

City of Santa Rosa Customer Leak Detection

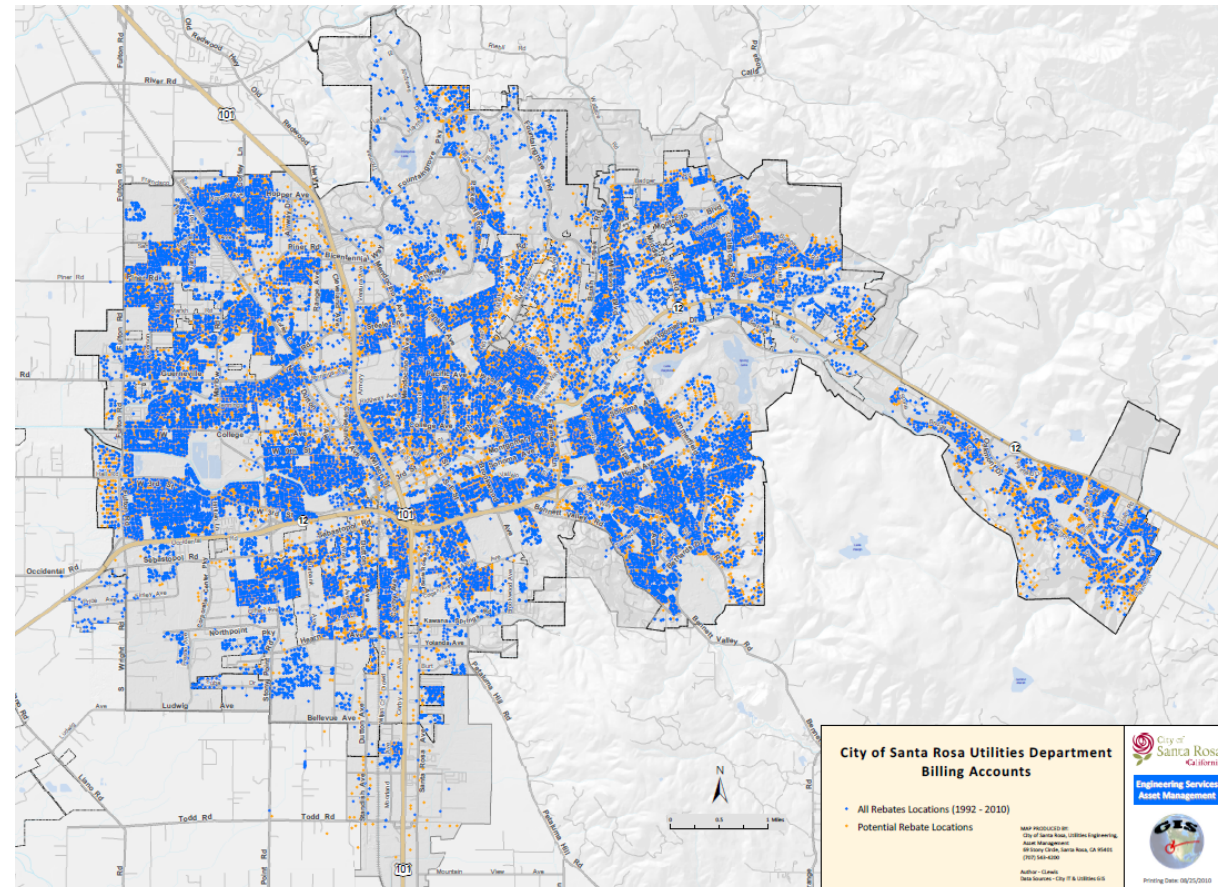
Claire Nordlie – Water
Use Efficiency Manager



OUR FUTURE IN EVERY DRÖP

City of Santa Rosa

- 53,000 accounts
- 16,500 ac ft/
year
- 83% residential
accounts



AMI and Continuous Use

Meter Group	Consecutive Hours	Continuous Gallons
Commercial	48	50
Industrial	72	100
Institutional	24	30
Residential	24	20
Residential – 2 unit	24	40
Multi-Family	48	80



OUR FUTURE IN EVERY DROP

Poll

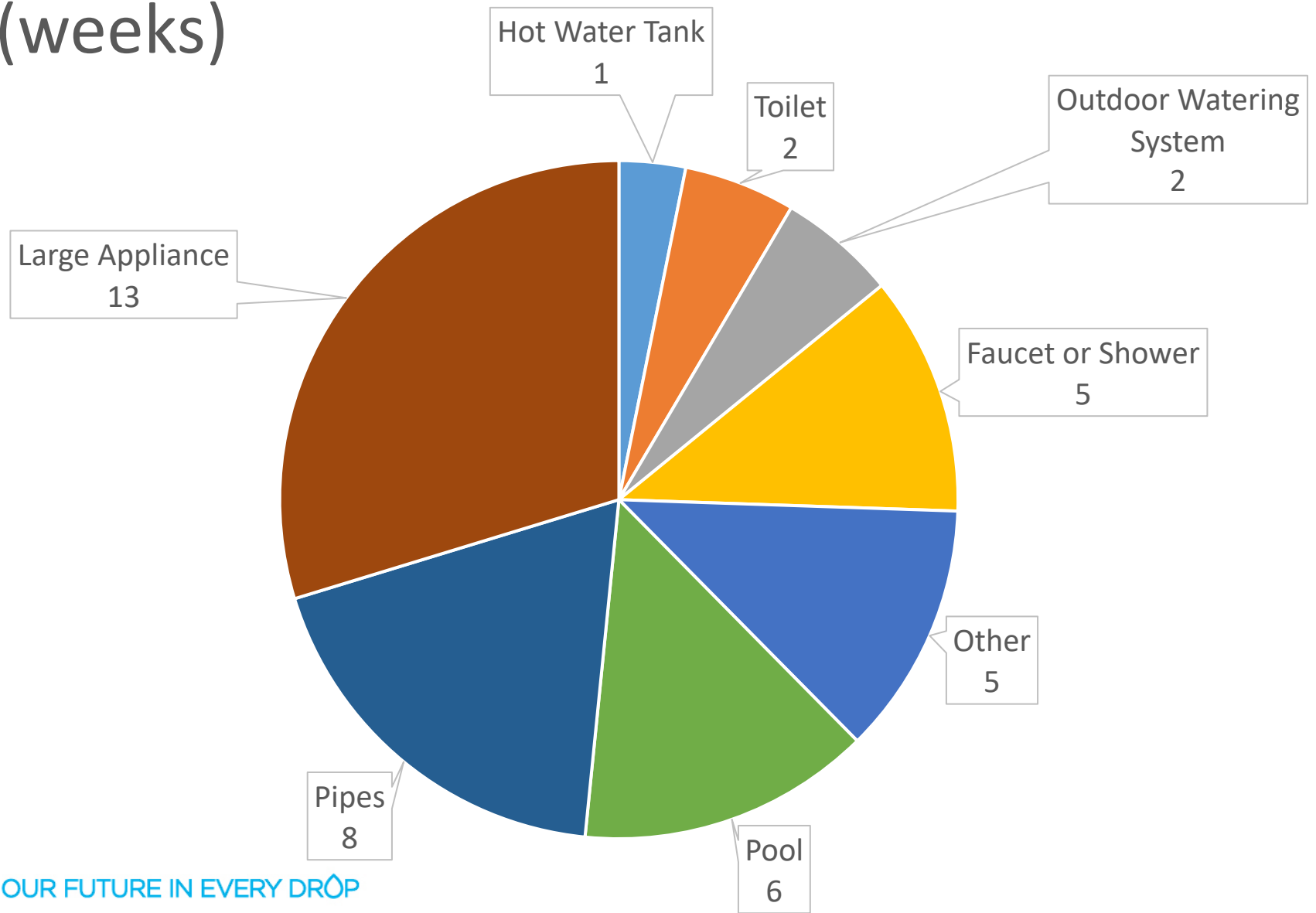
Describe your current AMI leak detection program:

- Our agency does not have AMI.
- Our agency has AMI but has not set up continuous use thresholds yet.
- Our agency has set up thresholds and we use them to reach out to customers.
- Our agency uses our AMI customer portal for customers to set up their own thresholds.
- Our agency has a hybrid of both agency set continuous use thresholds and allows customers to set their own thresholds in the portal.



