

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



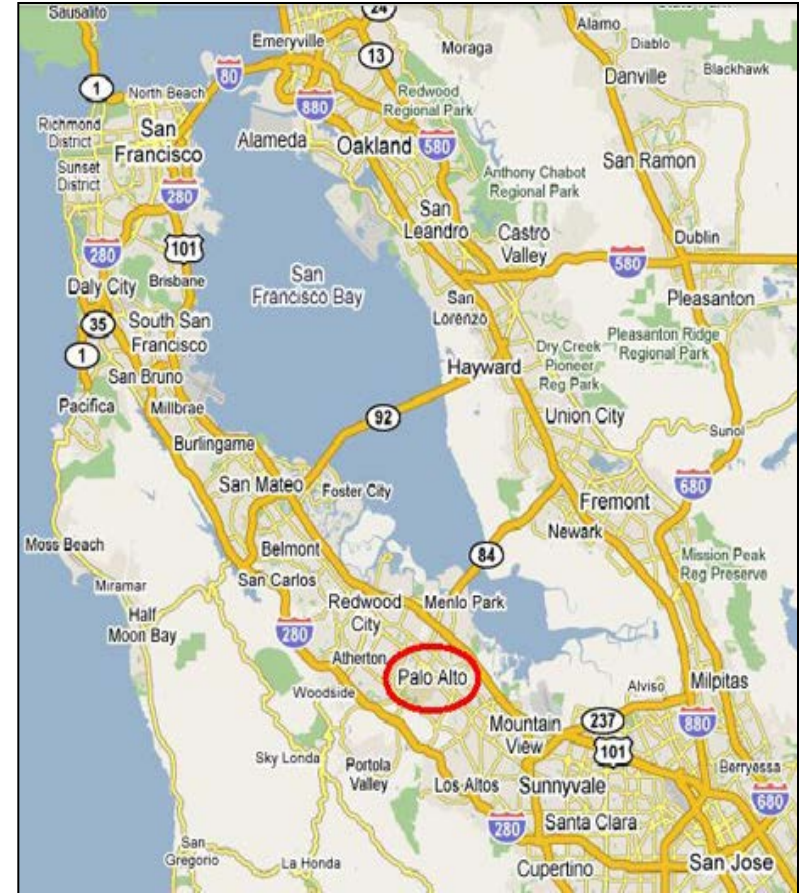
Real-Time Water Use Monitoring: An Effective Tool for Water Management

WaterSmart Innovations Conference

October 3, 2013

About Palo Alto

- 65,000 population
- 100,000+ daytime
- Serving 6 utilities
- 17,000 Residential
- 2,500 Non-Res
- FY '12 – 10.4 MGD
- 60% Res & 40% CII
- Climate Zone 4



Water Conservation

Rebates

- Toilets & Urinals
- Clothes Washers
- Landscape Conversion
- Irrigation Upgrades
- Food Service Equipment
- Custom Rebates
- New Construction
- Meters & Submeters
- NEW! Graywater

Free Services

- Indoor Audits
- Landscape Audits
- Toilets & Urinals
- Direct Install Measures
- Free Conservation Devices
- Outreach Materials
- Workshops
- NEW! Home Water Reports
- NEW! Landscape Budgets

