> <div>Acres: 0.5</div> <div>Survey: none</div> <div>Recency: Apr 20</div> </div> </div>
<div>Ygnacio Park Highlands in Contra Costa</div> <div> <div>City of Concord, Mike Alley</div> <div>103%</div> <div>78%</div> <div>50</div> <div>\$325</div> <div></div> <div> <div>CCWD</div> <div>ID: CCWD-6132</div> <div>Code: 44 Pub</div> <div>Active: yes</div> <div>Type: Streetscape</div> <div>Acres: 0.3</div> <div>Survey: none</div> <div>Recency: Apr 20</div> </div> </div>
<div>Ayers Rd 1 in Contra Costa</div> <div> <div>City of Concord, Mike Alley</div> <div>98%</div> <div>67%</div> <div>33</div> <div>\$511</div> <div></div> <div> <div>CCWD</div> <div>ID: CCWD-6134</div> <div>Code: 44 Pub</div> <div>Active: yes</div> <div>Type: Streetscape</div> <div>Acres: 0.4</div> <div>Survey: none</div> <div>Recency: Apr 20</div> </div> </div>
<div>Monument Blvd 3 in Contra Costa</div> <div> <div>City of Concord, Mike Alley</div> <div>113%</div> <div>61%</div> <div>24</div> <div>\$2.2k</div> <div></div> <div> <div>CCWD</div> <div>ID: CCWD-6137</div> <div>Code: 44 Pub</div> <div>Active: yes</div> <div>Type: Streetscape</div> <div>Acres: 0.9</div> <div>Survey: none</div> <div>Recency: Apr 20</div> </div> </div>



Questions?

Use the Q&A function

LOOKING FORWARD PANELISTS



Matt Davenport
Monarch Environmental



Paul Hatala
Rain Bird



Wayne Tate
Eagle Aerial



Moderated by Maureen Erbeznik
Maureen Erbeznik & Associates

LESSONS LEARNED: WHAT WE'LL COVER

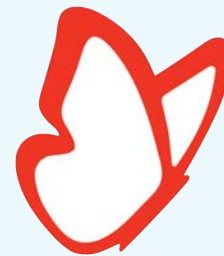
Reports from
the Field

Tools &
Technology

Open
Conversation
with Q&A



PERSPECTIVE: LANDSCAPE CONSULTANT



MONARCH
ENVIRONMENTAL

Landscape Analysis- Water

- ▶ Water Use Report Card
 - ▶ Each Meter Avg. Actual Costs (how much you spent)
 - ▶ Each Meter Avg. Usage (how much water was used)
- ▶ Identify the meters with the highest potential for savings (Actual - ETWU) and map them out
- ▶ Prioritize the meters/landscape areas
- ▶ Develop an action plan and budget
 - ▶ TUNE UP
 - ▶ TRANSFORMATION
- ▶ Implement
- ▶ Measure Success and Repeat



Water use report card

Association:	Typical HOA	Water District:	MNWD
Landscape Area (sf):	120,621	Prepared by:	Monarch Environmental, Inc.
Acres:	2.8	Date Prepared:	06.12.2019
LTM HCF Units:	3,946	Signature:	Matt Davenport

HOA Water Usage Grade:	
	C
	24 gals/sq.ft.

Water Usage Classifications Table	
Grade	Ideal Water Usage
A	<= 12 gals/sq.ft/year
B	13-19 gals/sq.ft/year
C	20-25 gals/sq.ft/year
D	26-31+ gals/sq.ft/year

Based upon conversion of water consumption in hcf units to 748 gallons and classification table above.

Current Water Costs and Savings Potential	
Annual Total Costs	Water Costs Classifications Table
\$12,165	Grade Ideal Water Usage
Costs Per Acre	A \$1,706 Dollars/Acre
\$4,393	B \$2,047 Dollars/Acre
Estimated Savings*	C \$2,388 Dollars/Acre
\$7,441	D \$2,559 Dollars/Acre

*Based upon achieving ideal water efficiency with an HOA water usage Grade "A" when compared to the actual Annual Total Cost. MNWD is a tiered rate system and there are fixed costs associated with each water meter. Decreasing water usage may not result in net reduced water costs due to anticipated rate increases. However, reductions in water use will result in avoided future costs.