OUR FUTURE IN EVERY DRÖP

Duration of Leak (weeks)



Single Family Leaks

Type of Leak	Average of Leak Volume (gallons)	Max of Leak Rate (GPD)	Average of Cost for repair
Large Appliance	476	910	\$ 179
Hot Water Tank	993	2,600	\$ 305
Faucet or Shower	2,909	1,800	\$ 228
Pool	4,218	7,800	\$ 382
Pipes	6,192	12,500	\$ 2,693
Toilet	1,912	4,600	\$ 558
Outdoor Watering System	3,071	21,800	\$ 1,209
Other	9,932	4,700	

Note: this describes leaks prior to and during a leak notification program



OUR FUTURE IN EVERY DRÖP

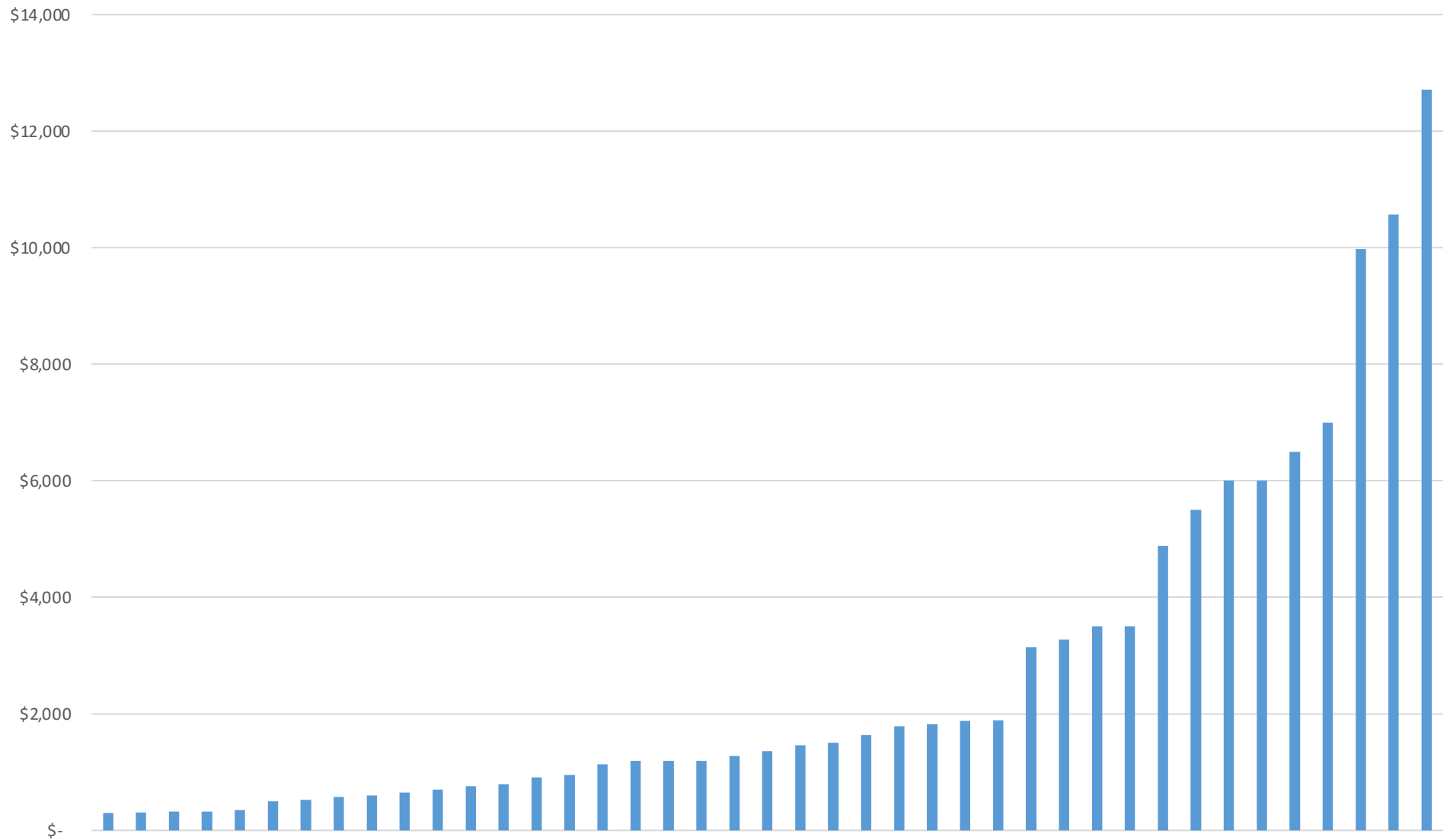
Pipe Leaks

Pipes	Number of Leaks	Ave Duration (weeks)	Ave Leak Volume (gallons)	Ave Cost to Repair
Main Line	191	8	11,000	\$ 3,474
Other	271	2	5,500	\$ 2,489
Slab	6	20	8,100	
Meter box	17	12	8,900	\$ 782



OUR FUTURE IN EVERY DRÖP

Cost of Customer Reported Pipe Leaks (2019 - 2020)



OUR FUTURE IN EVERY DRÖP

“Other” Leaks

Other	Number of Leaks	Ave duration (weeks)	Ave Leak Volume (gallons)
Fire Sprinkler	1		
Fountain	1		
Slab	2		
Solar Hot Water	3	4	3,700
Unknown	45	5	10,400



OUR FUTURE IN EVERY DRÖP

What's Next

- Evaluate the volume of leaks during leak alert program only
- Decrease the leak thresholds to capture more leaks
- Study the water savings potential of following up with continuous use

Leak Notification Programs



Leak Notification Program Overview



- EBMUD has had a “high-usage” notification program since the mid-90’s
 - Door hangers and courtesy calls
- Currently use a multi-pronged approach
 - Billing cycle, limited AMI, and flow-meters incentives
- Door hangers, courtesy calls, emails, texts, and customized reports



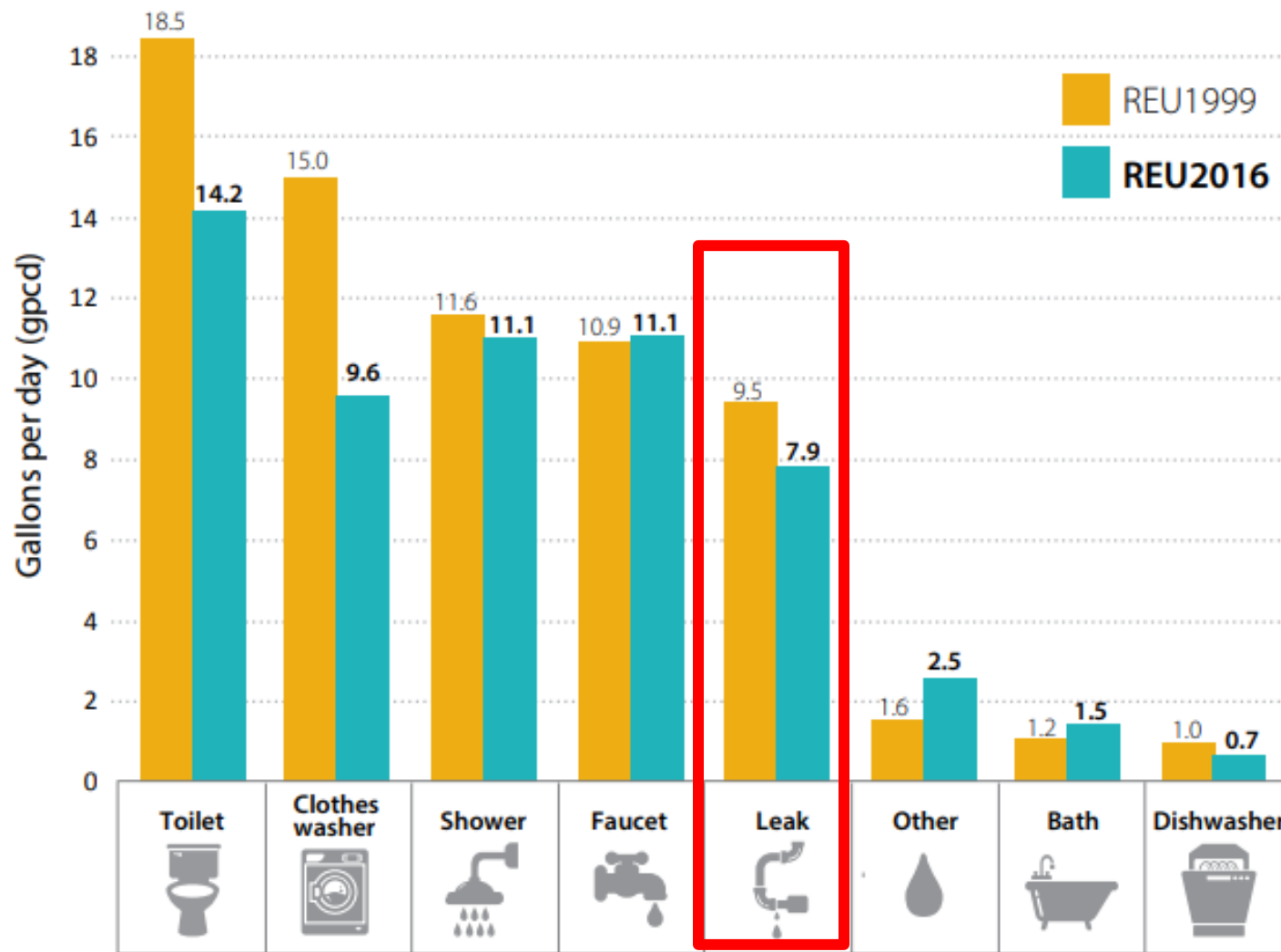
Real time
water use data

Now
in your
hands!