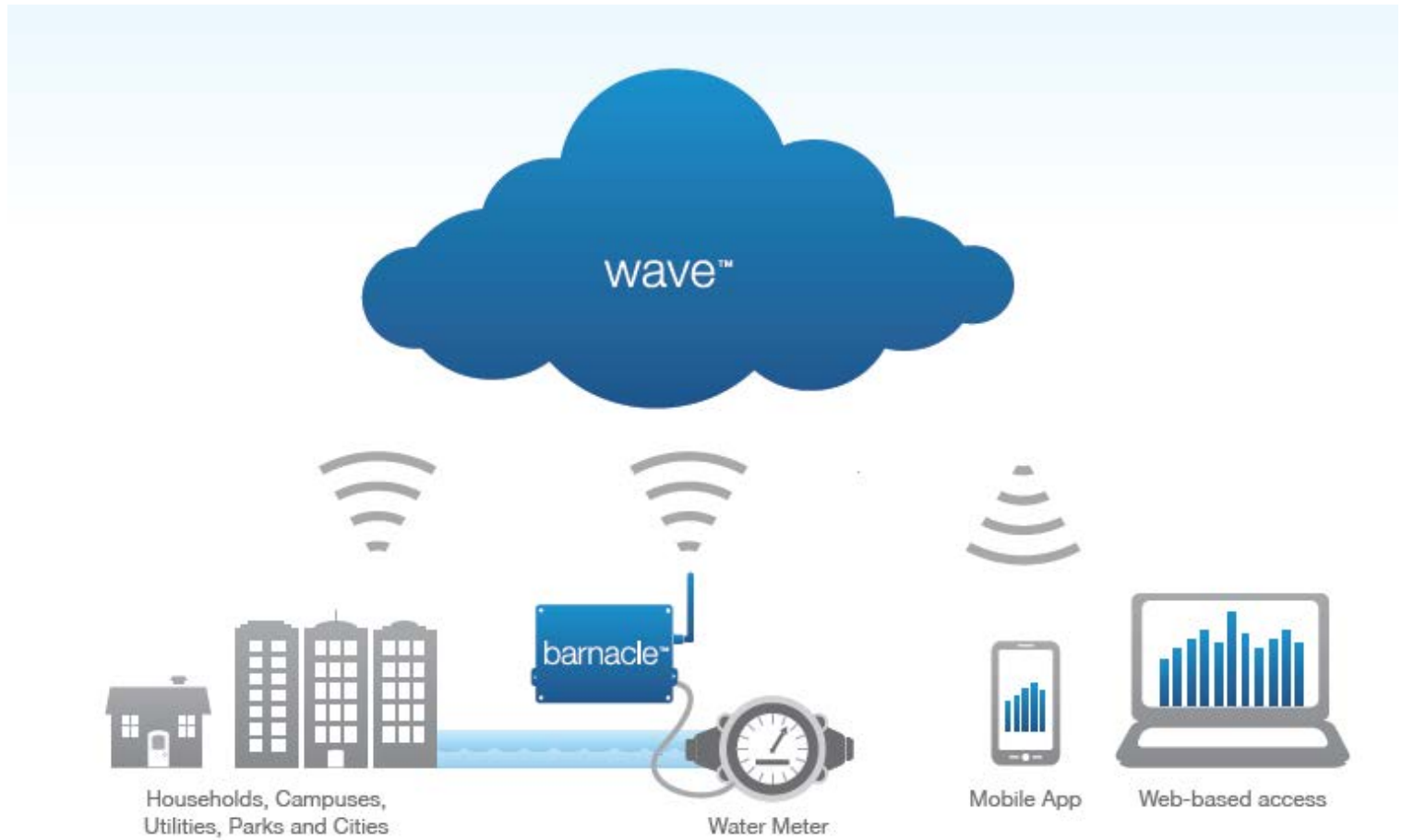
Aquacue Barnacle

- Real-time water monitoring device
- Provides advanced metering
- Compatible across most platforms
- Customer engagement