Water Management



Tune-up

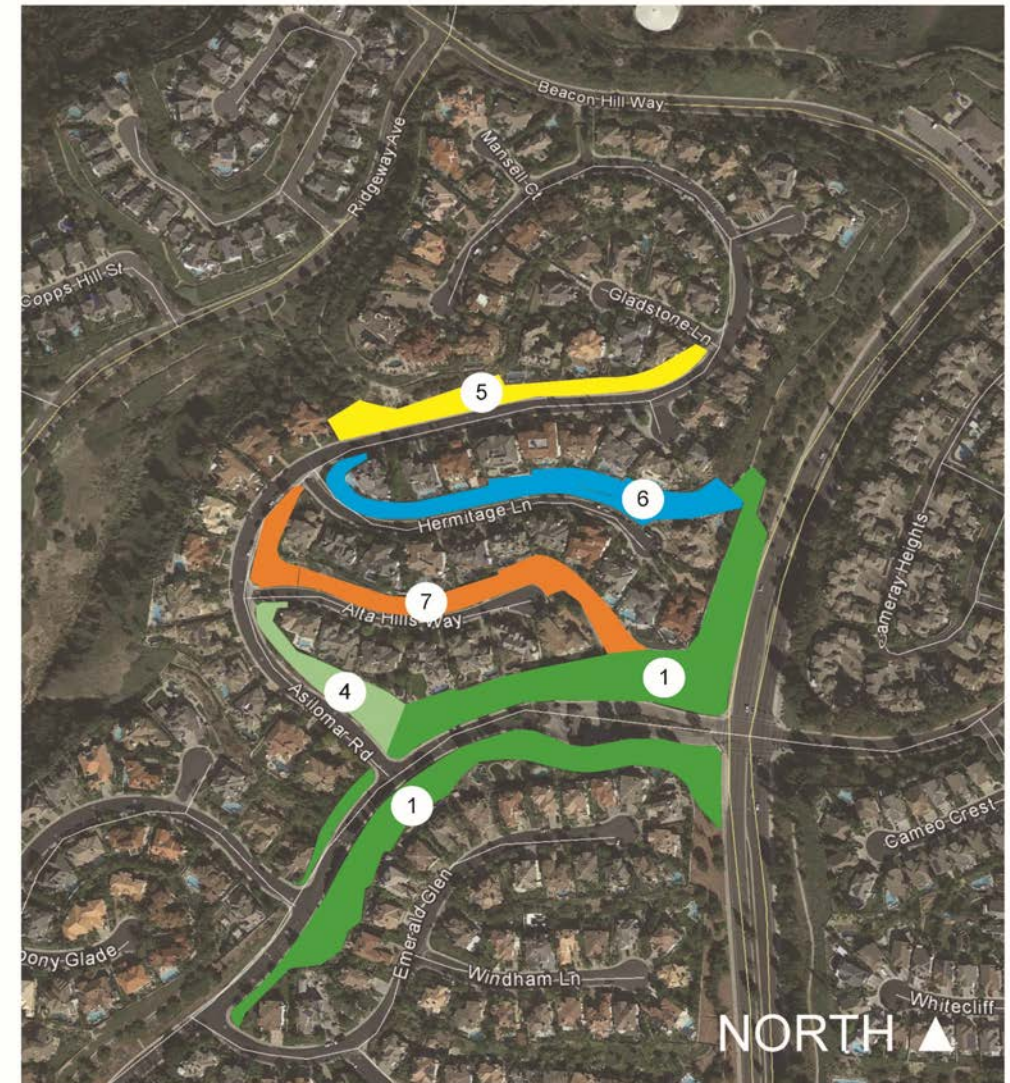
Action: Repair of broken equipment

Impact: HIGH



Transformation Process

- ▶ Assemble A Team!
- ▶ Understand the Need
- ▶ Prioritize the Opportunities
- ▶ Create a Vision
- ▶ Create a Budget
- ▶ Create an Action Plan
- ▶ Implement
- ▶ Measure Success
- ▶ Repeat
- ▶ Incentives and Tools Available