ebmud.com/mywaterreport



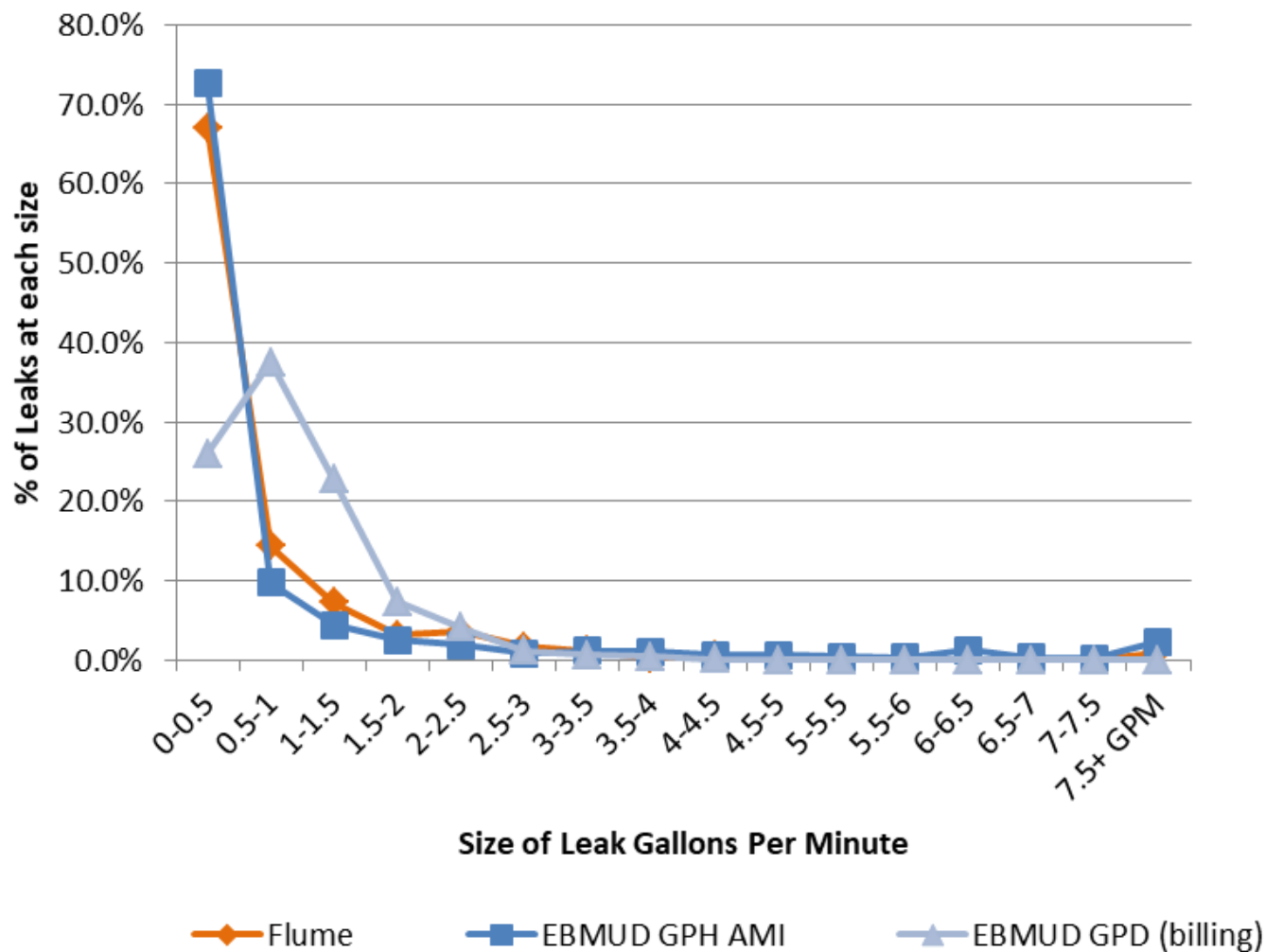
Residential Demand by Use Type



Data Frequency and Leak Detection







Leak Alerts



- How do you notify customers if they have a leak?
 - Text message?
 - Robocall?
 - Email?
 - Customized report?
 - We do not have a program.

Customer Survey for Notifications



Do You Recall Alert?		No	Not sure	Yes	Grand Total
	Robocall List Only	27%	6%	66%	100%
	Robocall, Standalone, HWR	6%	6%	89%	100%
	Standalone and HWR	17%	7%	76%	100%
	Standalone Only	22%	6%	72%	100%
Grand Total		19%	6%	75%	100%

Question:

Customer's were asked to "Recall" how they were contracted about high usage


- Highest with all three communications types
- Lowest with Robocall

Strong Preference for Standalone Email Alerts



Row Labels	Email alerts	Alerts in Water Report	Voice alerts	Text message alerts	Door hanger	I do not wish to receive alerts
Robocall List Only	69%	21%	8%	30%	16%	0%
Robocall, Standalone, HWR	70%	28%	19%	35%	46%	4%
Standalone and HWR	75%	17%	5%	23%	7%	1%
Standalone Only	82%	18%	6%	23%	4%	0%
Grand Total	74%	20%	7%	25%	12%	1%





Continuous Water Use
Your water has been running continuously since 1:00 AM on Tuesday, July 23, 2019.

[Investigate possible leak »](#)

Continuous use is often an indication of a running toilet or leaky irrigation valve.

ESTIMATED GALLONS

609

ESTIMATED DURATION

23 hours

ESTIMATED RATE

27 gph

What's next?

- Check for leaks.

[Here's how »](#)
- Tell us what you found

[I found a leak »](#) [This was not a leak »](#)

City of Cotati

707.465.4238 | info@cotatiwater.com


YOUR HOME WATER REPORT

THIS IS AN OPERATIONAL REPORT AND NOT A BILL.

SIGN UP TO GET THIS REPORT VIA EMAIL: [www.cotatiwater.com](#)

Your WaterScore

APR 18, 2019 - OCT 16, 2019



You used **more water** than most of your neighbors.

Galons Per Day (GPD)

WaterSmart Neighbors: 145 gpd

Local Average: 239 gpd

You: 239 gpd

What you could be saving

If you took the actions below, you'd be closer to 304 GPD. That's \$200 per year in potential savings.

WaterSmart Neighbors: 145 gpd

Local Average: 239 gpd

You: 239 gpd

Register online. It works!

"Who knows how much water old toilets use?" alerts will notify the Cotatiwater website with Cotati's free toilet offer. It's a win-win!"

Call, register and use of [www.cotatiwater.com](#)

[Log On](#)

Customer's Taking Action



Print alert: 11% visit portal

SERVICE ADDRESS: 1888 Tunnel Rd
 ACCOUNT NUMBER: 10233300001
 VIEW YOUR WATER USE
ebmud.com/mywaterreport
 (866) 403-2683 WaterConservation@ebmud.com

Continuous Water Use Detected

On July 31st, our automated system detected that your water was running continuously. This could indicate a leak.

GET FASTER ALERTS
ebmud.com/mywaterreport

Account Number: 10233300001
 Zip Code: 94705

Register on the My Water Report Portal and we'll email you the next time we spot irregular use. Text and voice messaging are also available.

Household leaks waste more than 1 trillion gallons of water a year. Join us in tracking down water waste this Fix a Leak Week, March 18-24, 2019!

ESTIMATED START DATE
Jul 30, 2019

CURRENT RATE
1 Gallon Per Hour

LEAKS 101
 The most common causes of irregular water use are easy to find and fix. For more detailed tips, log on to ebmud.watersight.com/LeakCheck.

- Running Toilets**
Listen for running water or do a dye test. Check the flapper and the float valve.
- Irrigation**
Check your controller settings. Inspect your system for breaks or excessively damp areas.
- Pipes & Fixtures**
Look for wet spots near your faucets, showerheads, and water heater, and behind appliances.

A free service offered by your water utility and powered by WaterSmart Software® © 2019.

Email alert: 57% interact

Continuous Water Use
 Your water has been running continuously since 1:00 AM on Tuesday, July 23, 2019.

[Investigate possible leak »](#)

Continuous use is often an indication of a running toilet or leaky irrigation valve.

ESTIMATED GALLONS: **609**

ESTIMATED DURATION: **23 hours**

ESTIMATED RATE: **27 gph**

What's next?

- Check for leaks.
[Here's how »](#)
- Tell us what you found
[I found a leak »](#) [This was not a leak »](#)

20% visit portal

Continuous Use Detected
 Your water has been running continuously since [1:00 AM on Tuesday, July 23, 2019](#) at an estimated rate of 27 gallons per hour. That's 609 gallons.

[Investigate possible leak](#)

HOURLY OVERVIEW LEAKS

Hourly

DAY WEEK 2 WEEKS 2 MONTHS YEAR

Normal Use Possible Leak Data Unavailable

Last updated Thursday, Jul 25, 2019 at 12:00 AM

Summary: Monday, July 8, 2019
 Total Use: 2,580 Gallons
 Possible Leak: 290 Gallons

Leaks and Types



	FY 2018	FY 2019	FY 2020	FY 2021 (incomplete)
Leak Alerts				
Leaks Detected	34,841	9,542	62,459	21,771
Alerts Sent	6,369	4,166	20,536	10,824
Percent alerted	18%	44%	33%	50%
Leak Volume (CCF)	683,941	495,236	2,095,294	2,009,426
Leak Alert Source				
Large Appliance	1	2	3	0
Unspecified	0	0	3	0
Faucet or Shower	12	5	54	18
Hot Water Tank	7	8	11	4
Hand-watered the Yard	15	5	19	13
Left a Hose or Faucet Running	22	11	39	31
Pool	28	20	51	19
Other	28	30	112	28
Filled a Pool or Hot Tub	54	37	70	27
Pipes	98	91	196	47
Toilet	127	98	285	94
Had Other High Volume Use	99	54	126	44
Irrigated Using an Irrigation Controller	111	42	222	45
Outdoor Watering System	377	244	644	220

Thank you!