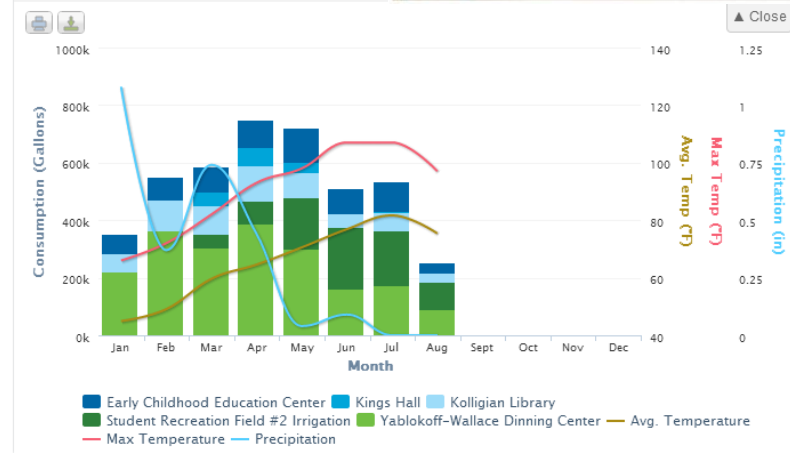
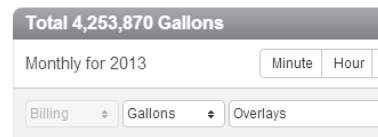
Aquacue Water Management

sends real-time data to the “wave” cloud-based software system



Aquacue Wave

- Real-time dashboard
- Leak detection/location
- Alerts
- Analytics
- Seasonal, trending
- Social comparisons
- Web-based
- Mobile app



Results					Show Columns
	Location	Site	Main Use	Water	Barnacle Serial
1	Early Childhood Education Center	Service	Domestic	Potable	220230
2	Kings Hall	Valley Terraces	Domestic Water	Potable	220244
3	Kolligian Library	Classroom / Office/lantern	Classroom / Office	Potable	220217

Overview

Monitor



Viewing 7 results

Reset

Location

Early Childhood Education Center X

Location

Academic Office Building X

Location

Kolligian Library X

Location

Carol Tomlinson Quad - South Irrigation X

Location

Carol Tomlinson Quad - North Irrigation X

Location

Yablokoff-Wallace Dinning Center X

Groups

▼ Funding

Auxiliary (2)

▼ Site

Quad Irrigation (2)

Classroom / Office/Lantern (1)

Food & Beverage (1)

Landscape (1)

Service (1)

▼ Water

Irrigation (3)

Potable (3)

▼ Area

8407 (1)

24943 (1)

▼ Continuous Flow Expected

No (6)

Yes (1)

▶ Main Use

Location

▼ Location

Early Childhood Education Center (2)

Academic Office Building (1)

Carol Tomlinson Quad - North Irrigation (1)

Carol Tomlinson Quad - South Irrigation (1)

Kolligian Library (1)

Yablokoff-Wallace Dinning Center

Total 8,230 CCF

Monthly for 2013

Minute

Hour

Day

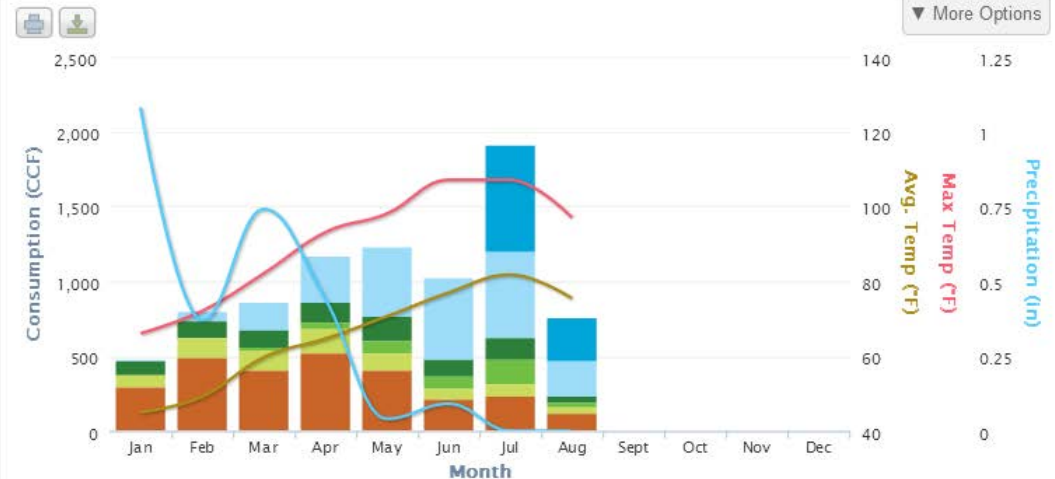
Month

Year

◀ Today ▶



▼ More Options


Results

Show Columns

	Location	Site	Main Use	Water	Barnacle Serial
1	Academic Office Building	(n/a)	(n/a)	(n/a)	220086
2	Carol Tomlinson Quad -	Quad Irrigation	Turf & Landscape	Irrigation	210009