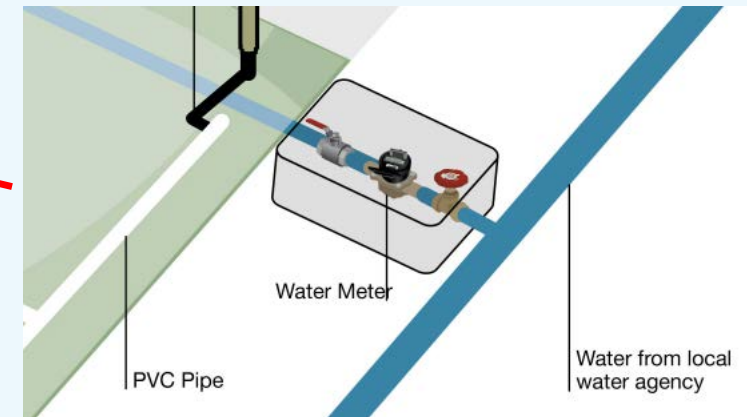
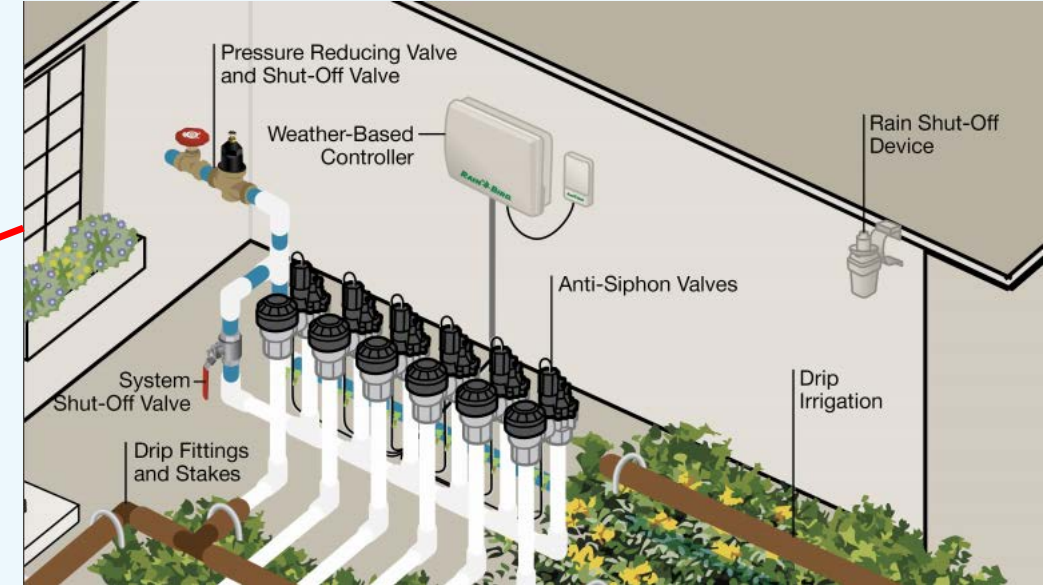
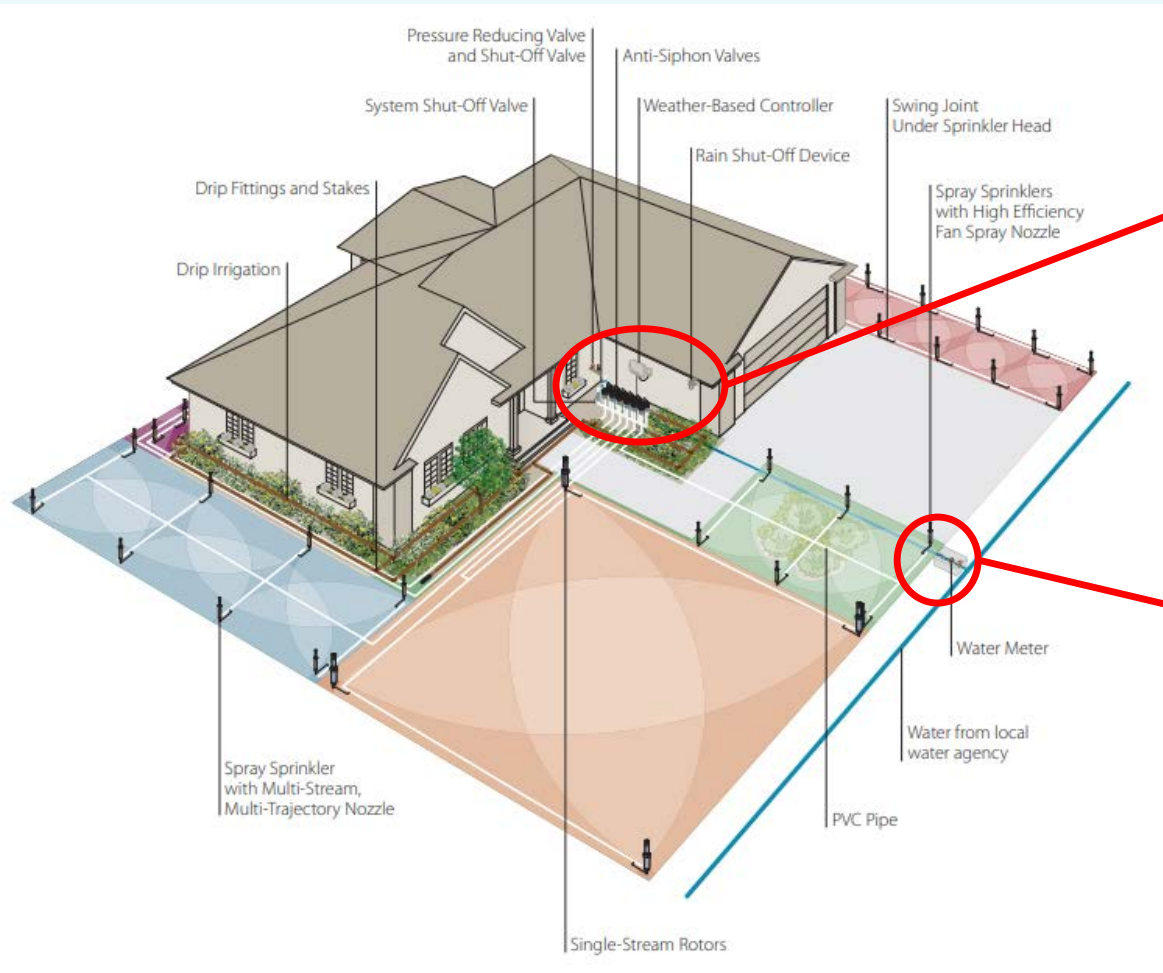
Slope Priority Map A



