



# Advanced Leak Detection

Open House Webinar  
February 11, 2021

Damon Rodriguez  
Mark Gutierrez  
Hannah Lin



# Agenda

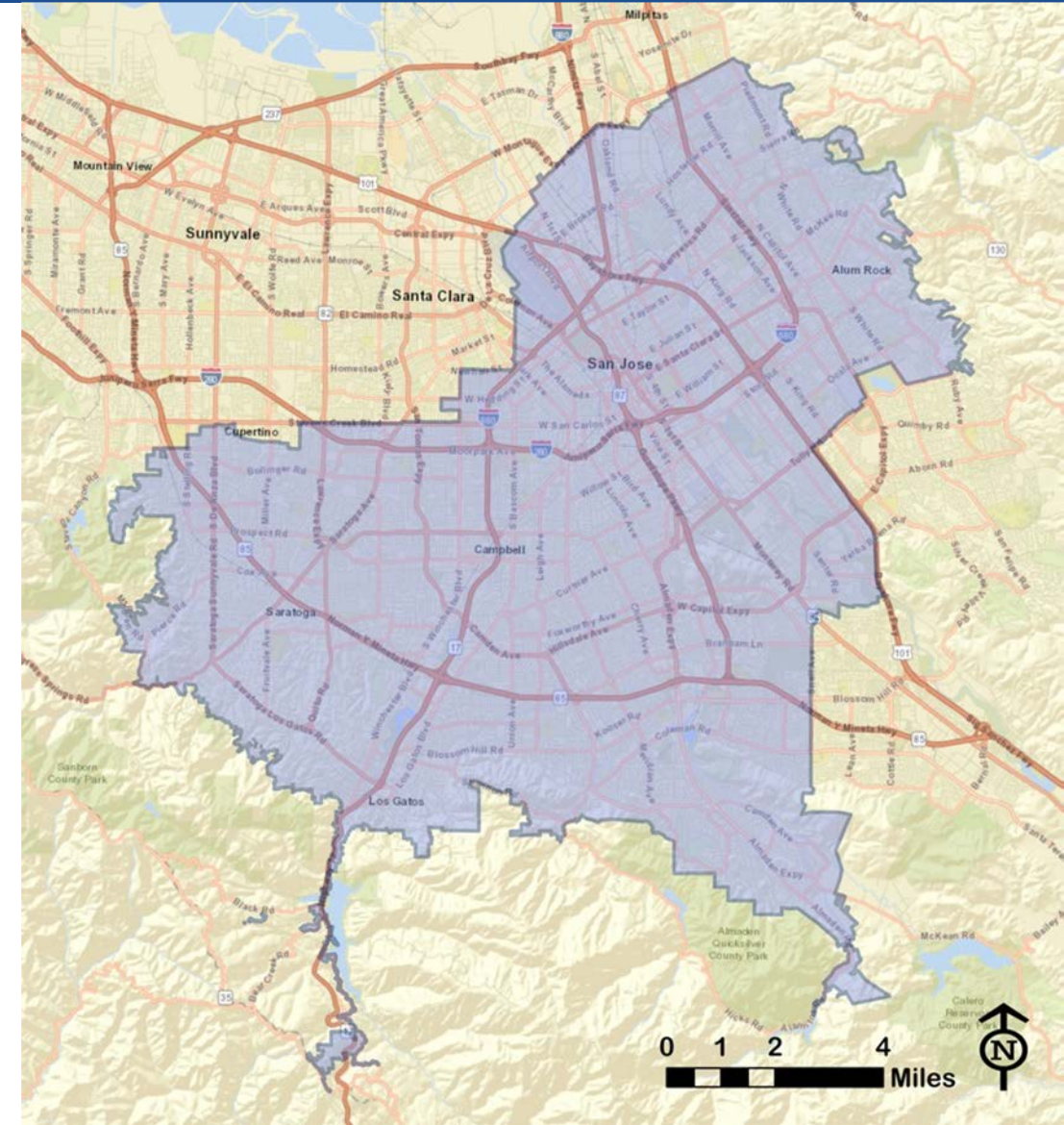
- Leak Detection Program Benefits
- Technology
- What Our Team Does
- Real Life Stories
- Q&A