Weekly Water Log

From: reports@aquacue.com
 To: Elvert, Catherine
 Cc:
 Subject: Weekly Water Log for Catherine Elvert

Sent: Mon 10/8/2012

Message: October.08.2012.xls (10 KB)

Water Log for Catherine Elvert



Here is your weekly Aquacue water use report for the week of October 1, 2012 through October 7, 2012.

Units: gal Barnacle Details	Last 7 Days		Last 30 Days	
	Daily Average	Total	Daily Average	Total
123 Main Street, Palo Alto, CA - Domestic #1	51,719	362,032	44,394	1,331,814
Meter: Badger Easy Read 6", high flow				
Installed Jan 17, 2012				
Continuous flow today: None				
Continuous flow this week: 26,928 gal/day average				
Continuous flow last week: None				
Anywhere Road - Irrigation, 456 Anywhere Road, Palo Alto, CA				

Meter: Anywhere Road, B
 Installed Jul 06, 2012
 Leak today: 40 gal/hour
 Leak yesterday: 145 gal/h
 Leak this week: 7,717 gal/
 Leak last week: 7,709 gal/

From: reports@aquacue.com
 To: Elvert, Catherine
 Cc:
 Subject: Monthly Leak Report for July, 2013 for Catherine Elvert

Sent: Thu 8/1/20

Message: July.2013.xls (10 KB)

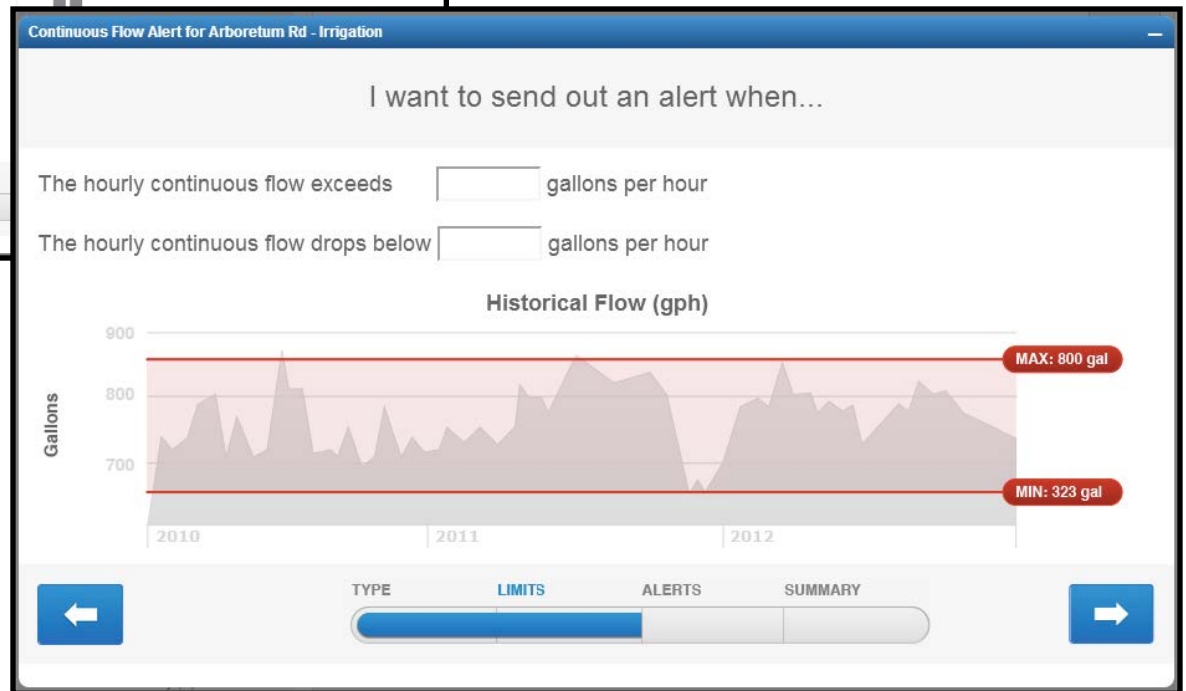
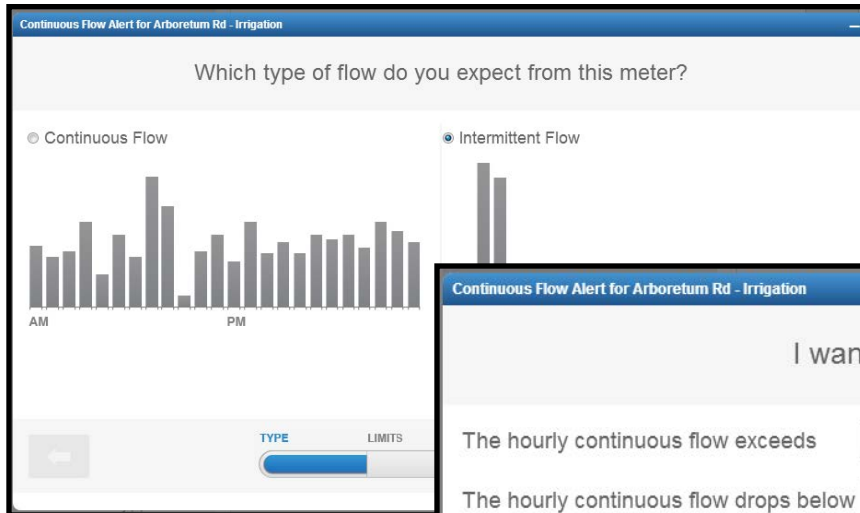
Meters not expecting Continuous Flow