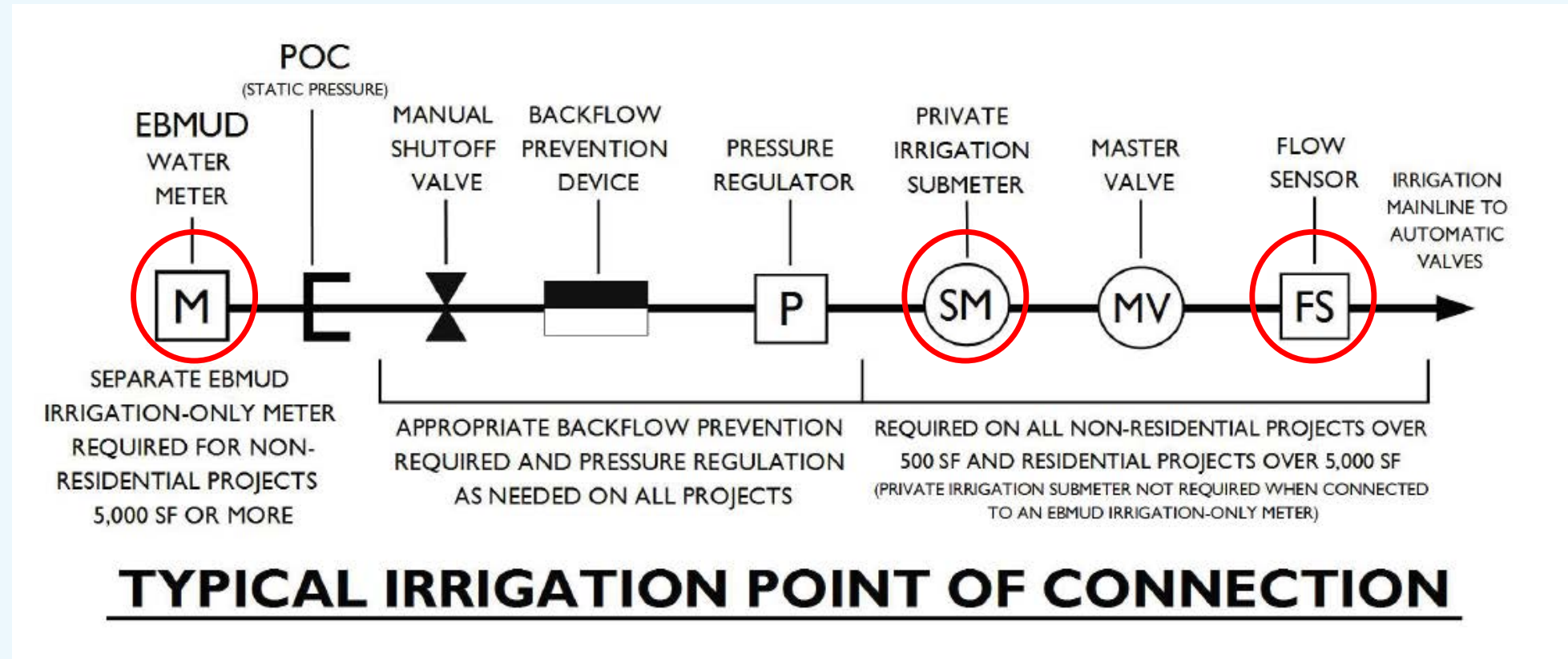
PERSPECTIVE: IRRIGATION MANUFACTURER



IRRIGATION SYSTEM OVERVIEW

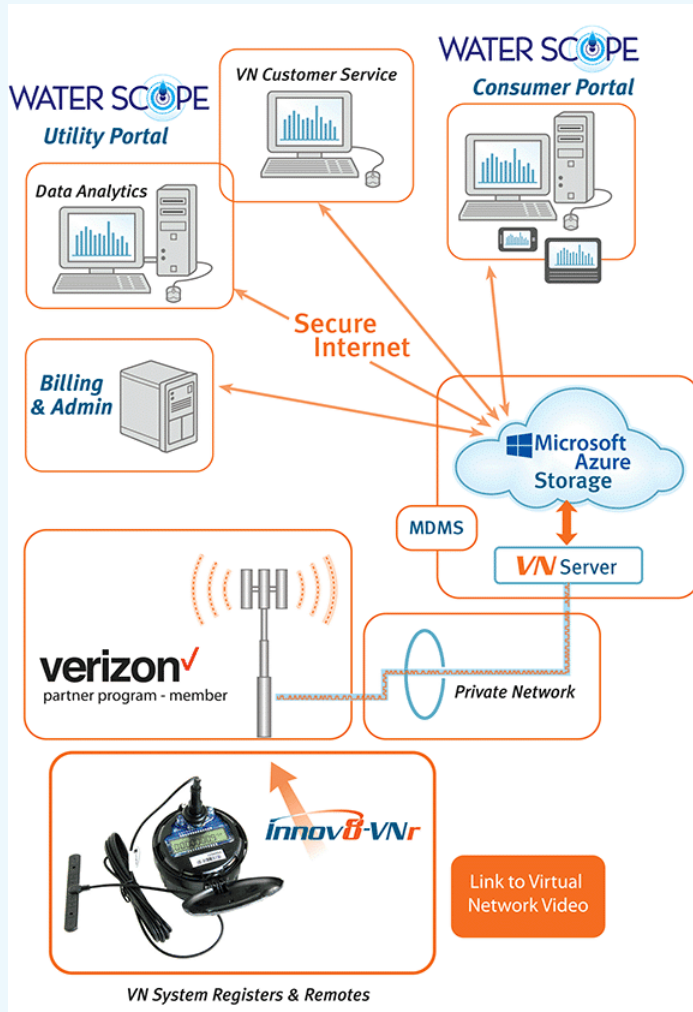


IRRIGATION SYSTEM – REQUIREMENTS EXAMPLE