# SJW at a Glance

- Approx. **1 million** people served
- **140 square miles**
- Over **2,400 miles** of pipe
- Over **1,130 miles** of service lines
- Multiple pump stations, wells, storage facilities



# Leak Detection Benefits

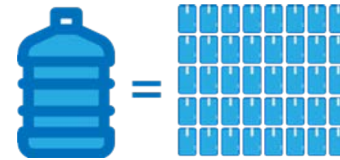
- Identify leaks before they become catastrophic
- Decrease damage to customer property
- Reduce disruptive, unplanned repair work
- Conserve water, resulting in lower customer bills and less wasted energy for producing water
- Protect aquatic wildlife by preventing chlorinated discharges to creeks





# Leak Detection Benefits

- SJW finds over **25 leaks** per month
- Equivalent to **480 million gallons** of water saved per year or **730 Olympic-sized swimming pools**
- Annual water loss: **7.5%** (compared to national average of 16%)
- Opportunity to hear from customers



"Can't thank you enough! What a terrific program. It helped us detect a leak we never would have found – (no outward signs)"

"Major props & praise for your crew!"

**SAN JOSE WATER**

### How'd we do? Your feedback is important to us.

San Jose Water uses cutting-edge Acoustic Leak Detection technology to find a leak before it becomes problematic. This system uses sensors placed on fire hydrant caps to monitor sounds within our water system, which indicate leaks that may have otherwise gone undetected. Our goal is to solve future issues before your residence or neighborhood is affected.

By answering the questions below or online, you can help us improve our service.

Online Survey: [www.surveymonkey.com/r/56BFKXX](http://www.surveymonkey.com/r/56BFKXX)

1. Did you know about the leak before we came out to investigate?  
☐ Yes ☒ No
2. Did you interact with any San Jose Water field staff?  
☒ Yes ☐ No
3. If so, how would you describe the interaction?  
*We were so impressed by their kindness, professionalism, knowledge & willingness to help us*
4. Do you think San Jose Water should continue investing in leak detection technology?  
☒ Yes ☐ No ☐ I don't know
5. Do you follow San Jose Water on social media? Please check all that apply.  
☐ Facebook ☐ Instagram ☐ Twitter  
If you don't already follow San Jose Water and would like to stay informed about your water service, follow us at [facebook.com/sjwaterco](https://facebook.com/sjwaterco), [instagram.com/sjwater](https://instagram.com/sjwater), and [twitter.com/sjwaterco](https://twitter.com/sjwaterco).