Barnacle Details	Days Leaking	Leak Gallons	Flow Gallons	% Efficiency
123 Main Street, Palo Alto, CA - #1	31	135,320	461,807	70.7
Meter: Badger Easy Read 6", high flow				
123 Main Street, Palo Alto, CA - #2	28	167,140	689,557	75.8
Meter: Badger Easy Read 8", low flow				
456 Anywhere Road, Palo Alto, CA (#1)	31	368,772	1,746,301	78.9
Meter: Anywhere Road, Badger 120.1.5"				

Monthly Leak Report

Set Alerts Threshold



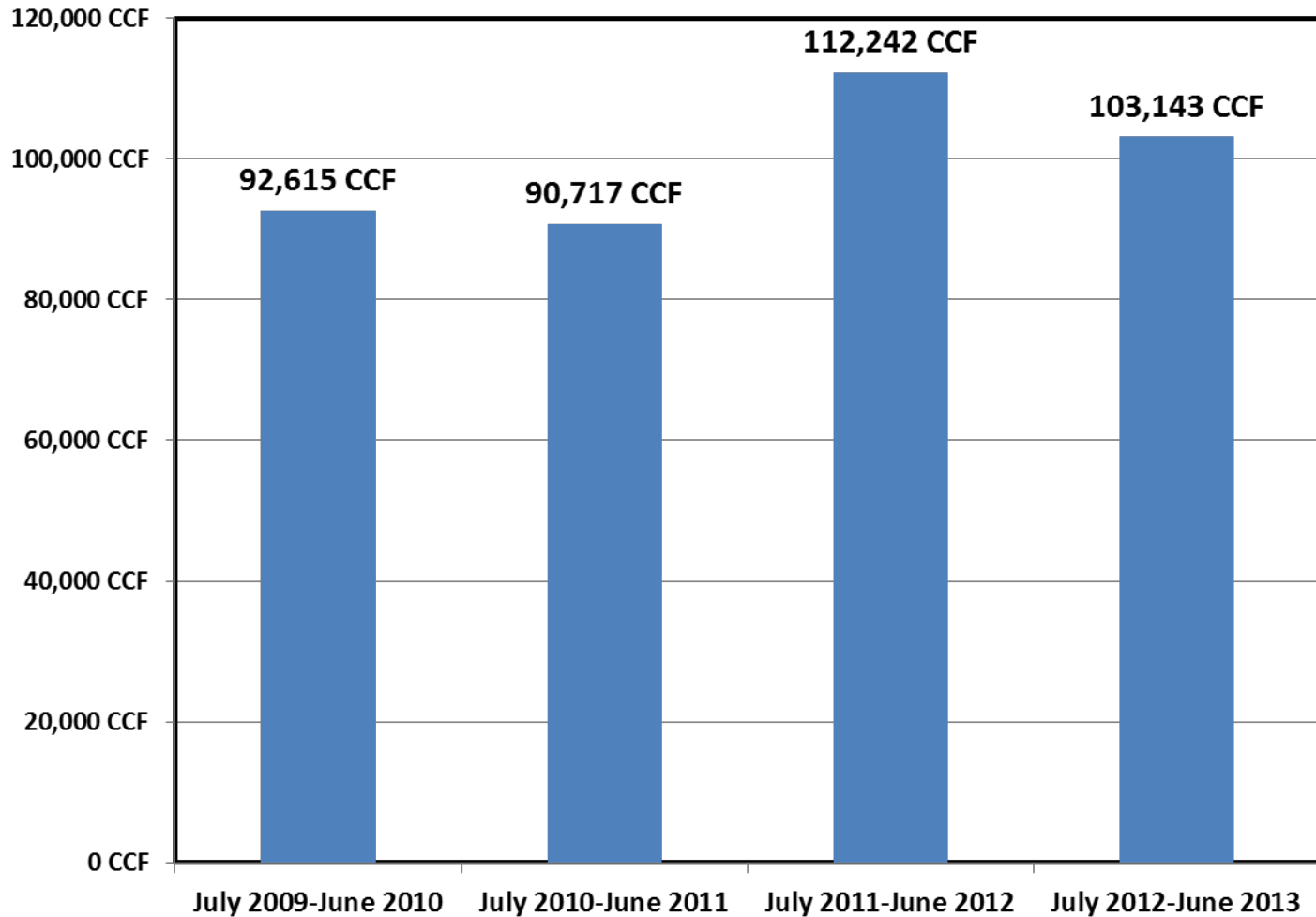
Instant Alerts via Text/Email



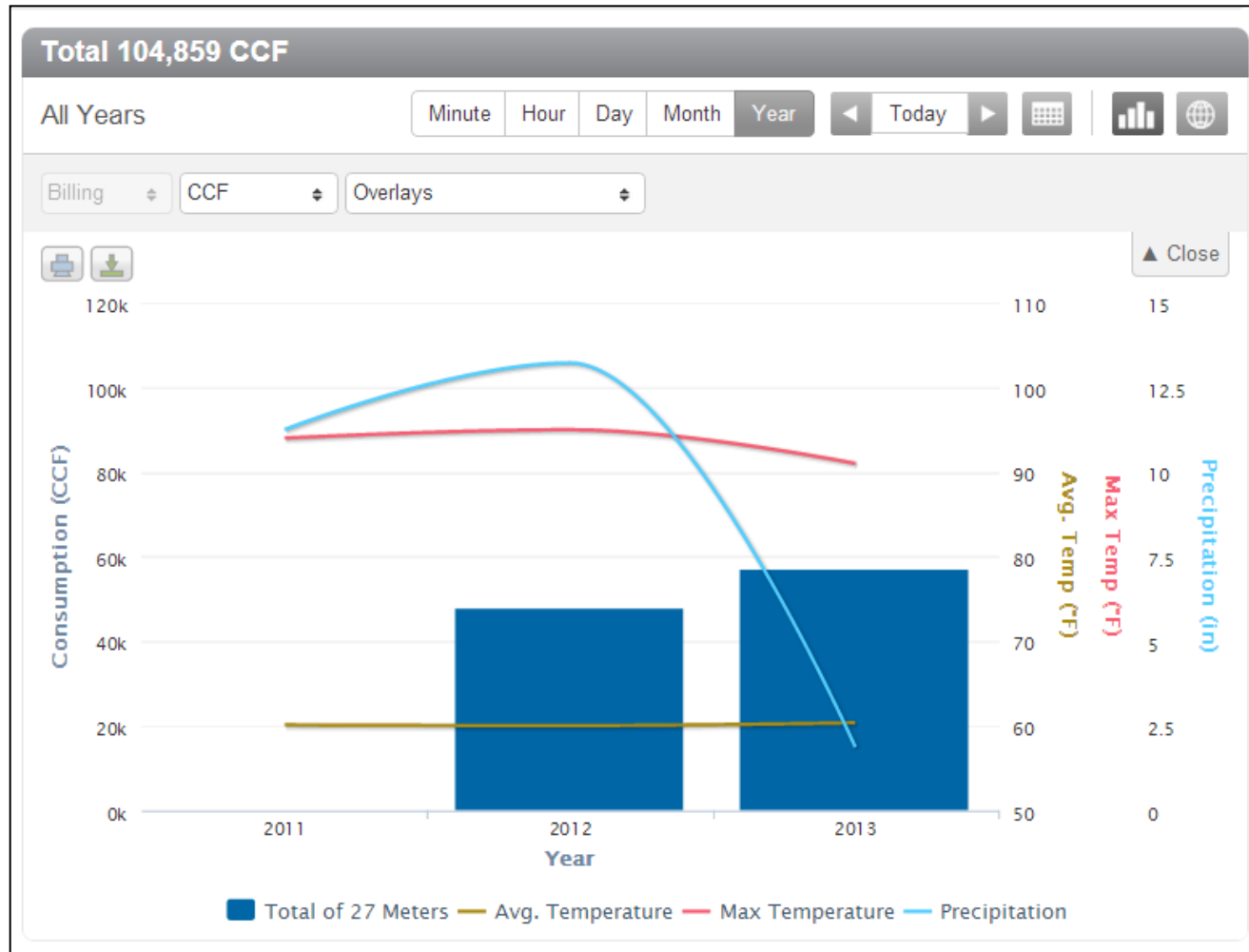
Participants and Results

- Major Commercial Shopping Center
- Two Large Condominium Complexes
- Large Retirement Facility
- Major High-Tech Company
- Reduction in water use
 - Overall 8% - annual comparison
 - July 2011-June 2012
 - July 2012-June 2013