*Image above courtesy of EBMUD
Red circles added for emphasis*

IRRIGATION SYSTEM – METER TECHNOLOGIES



POC

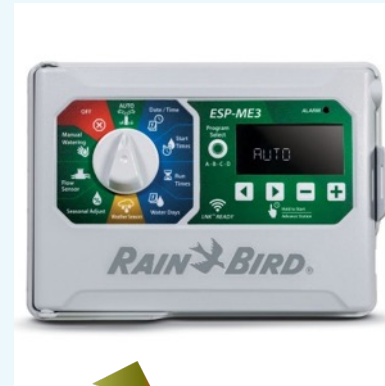
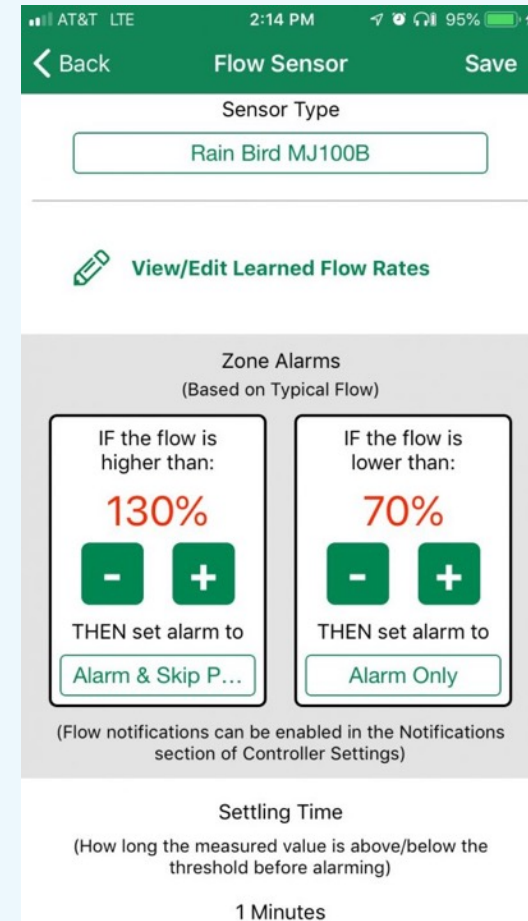