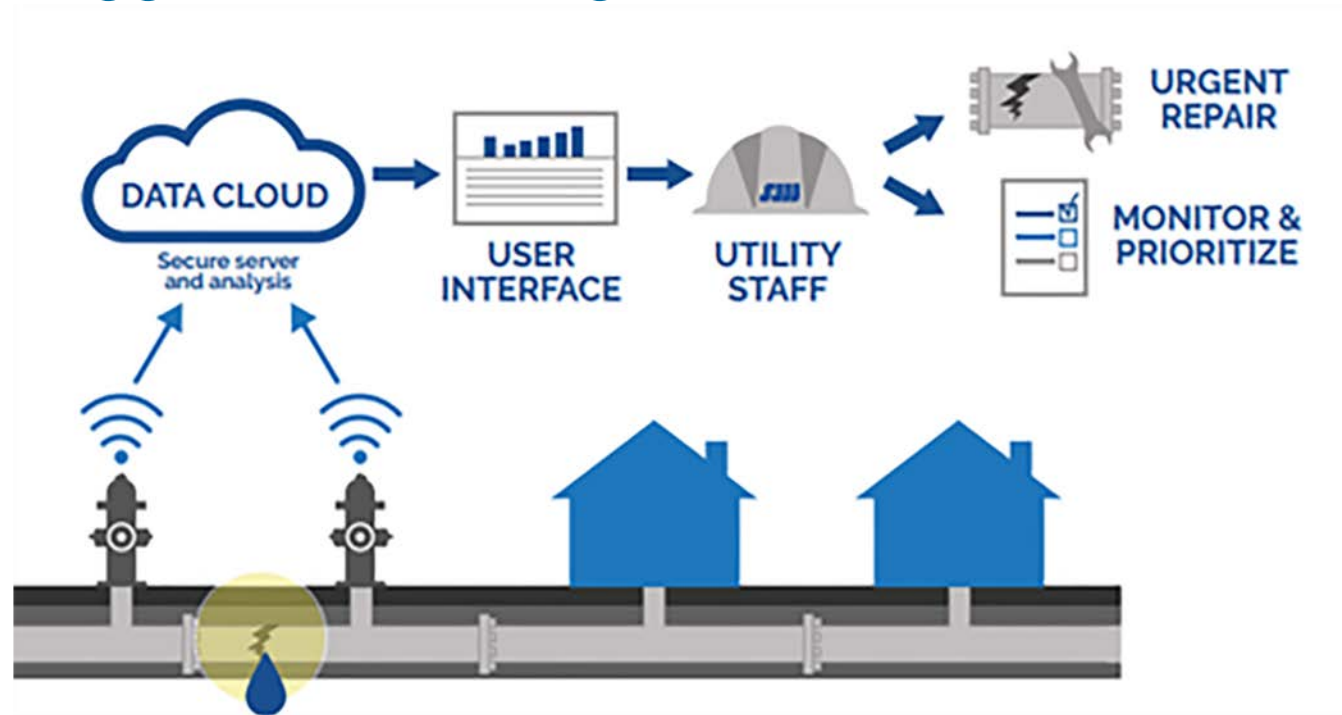
Any additional comments?  
*Can't thank you enough! What a terrific program. It helped us detect a leak we never would have found - (no outward signs)*

Once you've completed the survey, please send it back in the pre-paid envelope provided. If you have any further questions, please reach out to us at (408) 279-7900.

*Major Props & Praise for your crew*

# Acoustic Leak Detection Technology

- Echologics Echoshore-DX cellular fixed leak monitoring system
- Sensors listen nightly to sounds in pipes
- Data is sent, stored, and analyzed for anomalies
- Persistent anomalies trigger field investigations



# Other Tools



Acoustic Leak  
Detection Sensors



Precision Correlators



Leak Prediction  
Machine Learning



High Sensitivity Ground  
Microphones



Portable Leak Sensors



# Advanced Leak Detection Team

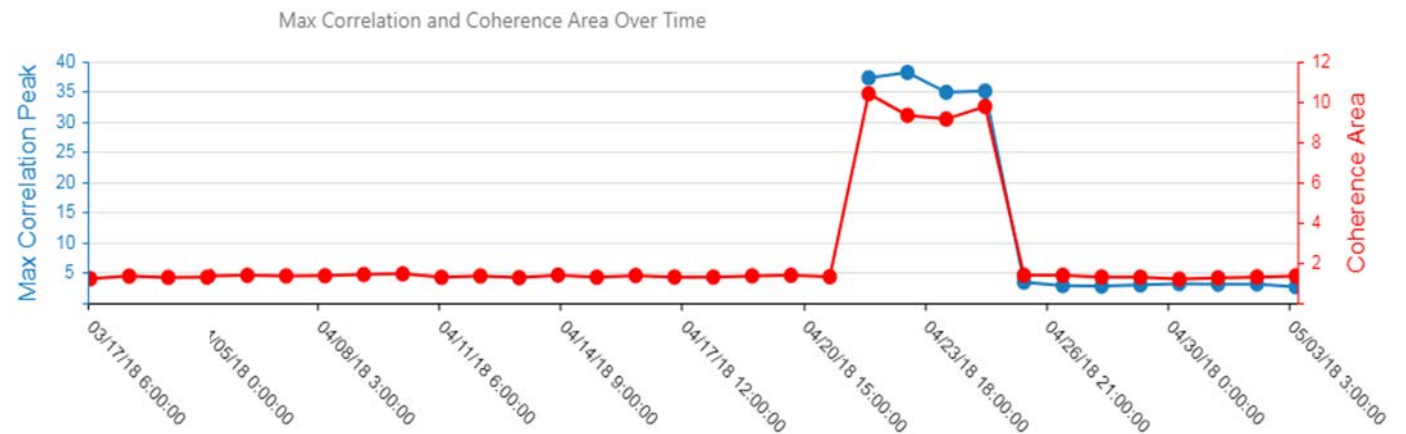
- 1 full-time Echologics Data Analyst
- 2 full-time Leak Detection Technicians
- Engineers from the Asset Management department
- Support from many other departments & individuals