Real time
water use data

Now
in your
hands!

ebmud.com/mywaterreport



Charles Bohlig

charles.bohlig@ebmud.com

510-287-0491

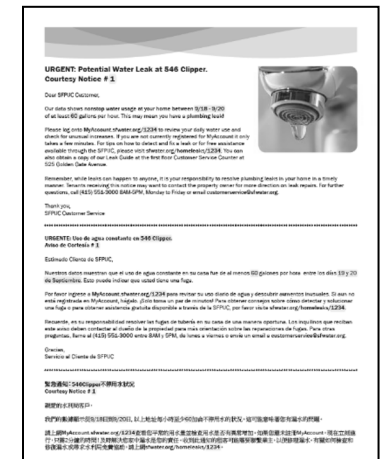
“You May Have a Leak!”

What We’ve Learned About Single Family Customers with Constant Use

Julie Ortiz

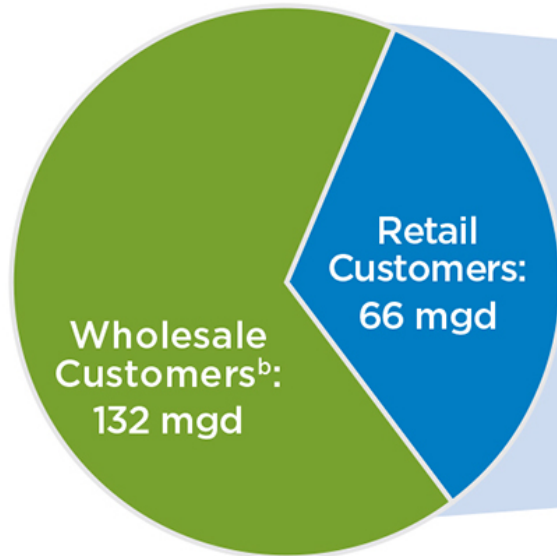
San Francisco Public Utilities Commission

December 9, 2020 – CalWEP Peer-to-Peer Conference

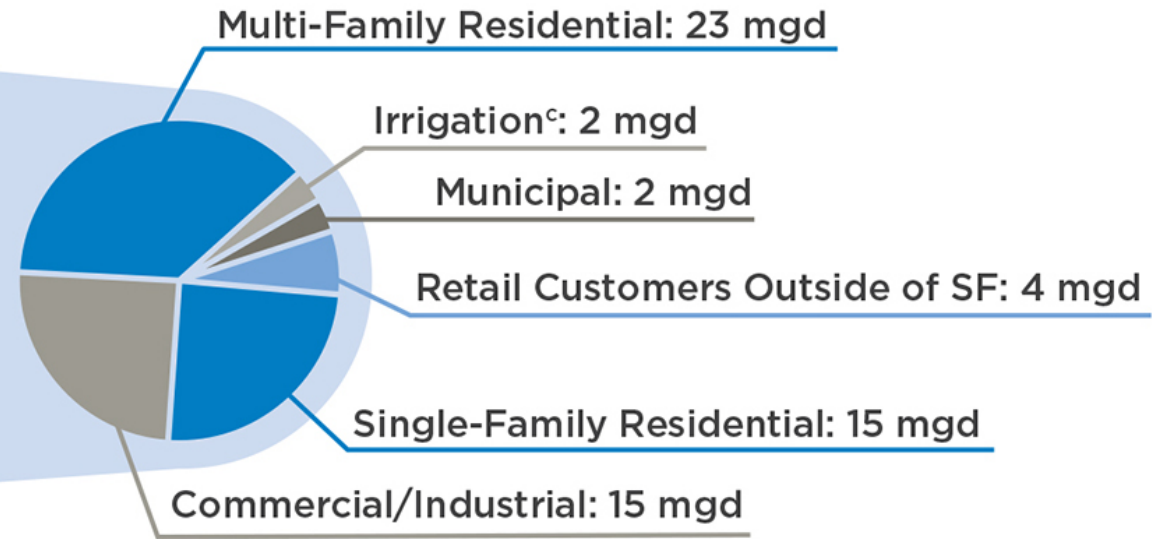


SFPUC Water System

FY 2019-20 Regional Water System Deliveries and Retail Water Use



Regional Water System Deliveries^d



Retail Water Use^d

SFPUC Retail AMI System

- Aclara STAR fixed network transmits hourly reads 4 times a day; almost all 180 k connections covered
- Custom in-house AMI data screening tool and customer portal
- Use hourly data and internal algorithms and i-INFO notification platform to issue leak alerts





SFPUC Leak Alert Program

- Notify SF, MF (2 to 5 dwelling units) and irrigation accounts at 72 hours constant use over 7.5 gallons/hr
- 3 rounds of automated notices using all methods with contact info: phone message, text, email, letter in multiple languages
- Door hanger for long-term residential leakers after 3 rounds of notices
- Adding permanent alerts for large MF and commercial customers spring 2021

Mi-Nexus Back Actions ? Help **i-VIDEO** **i-INFO**

Account Info

Account ID: #####
SPID: #####
Premise Address: ## Magellan Av, San Francisco, CA 94116
Account Type: RES-SWTR
Account Status: Active Service Agreement
Incident Status: Current Open Incident (since 08/13/18)
Account Name: Doe, John
Last Notice Sent On: 08/14/2018
Incident # - Notice #: 1 - 1
of times on leak report: 2

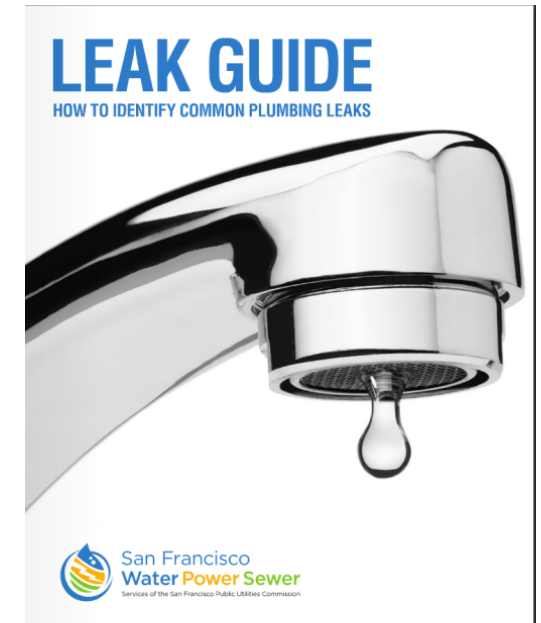
Notes (0) no notes

Customer Name	Phone	Email Address	Mailing Address	Opt Out
Doe, John	(###) ###-#### (H) (###) ###-#### (W)		>## Magellan Ave San Francisco CA 94116	None

Communication History
Leak History
Service Points

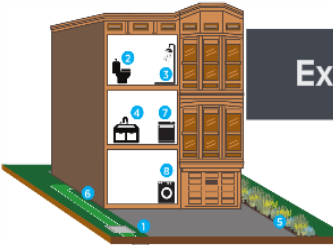
SFPUC Leak Resources

- FAQs and info on web site, www.sfwater.org/fixleaks
- Leak guides in English, Chinese and Spanish
- Free indoor/outdoor water-wise evaluations & free water-efficient devices, including toilet repair parts
- Toilet direct install program, clothes washer rebates
- Ability to track constant use on My Account portal
- Bill reductions for leak repairs
- Water lateral replacement insurance program



DO YOU HAVE A LEAK?

A home with plumbing leaks can lose over 70,000 gallons of water each year – that's enough water to fill a basketball court two feet deep! Toilets are the most common sources of household leaks, although leaks can also occur in faucets, irrigation systems, or even a home's main water service line. While most plumbing leaks can be easily repaired by a homeowner, they often go unnoticed and can waste thousands of gallons of water per month. This Leak Guide will help you identify common plumbing leaks and provide steps to make simple repairs yourself.