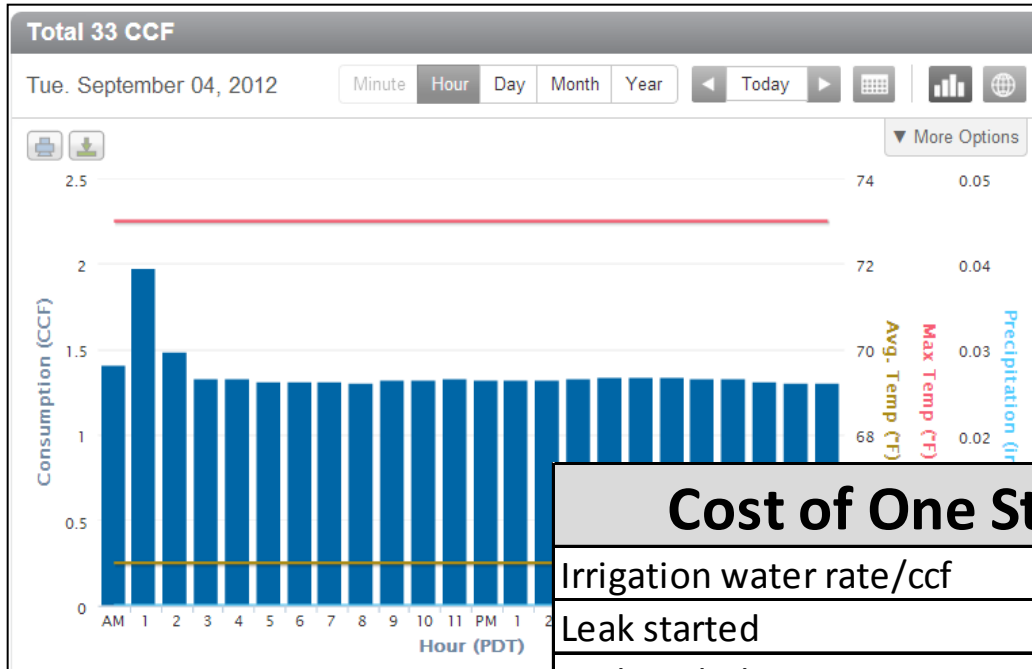
Annual Water Use Comparison



Usage & Environmental Factors



Case Study



Irrigation water leak unnoticed for 11 days. Daily or weekly login to Wave could have prevented this waste.

Cost of One Stuck Sprinkler

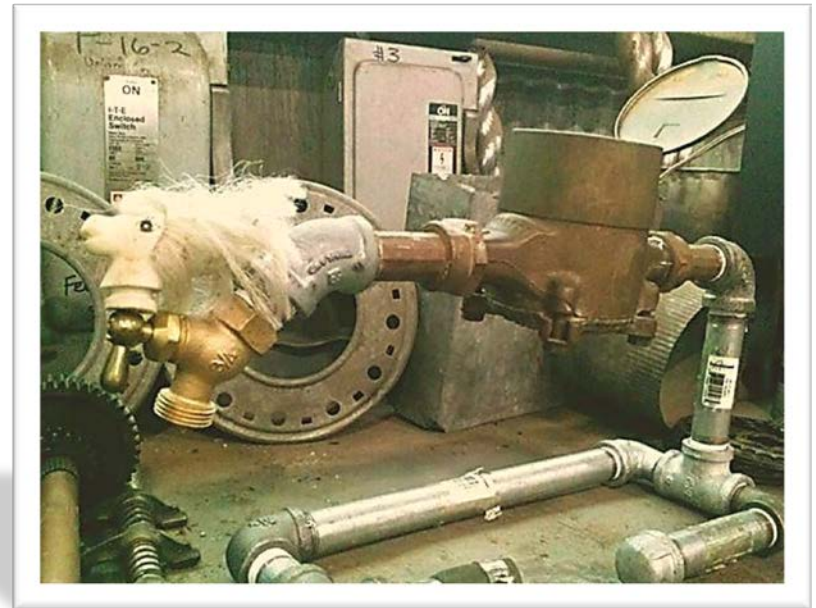
Irrigation water rate/ccf	\$7.90
Leak started	August 24, 8 PM
Leak ended	September 5, 9 AM
# hours leaked	277 hours
Av. rate of gallons leaked/hour	950 gallons/hr
Total gallons leaked	263,150 gallons
Total leaked in ccf	352 ccf
Cost of leak	\$2,779

Why Are We Doing This?

- Control water loss
- Let customers actively manage resource use
- Let customers actively manage resource costs
- Evaluate real-time data's effect on usage
- Influence customer behavior
- Inexpensive advanced metering
- Improve system mapping

Roadmap for the Future

- 2013 Badger acquires Aquacue
 - Silicon Valley Innovation Center
- 2014 integrate analytics & metering
- Compare results
- Participant feedback
- Evaluate expansion



Pony Express Water Data

Catherine Elvert

Utility Account Representative

City of Palo Alto , Utilities Department

Ph: (650) 329-2417

Email: catherine.elvert@cityofpaloalto.org

URL: cityofpaloalto.org/water



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