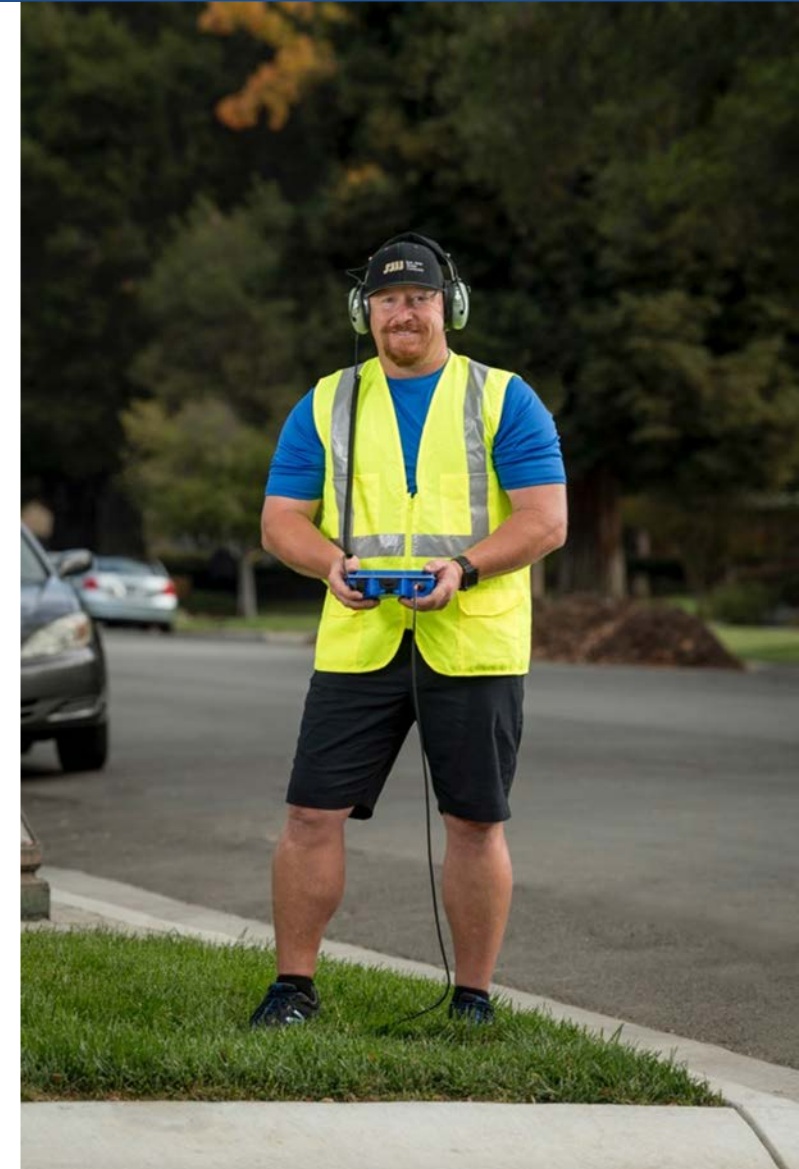
# A Typical Day

- Acoustic sensors listen nightly for any possible leaks, called **Points of Interest (POI)**.
- If the POI persists for 4 consecutive days, it becomes a **Persistent Point of Interest (PPOI)**.
- Echologics Data Analyst then dispatches Leak Detection Technicians to investigate.