WHERE TO START

1	Water Meter.....	4
2	Toilet.....	6
3	Shower.....	8
4	Sink Faucet.....	8
5	Irrigation System.....	9
6	Service Line.....	10
7	Dishwasher.....	11
8	Clothes Washer.....	11

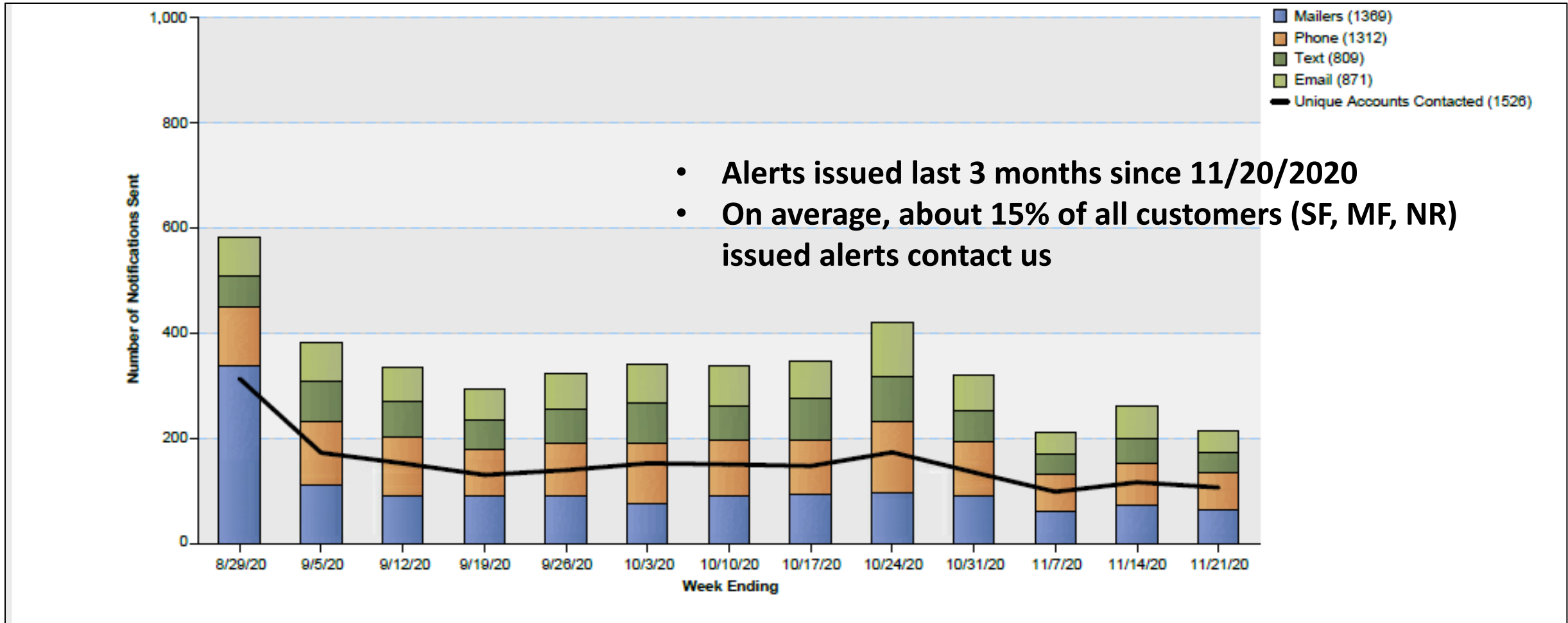
Expand



General Program Findings

- On average, 3 to 5% of single family accounts trigger alerts a year
- Leak incidents occur across all residential areas in the City
- On average, about same number of new leaks open a week as old leaks close
- Most common things people call us about:
 - Tell us they got the alert and what they plan to do
 - Tell us they couldn't find a leak or don't think they have one
 - Ask if their constant usage has stopped
 - Seek a high bill adjustment
- Only 10 requests to date to be opted out across all customer sectors; most customers appreciate the service; a few complaints we should notify before 72 hours

Alerts Issued a Week for Past 3 Months

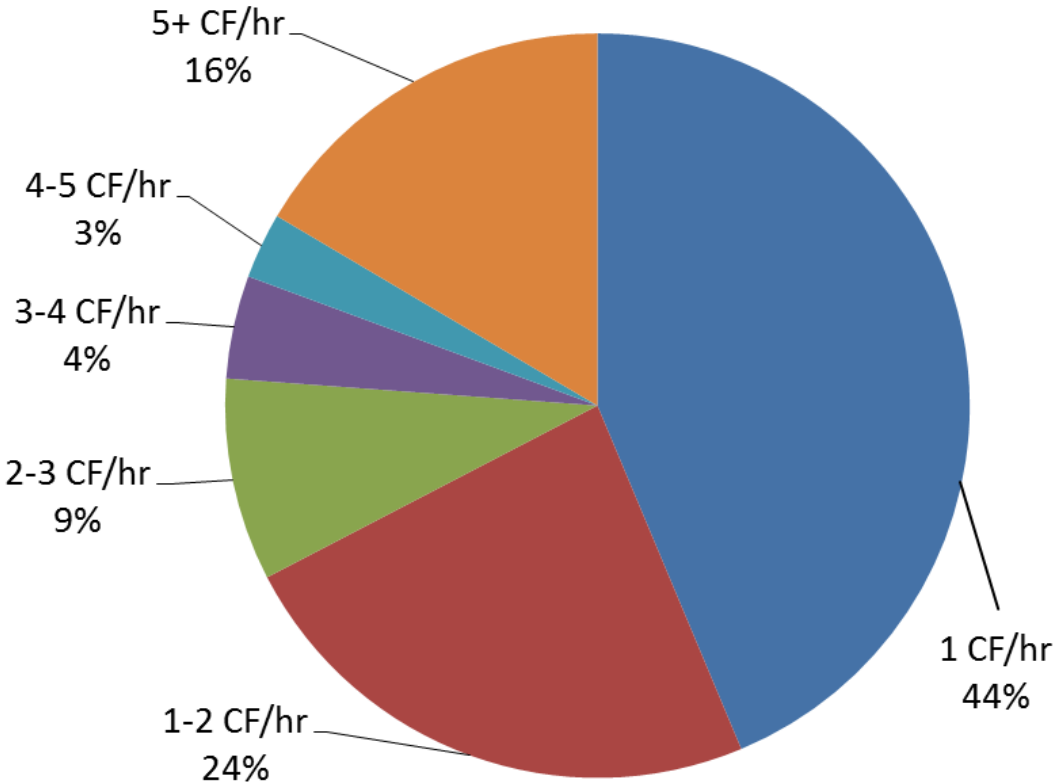




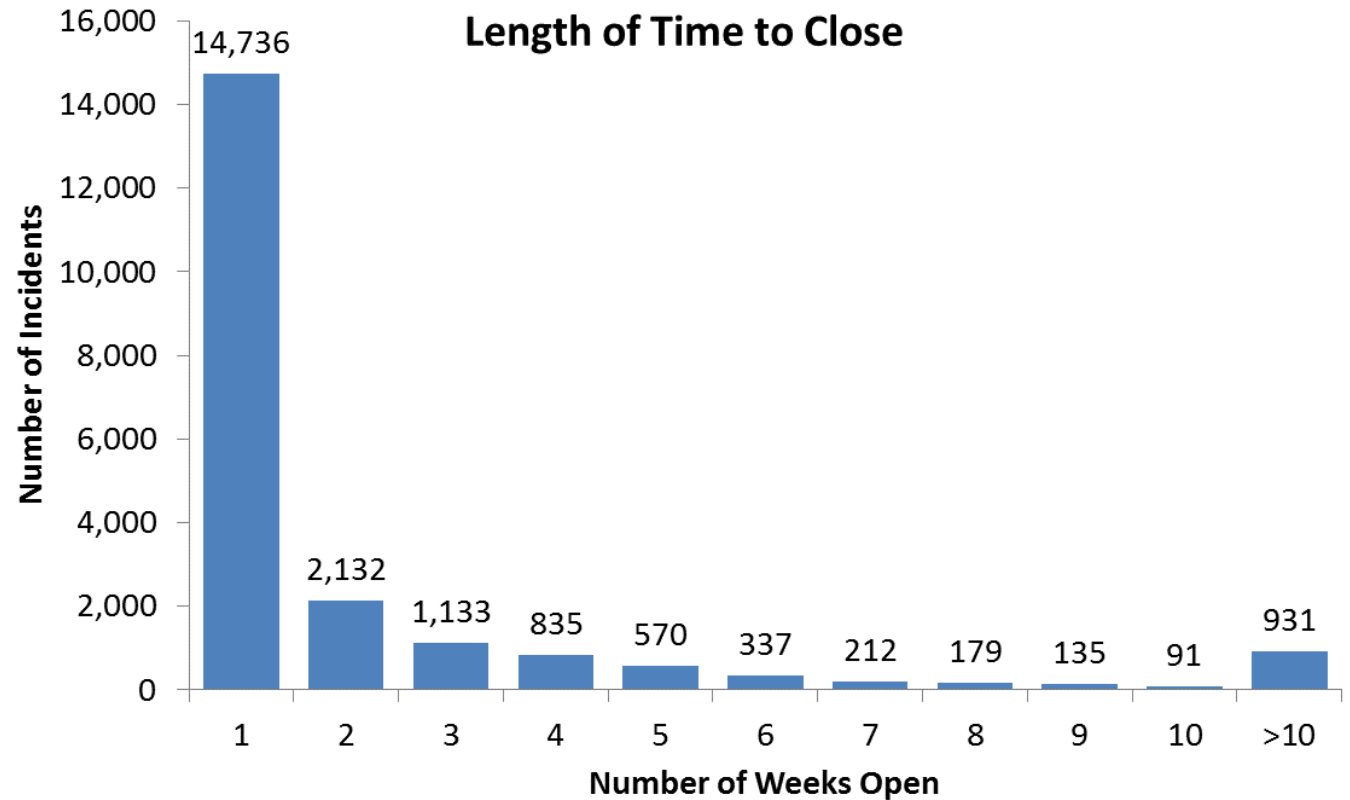
Leak and Closure Rates 2017-2020

- Over this 3-year period, sent 78,309 individual notifications to 17,369 SF & MF accounts