Image above courtesy of Metron Farnier



PERSPECTIVE: AERIAL IMAGERY PROFESSIONAL





WATERVIEW
Water Conservation Software

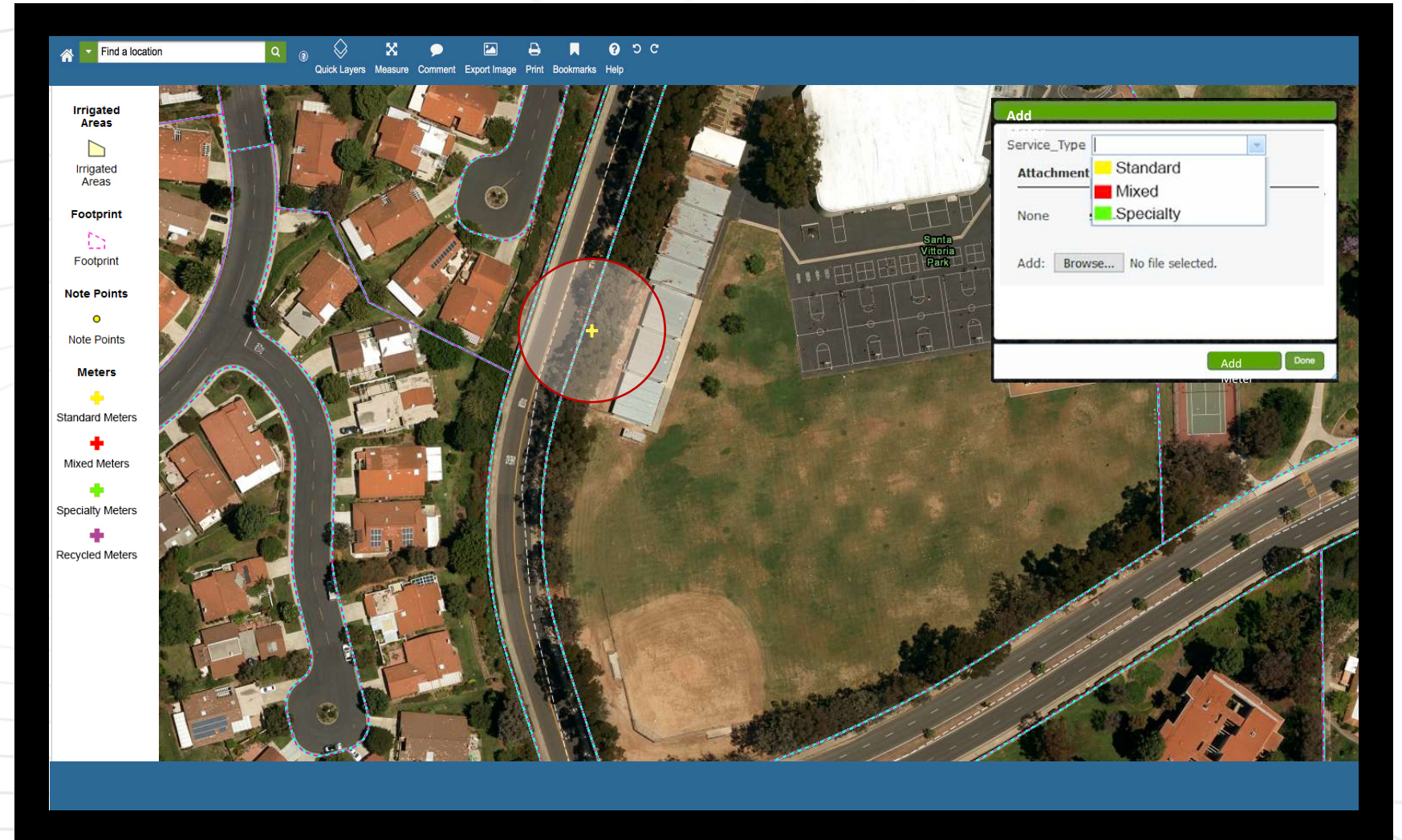
CI Field App



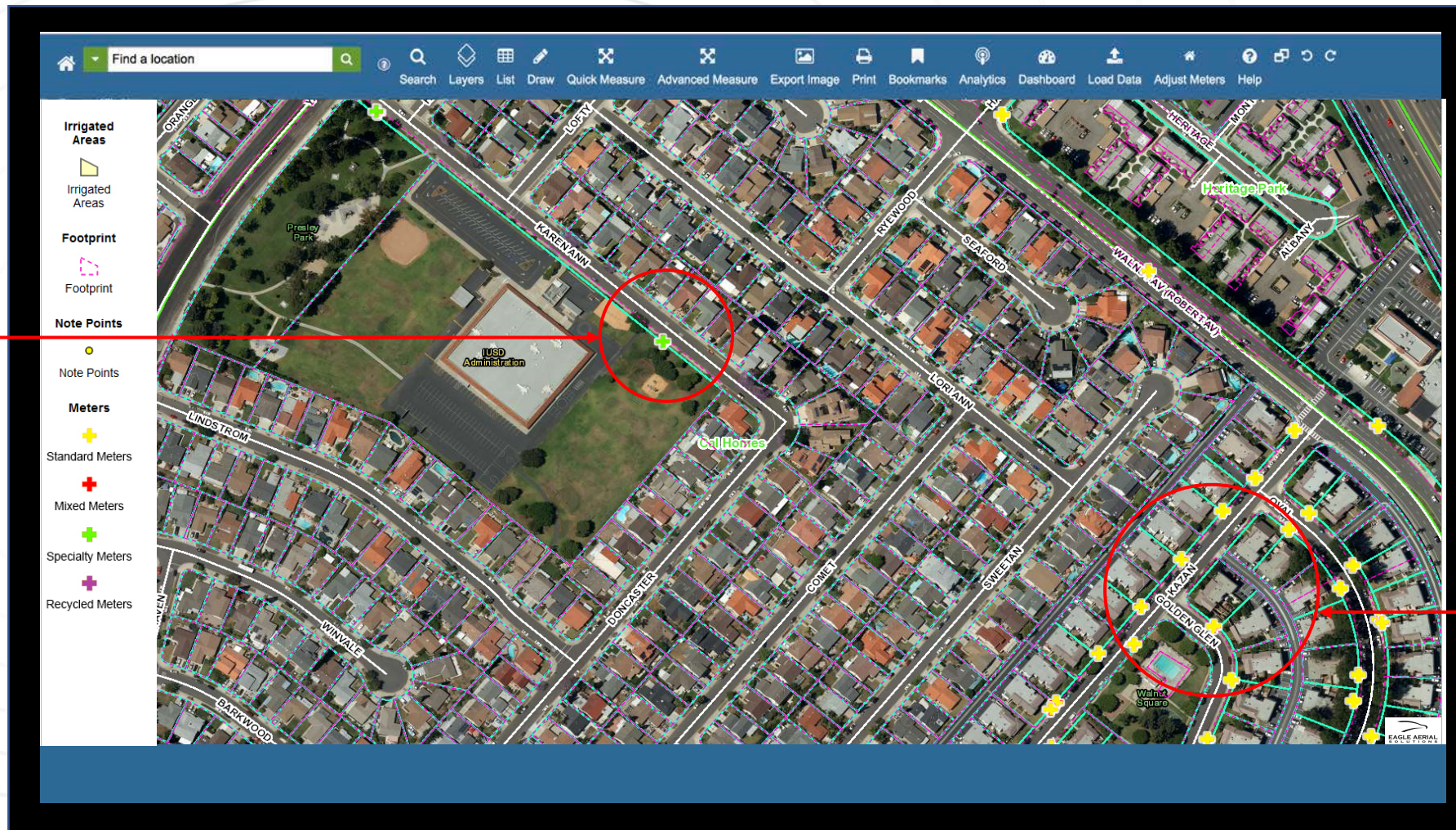
From the field:

- ✓ Identify an area
- ✓ Locate meter
- ✓ Geolocate meter
- ✓ Classify meter

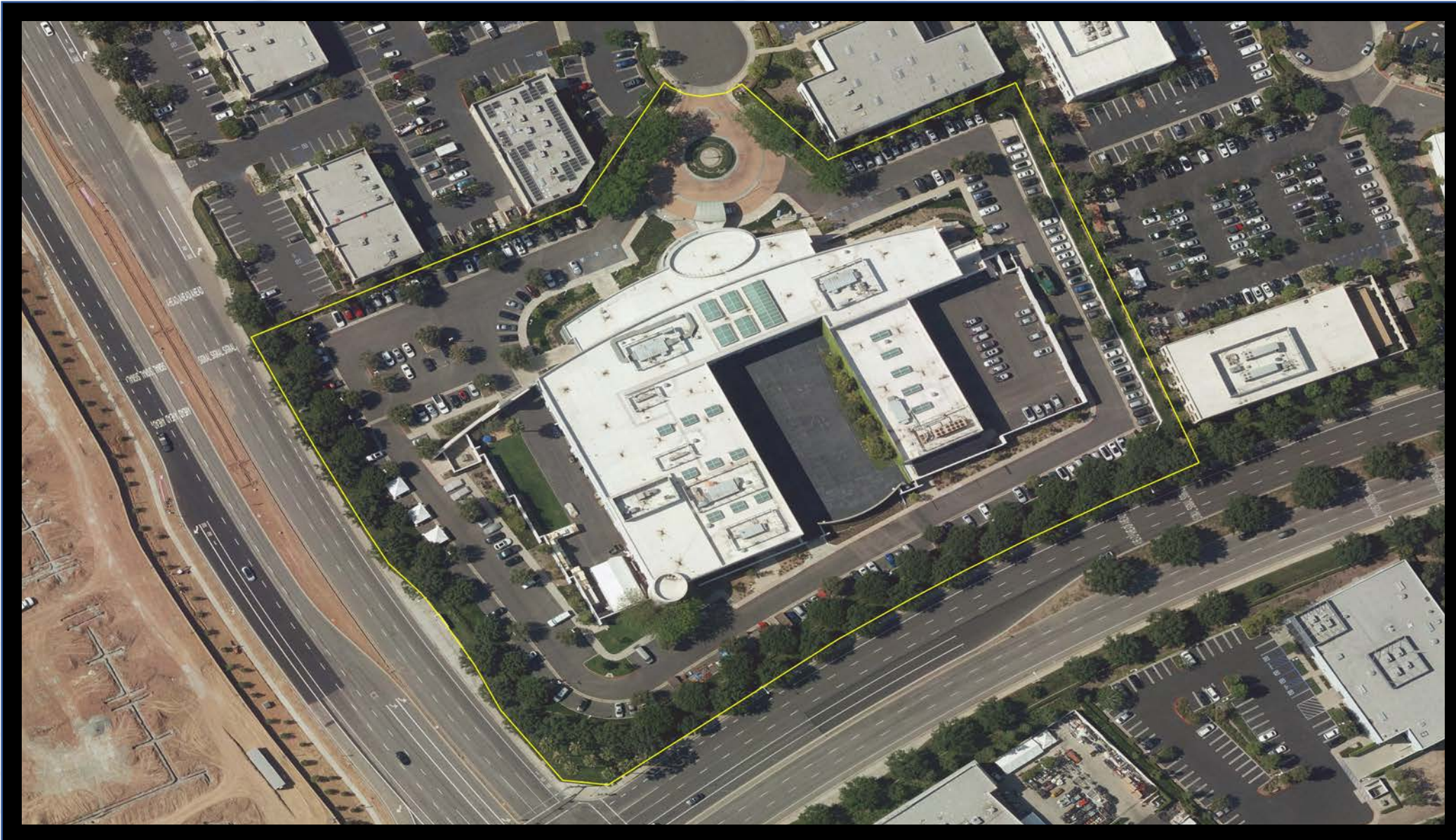
- **Standard**
- **Mixed**
- **Specialty**
- **Recycled**
- **Other**



Specialty



Standard





Irrigated:
32,924 Sq. Ft



WATERVIEW

Irrigated Landscape

EAGLE AERIAL
SOLUTIONS



Irrigated:
45,712 Sq. Ft



Irrigated Landscape

Questions?

Use the Q&A function



THANK YOU!



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