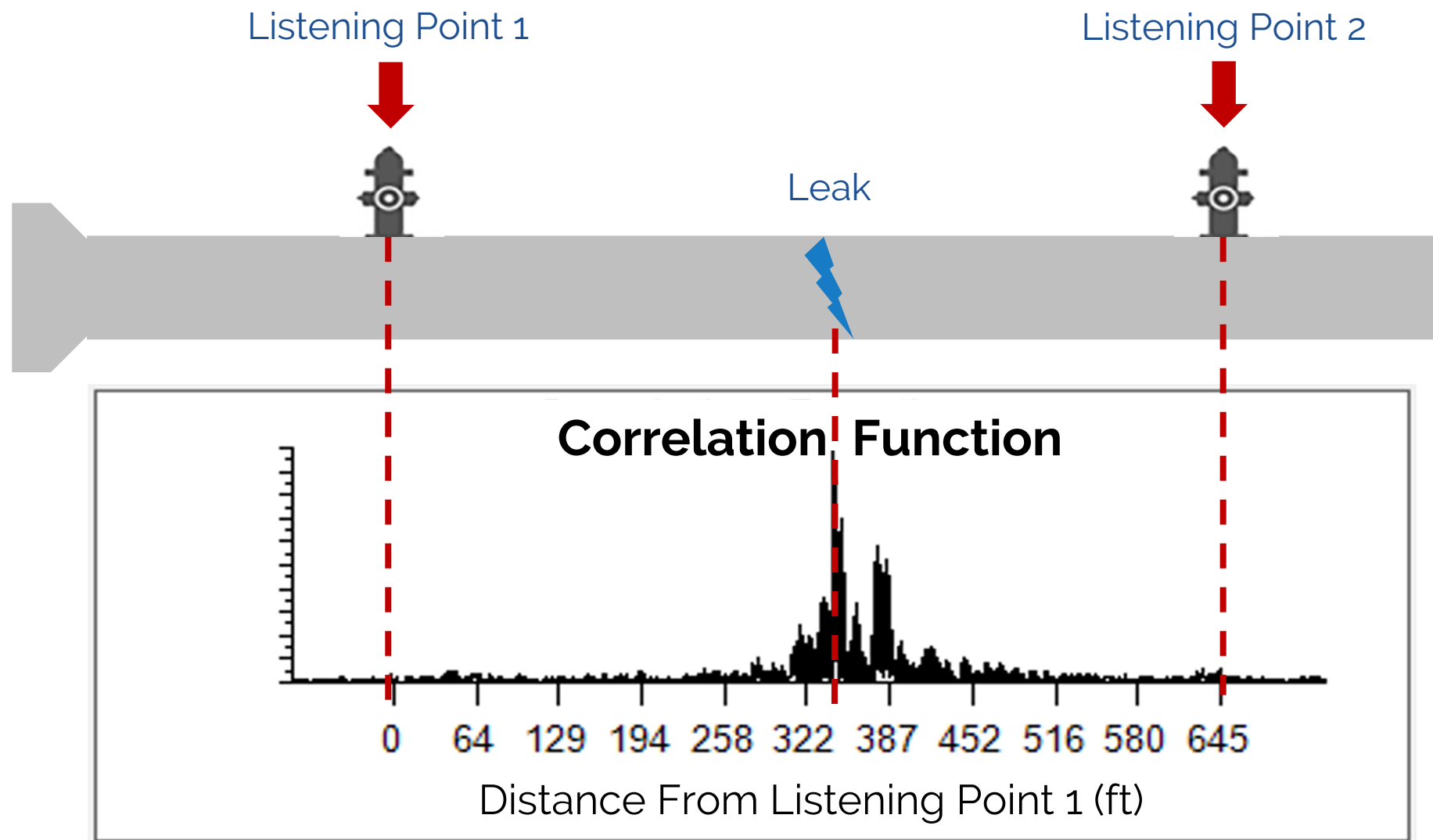
# A Typical Day

- On arrival, we do a visual check for any immediate surfacing leaks.
- If no leaks are immediately apparent, we listen to the surrounding services and valves for signs of a leak, which could be on SJW's side or yours (the customer).
- Once we suspect there's a leak, we narrow in on the location using Precision Correlators and the ground microphone.