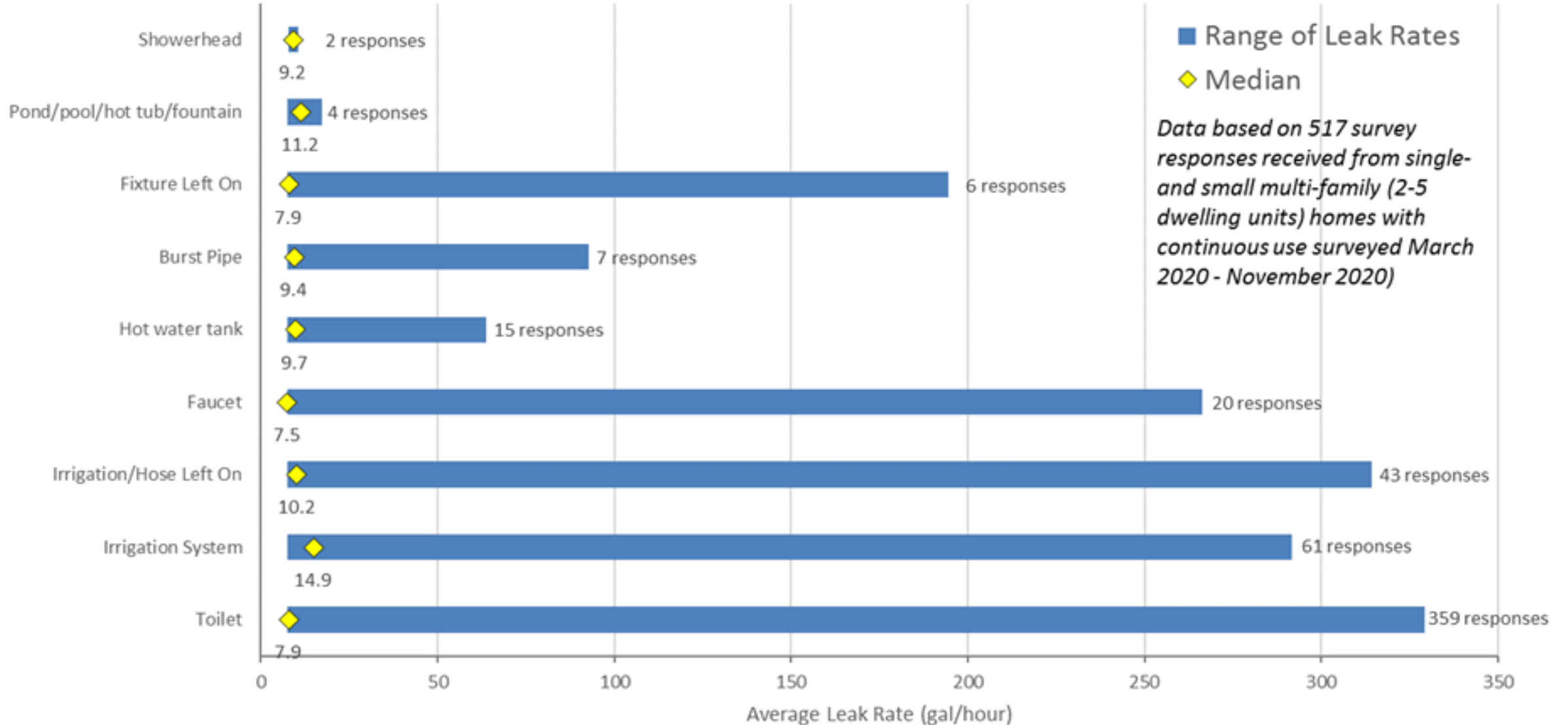
Average Leak Rate



Length of Time to Close



Estimated Volume by Leak Type

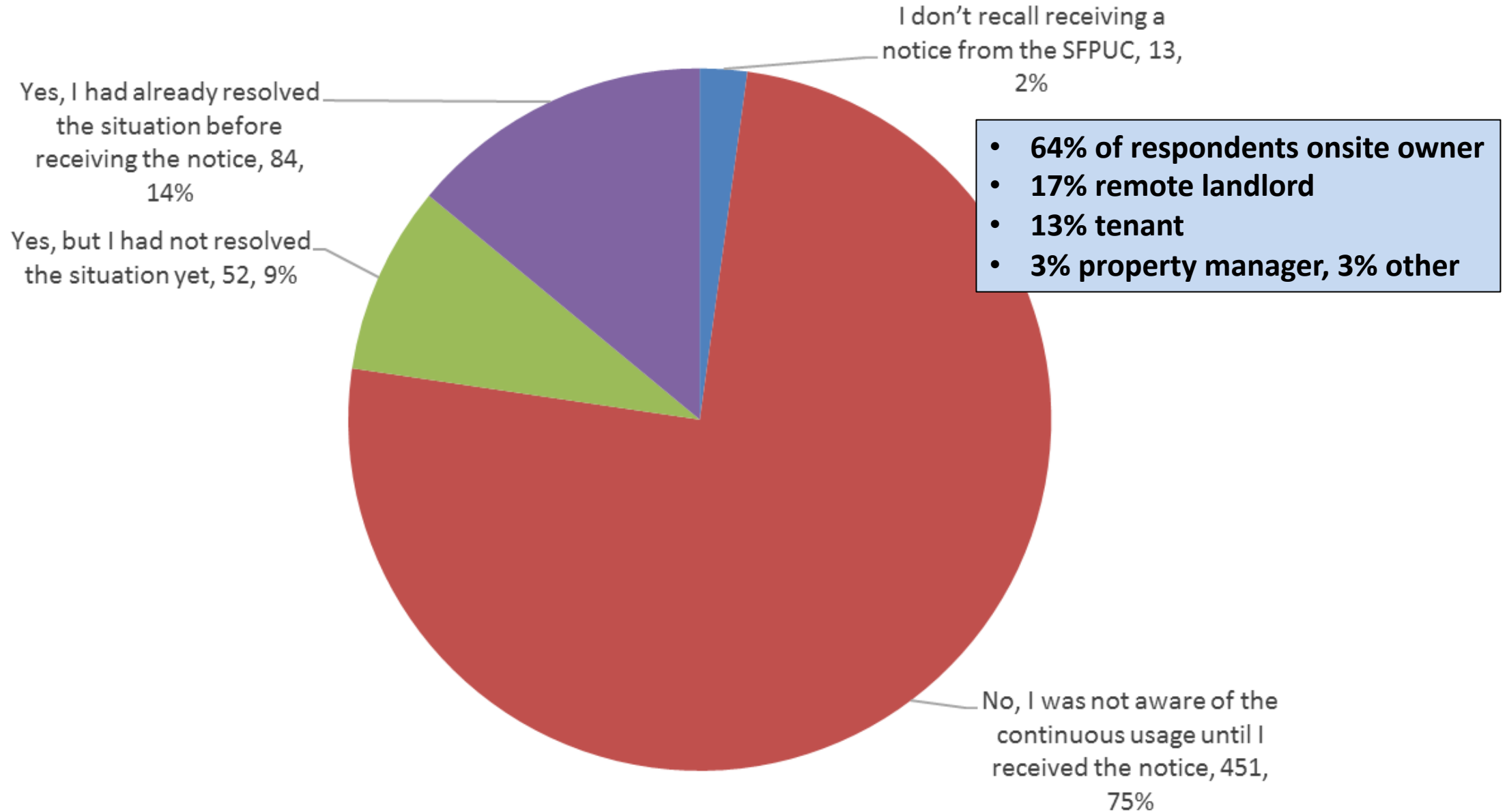




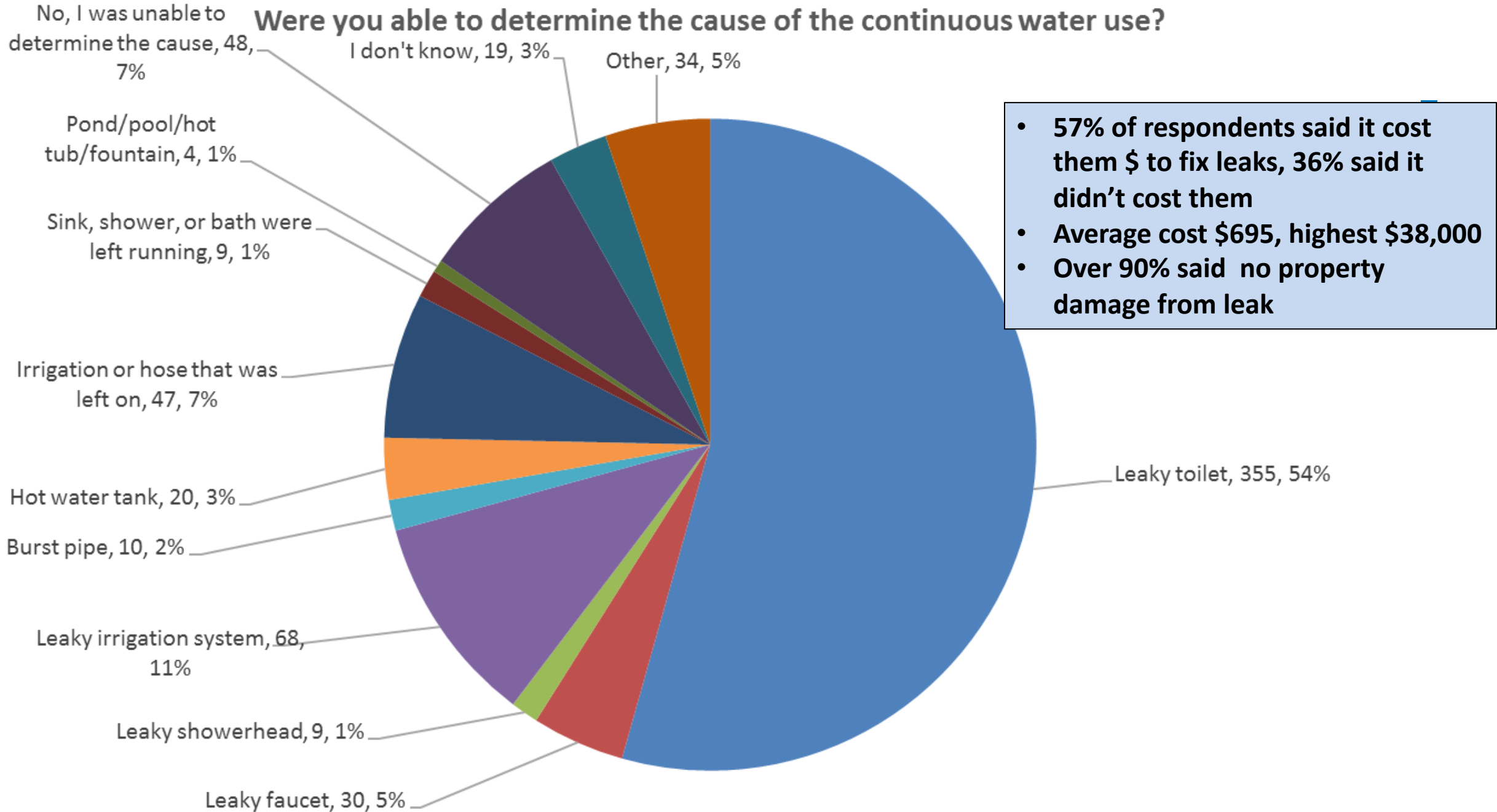
Customer Survey Responses

- Starting in 2020, SFPUC automatically emails every residential leak alert recipient a brief online survey; as of November 2020:
 - 3,298 surveys issued
 - 601 customers responded
 - 18% response rate
- We also surveyed 2,112 single family leak alert recipients in 2018 by mail and email, receiving 586 responses for a 28% response rate
 - Key findings from previous survey similar to findings from current, ongoing survey

Were you aware of the continuous water use before receiving a notice from the SFPUC?

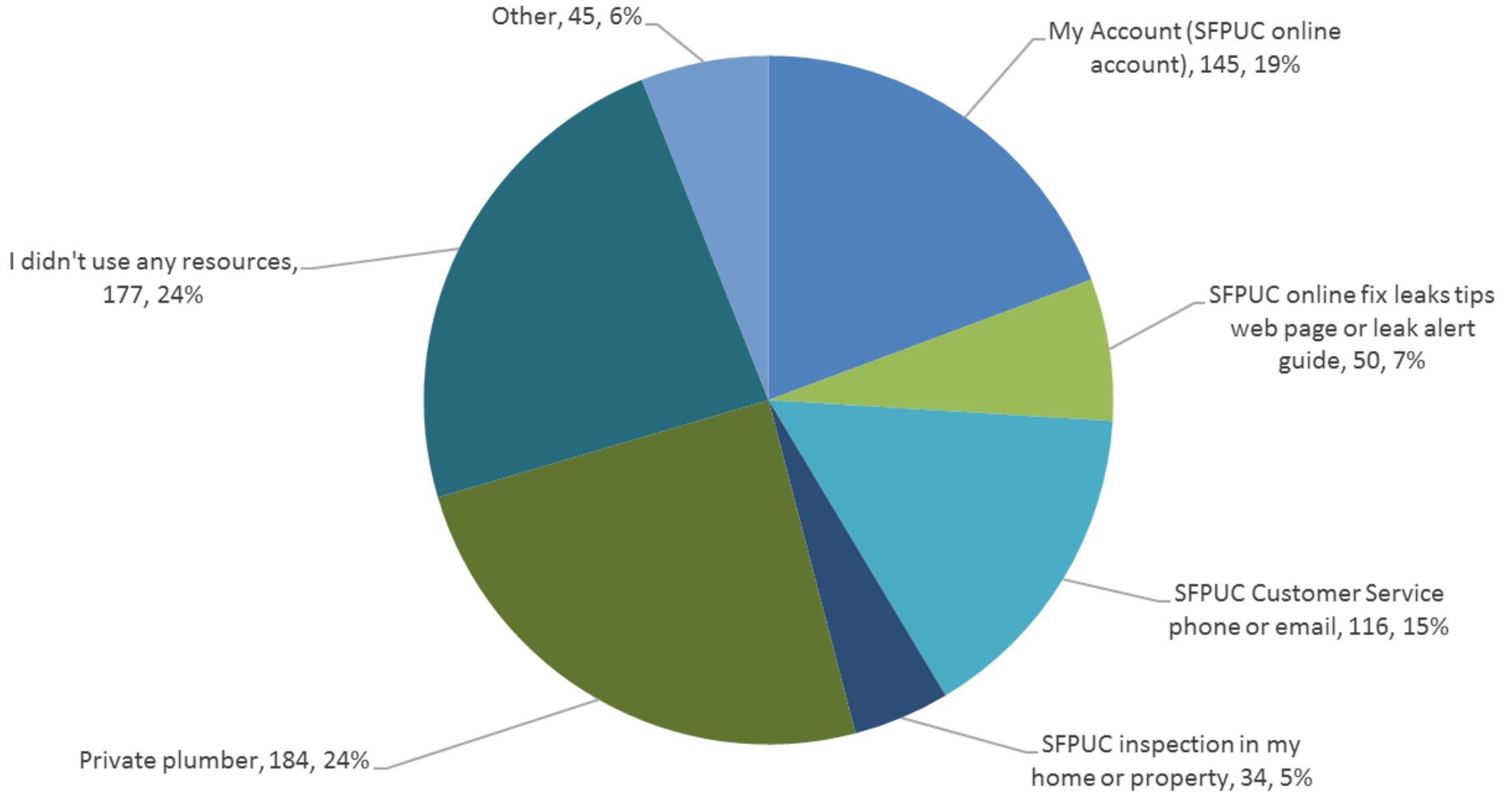


Were you able to determine the cause of the continuous water use?



- **57% of respondents said it cost them \$ to fix leaks, 36% said it didn't cost them**
- **Average cost \$695, highest \$38,000**
- **Over 90% said no property damage from leak**

What resources did you consult to learn about and identify the cause of continuous water use?





Estimated Water Savings

- Worked with economist David Mitchell, M-Cubed to estimate water savings
- Evaluated hourly AMI data to study leak events occurring:
 - July 2014 – March 2015 (No Program)
 - September 2017 – June 2019 (Current SF Leak Alert Program)
- Results:
 - 54% reduction in leak volume
 - Total single-family program savings of 27.8 MG/year \pm 4 MG/year (95% CI)



For More Information

Visit: www.sfwater.org/fixleaks

Contact:

- Julie Ortiz, Water Conservation Manager, jnortiz@sfgov.org
- Kevin Galvin, Leak Alert Program Manager, kgalvin@sfgov.org



Customer-Side Leak Detection:

Increasing Utility and Customer Access to Real-Time Water Data without AMI

Alison Loukeh - Jurupa Community Services District

Nate Adams - Santa Margarita Water District

Tom Kennedy - Rainbow Municipal Water District

Sarah Musiker - Flume Inc.