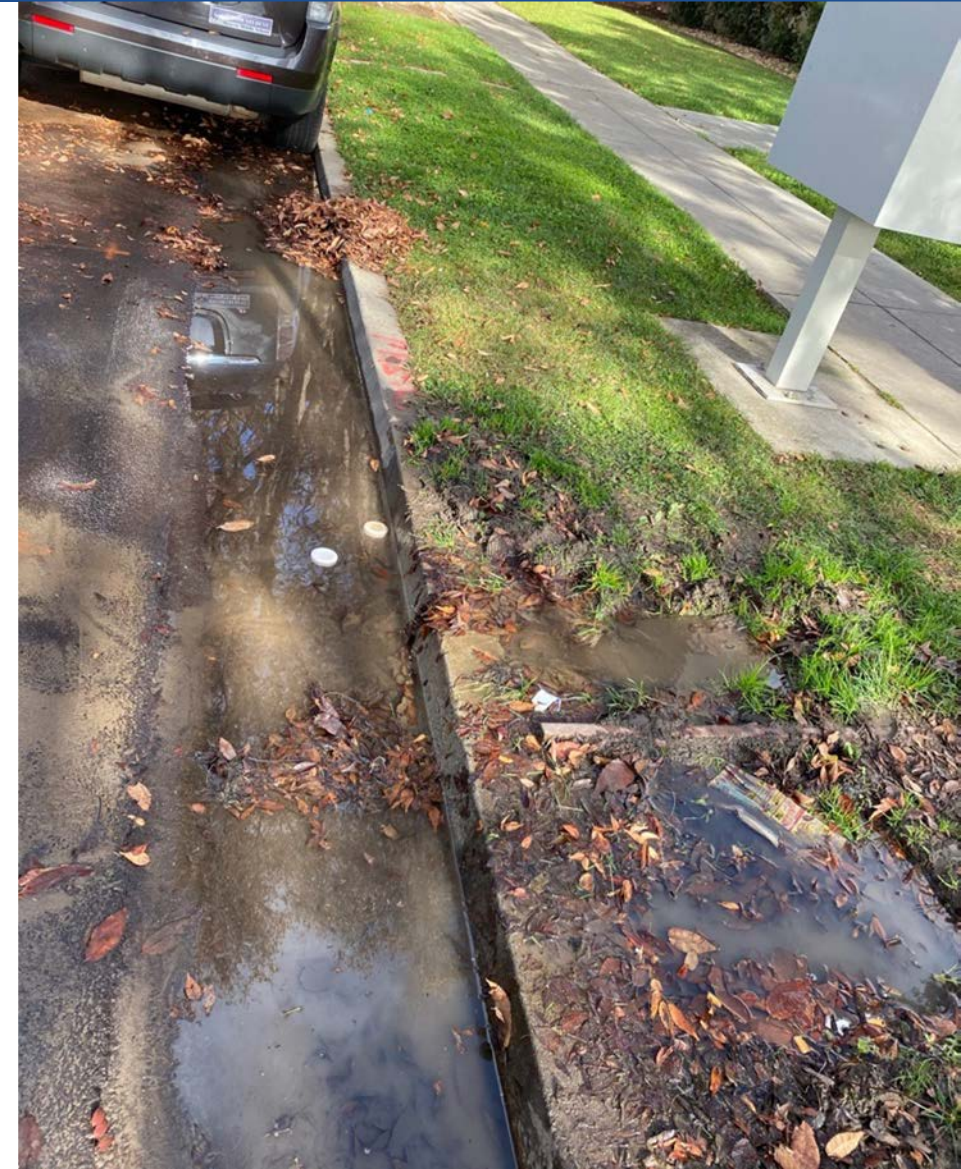


# A Typical Day



# A Typical Day

- Upon positive leak location, we classify it as a Code 1, 2, or 3 depending on size and potential damage it can cause.
- Also, if the leak is on the customer side, we will make contact, walk through the property, and try to pinpoint the location.
- Finally, we refer the incident to our maintenance department for repairs.





# A Typical Day

## Challenges:

- Background noise (traffic, usage)
- Whose leak? Consumer, SJW, or other agency?
- Lots of acoustic sensors to manage (8,255 deployed and more to come)

## Rewards:

- Finding leaks early
- Serving customers – saving water



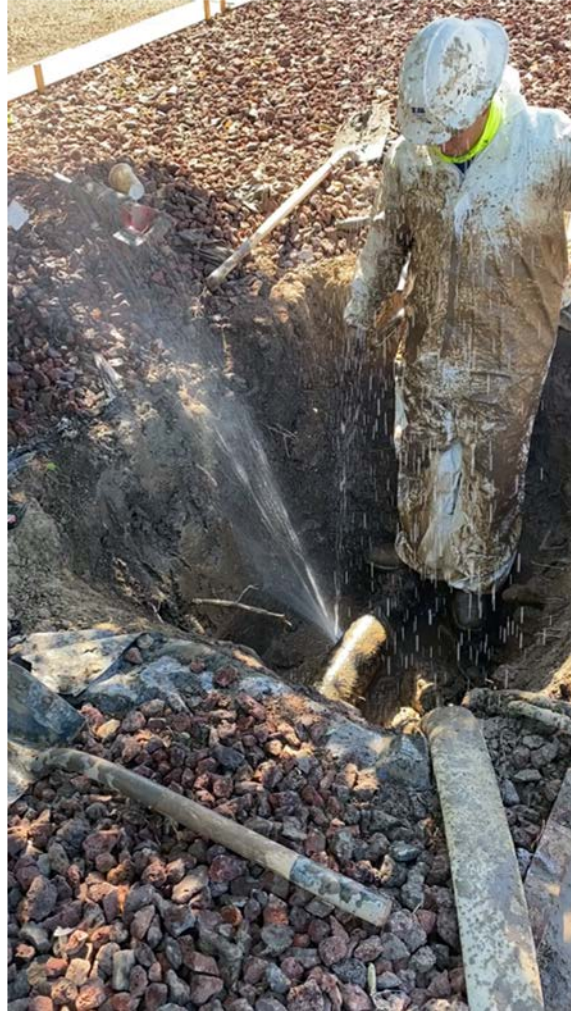


# Encountering Leaks



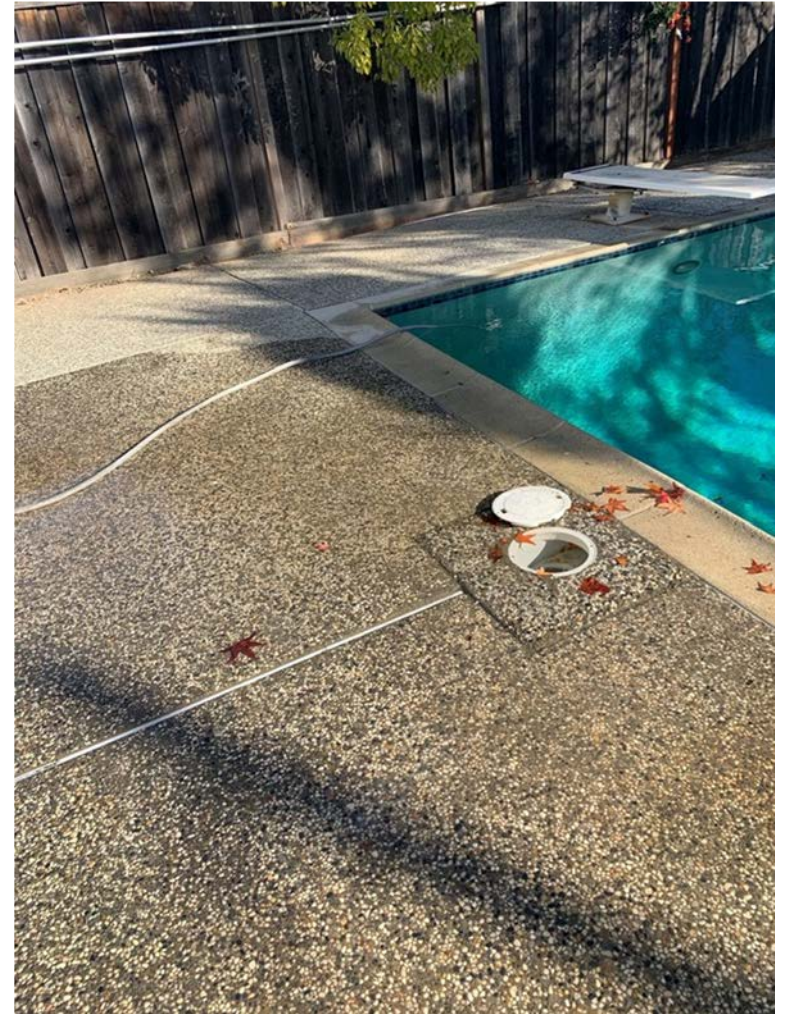
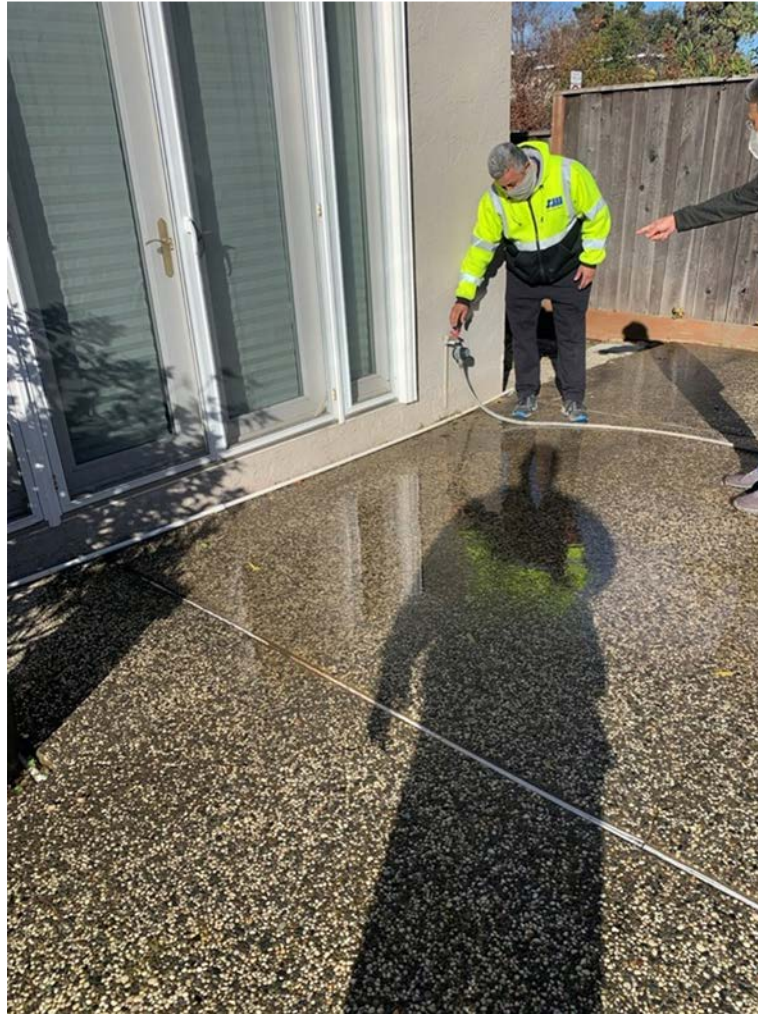


# Encountering Leaks





# Encountering Leaks





# Real Life Stories

- 18-inch steel main crossing over I-280 was leaking into freeway
- Advanced leak detection technology was used to pinpoint exact location
- Catastrophic pipe break was prevented
- Repair work was scheduled outside of peak commute hours



# Real Life Stories

- Field staff alerted to potential leak on 12-inch main near Babb Creek
- Leak detection team confirmed and located a 700 gallon per hour leak
- Prompt repair made, preventing chlorinated discharge into creek and potential harm to aquatic wildlife





# Real Life Stories

- Field staff alerted to potential leak on residential line in Saratoga
- Leak was located on a property with several landscaped ponds
- Customer didn't know about the 170 gallon per hour leak
- Finding the leak resulted in over \$500 per month savings in water bills



# Real Life Stories

- Field staff alerted to potential leak on residential line in San Jose
- Non-surfacing 160 gallon per hour leak was located under the customer's home
- Finding the leak prevented potential, significant customer property damage





# Concluding Thoughts

- Leak Detection is full-time work requiring multi-departmental support/coordination
- SJW is committed to continual improvement and success (new technologies, and your customer feedback!)