Rainbow Municipal Water District

Tom Kennedy, General Manager



Rainbow MWD Customer Data Program

- The District's Strategic Plan includes a requirement to enhance customer water consumption information delivery
- Rainbow evaluated every major AMI vendor and performed extensive piloting on one (Itron)
- AMI pilot failed to produce expected results, leading to a reconsideration of AMI generally

Challenges with AMI

- High Cost – especially in hilly areas that require a lot of towers to get coverage plus a lot of O&M costs
- Low Customer Use of System – even the best AMI operators rarely result in more than 20-25% of customers accessing the system
- When combined, the low uptake and high cost makes AMI even more economically problematic than before
- The goal is to get more accurate data to customers who want it – not to spend money on customers who don't want it

Enter Flume

- Rainbow MWD piloted the Flume water monitor on 50 accounts starting in early 2019
- Results were very positive – easy installation, low cost, extremely accurate data
- Board approved a subsidy program to roll out the Flume device to customers
- To date about 500 customers (out of 8000) have signed up

Rainbow MWD Results

- We surveyed our Flume customers to see how it was going
 - 63% found leaks
 - 88% reported a change in water use behavior
 - 9% net savings compared to control
 - 98% would recommend Flume to a friend

Customer Leak Assistance & COVID: Physically Distanced Hand-Holding

Nate Adams, Santa Margarita Water District



Santa Margarita Water District

Services:

Drinking Water, Recycled water & Wastewater

165,000 – Service Population

57,000 – Connections



Residential = **90%** DW connections (non AMI)
75% DW consumption



SMWD “Tiers” of Customer Leak Assistance

Site Surveys



Active: “white-glove” customer (on-site) assistance

High Use Notifications



Active: monthly alerts; invites to DIY resources & Site Survey

Budget-Based
Rate Structure



Passive: monthly bills & water budget

COVID-19 Challenge:

How do we maintain impactful customer service & assistance?

2019



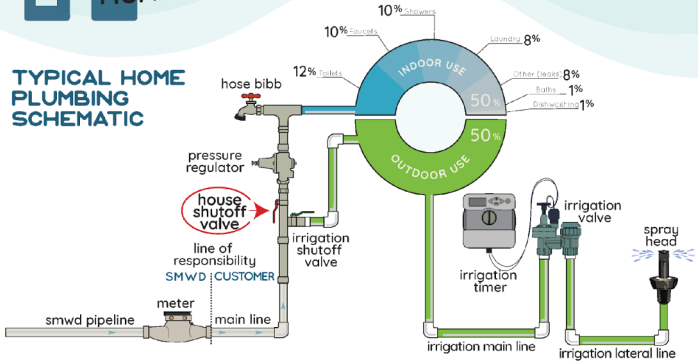
2020





HOME DIY: LEAK CHECK

TYPICAL HOME PLUMBING SCHEMATIC



TIPS AND TRICKS WITH LEAK DETECTION:



HOME CHECK

Indoor Flow on Meter:	Outdoor Flow on Meter:
<input type="checkbox"/> toilets	<input type="checkbox"/> irrigation system (timer, irrigation main line, valves, spray heads, dripline)
<input type="checkbox"/> fixtures (shower heads, faucets, hose bibbs)	<input type="checkbox"/> swimming pool (auto-fill valve, pumps, connections)
<input type="checkbox"/> appliances (water heater, clothes washer, ice maker, water softener/filtration, dishwasher)	<input type="checkbox"/> fixtures (faucets, hose bibbs)

More severe leaks include pinhole, slab, main line, and swimming pool leaks.



ONLINE TOOLS

WATCH VIDEOS at SMWD.COM/LEAKS

Set your irrigation timer SMWD.COM/WATERING

Find information on rebates at SMWD.COM/REBATES

Interactive HOME DIY: LEAK CHECK GUIDE ([Click](#) or [Scan](#))



Contact Us:

Email: efficiency@smwd.com or Call: 949-459-6593

www.SMWD.com/Leaks

Home DIY Leak Check: paper & interactive digital guide

Since June 2020:

1,000+

Unique Web Views

1 min 44 seconds

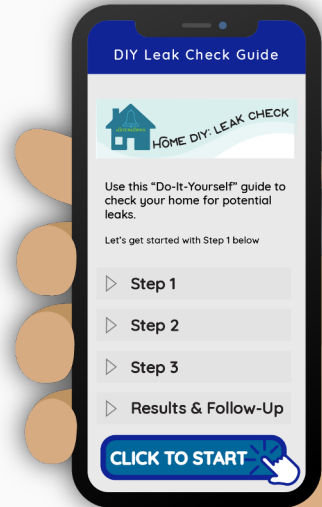
Avg Viewing Time

325

Paper Guides Sent

150

Unique Clicks of “App”



COVID-19 Challenge:

How do we provide impactful customer service & assistance?

Expanding DIY resources to assist with:

- Watering Schedule assistance
 - www.SMWD.com/Watering
 - Virtual workshops & demonstrations
- Take a look at www.resetyourcontroller.com



Thank You.

Contact Nate Adams at natea@smwd.com

App Based Real Time Water-Use and Leak Detection Pilot Program

Alison Loukeh, Jurupa Community Services District



JCSD – At A Glance

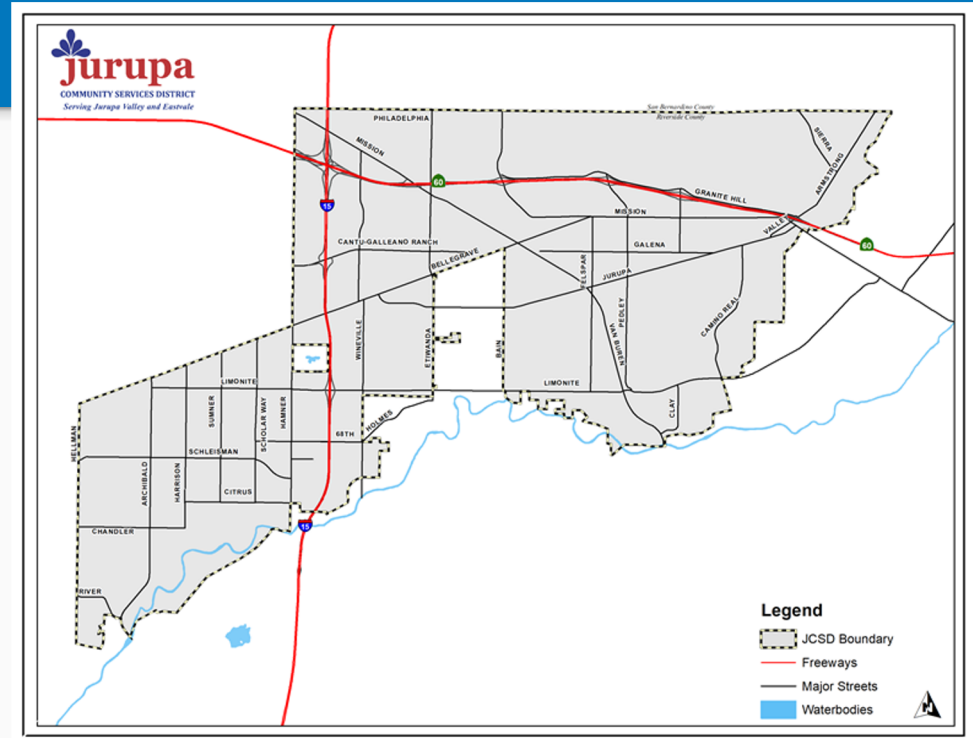
Established - 1956

- Service Area – 40.8 Square Miles
- Population – 140,150
- Board of Directors – 5 Members
- Water Connections – 32,230
- Sewer Connections – 31,610
- Parks Service Area Population – 60,000
- Streetlights – 1,905
- Graffiti Items Abated ~3,400 Annually
- Water Source – 100% Groundwater



Our Community

- City of Eastvale
- City of Jurupa Valley
- Very Diverse Service Area
 - Languages
 - Income Levels
 - Lot Sizes
 - Water-Use



Project Beginning – Help Customers Help Themselves

- High Water Use/Leak Detection
 - Audits
 - E-Citizen App
 - Billing Exception Reports
 - Customer Service Follow-Up
 - High Water Users
 - Letters, Telephone Calls, Emails, Site visits
 - January 2021 – Limited Leak Repair
- Looking For More
- WaterSmart Innovations Conference
- Flume



Project Rollout

- Funding:
 - Western Municipal Water District
 - Metropolitan Water District
 - JCSD Conservation Budget
- Contract
- Rollout Date Selection
- Outreach
 - Email Blast
 - Inserts
- Follow Up:
 - Customer Issues
 - Data Research



It's too precious to waste...
TAKE CONTROL!
Protect your home
Trim your water bill
Intelligent Leak Detection

Here is a Special Offer just for YOU!



flume

Real time water tracking.
Requires a free app on a smartphone.
Easy to install.
No plumber necessary.
Detects and identifies abnormal water usage.
Deeply discounted for you!
No monthly service fee.

\$49 (\$199 Value)

For more information
Please call Clover Rogers
(951) 727-8002
or e-mail savewater@jcsd.us
Purchase at JCSD.us/flume
Find out more at
www.flumetech.com/jcsd

Or on YouTube @JCSDistrict

What your neighbors are saying:

“ My flume device discovered a leak I did not know we had. This will help save money and water. ”
Sandra M., of Eastvale CA

“ I am very happy with my Flume. We started watching our water use and are now able to conserve and save. ”
Carol B., of Jurupa Valley

“ I would not have found my leak without the Flume. ”
Nick C., of Jurupa Valley

Project Findings

- Sold - 696
- Analyzed - 125
 - Continuously online for over 1 year
 - Had one full previous year of data
- Saved Water – 64%
- Leak Alerts – 48%





Moderated Discussion

20 Minutes



Questions from the Audience

10 Minutes

Thank You



Alison Loukeh - aloukeh@jcsd.us

Nate Adams - natea@smwd.com

Tom Kennedy - tkennedy@rainbowmwd.com

Sarah Musiker - sarahm@flumewater.com