Valley Water

2022 Annual Report

Large Landscape Program

Valley Water

Clean Water • Healthy Environment • Flood Protection

Participating Retail Agencies:

City of Gilroy

City of Milpitas

City of Morgan Hill

City of Mountain View

City of Palo Alto

City of Santa Clara

City of Sunnyvale

San José Municipal Water System

San Jose Water Company

March 8, 2023

Revised August 21, 2023

Waterfluence LLC

PO Box 561 Menlo Park CA 94026

www.waterfluence.com

(800) 800-9519

Waterfluence

Summary

Since 2014, Valley Water has partnered with Waterfluence to provide program services to reduce overwatering at commercial and public landscape sites. In 2022, nine retail agencies within Valley Water's service area participated in this program including the cities of Gilroy, Milpitas, Morgan Hill, Mountain View, Palo Alto, Santa Clara, Sunnyvale, and the San José Municipal Water System and San Jose Water Company. These retailers serve 91% of Valley Water's 1.9 million service population.

This report summarizes the Valley Water sites for the 2022 calendar year. Key points include:

- **Site Characteristics**. By the end of 2022 Valley Water had 3,733 sites irrigating 6,707 acres enrolled in the program. The average depth of water applied over all landscape area was 3.3 feet totaling 22,000 acre feet or about 8% of total use of Valley Water sources by retailers.
- **Online Engagement**. Online engagement with the Waterfluence website by stakeholders (account holders, HOA board members/owners, and landscape contractors) is 43%. A strong correlation exists between online engagement and lower overwatering. Commercial sites overwatered by 30% less and public sites overwatered by 36% less relative to sites without online stakeholders.
- **Landscape Field Surveys**. We completed 28 landscape field surveys at targeted sites agreeing to have our irrigation expert gather in-depth diagnostics and provide recommendations to improve irrigation efficiency. Since 2014, the program has conducted 252 field surveys covering 692 irrigated acres.
- **Irrigation Efficiency Opportunities.** In 2022, overwatering totaled 5,978 acre feet or 27% of all water used. Overwatering averaged 0.9 feet over all irrigated landscape but was greater than 2 feet at 27% of sites. Significant reductions in overwatering can still be made with sites that are commercial, have less than 1 acre of landscaping, and do not have online stakeholders.
- **Irrigation Efficiency Trends**. Overwatering is trending downwards. Overwatering dropped sharply during the 2015-16 statewide drought, rebounded, but in 2022 is still 44% below 2013 levels and 31% below 2019 levels.
- **Program Improvements**. In 2022, Waterfluence streamlined its online dashboard to foster engagement and created an online service area map to make it easier for landscape contractors to get access to their sites.
- **SB606 / AB1668**. The State of California passed new legislation requiring, in part, water suppliers to annually report the total irrigated landscape areas of commercial, industrial, and institutional sites with dedicated irrigation meters starting January 1, 2024. For the participating agencies,

Waterfluence has already measured more than 90% of the landscape subject to the regulation. Unmeasured sites are largely streetscapes and small sites using less than 500 CCF per year.

Program Description

Waterfluence partners with urban water agencies to reduce overwatering at commercial and public landscape sites through monitoring, insights, and connection.

- **Monitoring.** For each site, we chart how actual water use compares to a budget benchmark. Actual water use comes from agency meter reads made for billing purposes (monthly or bimonthly). Budgeted water use is a function of site-specific characteristics (landscape areas, plant types, irrigation system) and real-time weather. We map landscape areas and then encourage stakeholders to edit the map online to improve its accuracy and to create a controller map to assist with irrigation operations. Where available, we also monitor hourly and daily water use.

- **Insights.** Monitored data is channeled through our irrigation expertise to generate actionable recommendations. For targeted sites accepting additional help, our irrigation experts conduct on-site landscape field surveys to generate detailed diagnostics. When relevant, we encourage stakeholders to tap water agency rebates to offset improvement costs.

- **Connection.** Our website provides a centralized location for stakeholders to better understand, prioritize, communicate, and act on solutions toward the non-controversial goal of improving irrigation efficiency and landscape appearance. Commercial and public irrigation sites frequently have multiple stakeholders such as property managers, property owners, HOA board members, in-house maintenance staff, and landscape contractors. Furthermore, these stakeholders are often associated with multiple sites in multiple communities. Our website brings it all together so that stakeholders can securely access and interact with all their sites.

Site Characteristics

By the end of 2022, Valley Water had 3,733 sites irrigating 6,707 acres of landscape in the program. Sites have progressively entered the program since 2014. Although the average depth of water applied over all irrigated landscape was 3.3 feet, application rates vary widely with site type and size, among other factors. We segment sites into commercial and public categories because of fundamental differences in how irrigation is managed. Commercial sites, such as HOAs and offices, account for 85% of sites and 65% of water use and are often managed by landscape contractors. Public customers, primarily parks and schools, account for the rest and are often managed by their in-house staff. Across all sites, 54% of irrigated area is planted in turf grass and the remainder is in shrubs, trees, groundcovers, and

pools/fountains. Public sites tend to have a high percentage of irrigated area in turf from large playfields and parks.

Description	Commercial	Public	Total
Number of Sites*	3,156	577	3,733
< 1 Acre	64%	25%	58%
1-3 Acres	28%	32%	28%
>3 Acres	8%	43%	13%
Irrigated Acres	3,851	2,856	6,707
Average Acres per Site	1.2	4.9	1.8
Turf %	30%	85%	54%
Shrub %	70%	15%	46%
2022 Water Use CCF	6,253,767	3,329,910	9,583,677
2022 Water Use Acre Feet	14,356	7,644	22,000
2022 Water Use %	65%	35%	100%
2022 Depth Applied Feet	3.7	2.7	3.3

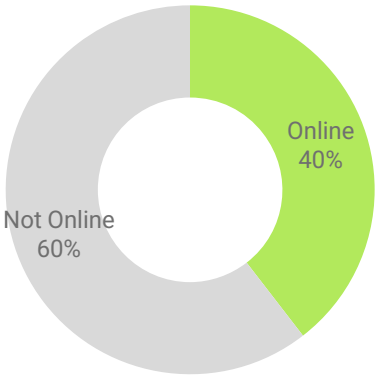
Excludes 148 sites without complete water records for 2022.

Customer Engagement

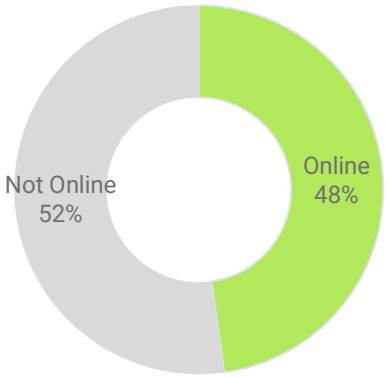
Waterfluence uses multiple tactics to onboard account holders to its website by leveraging: 1) agency billing information, 2) account holders already in Waterfluence, 3) the landscape contractor community, and 4) interactions with account holders with other agency programs. For sites without a known account holder, Waterfluence prints and mails reports to encourage online participation. We encourage account holders to add additional stakeholders associated with landscape irrigation at each site including property managers, property owners, HOA board members, in-house maintenance staff, and landscape contractors.

Each month, Waterfluence imports agency water use and notifies stakeholders that new information is available for viewing. In 2022, 43% of site area was viewed online by at least one stakeholder; commercial had 40% and public had 48%.

Engagement: Commercial



Engagement: Public



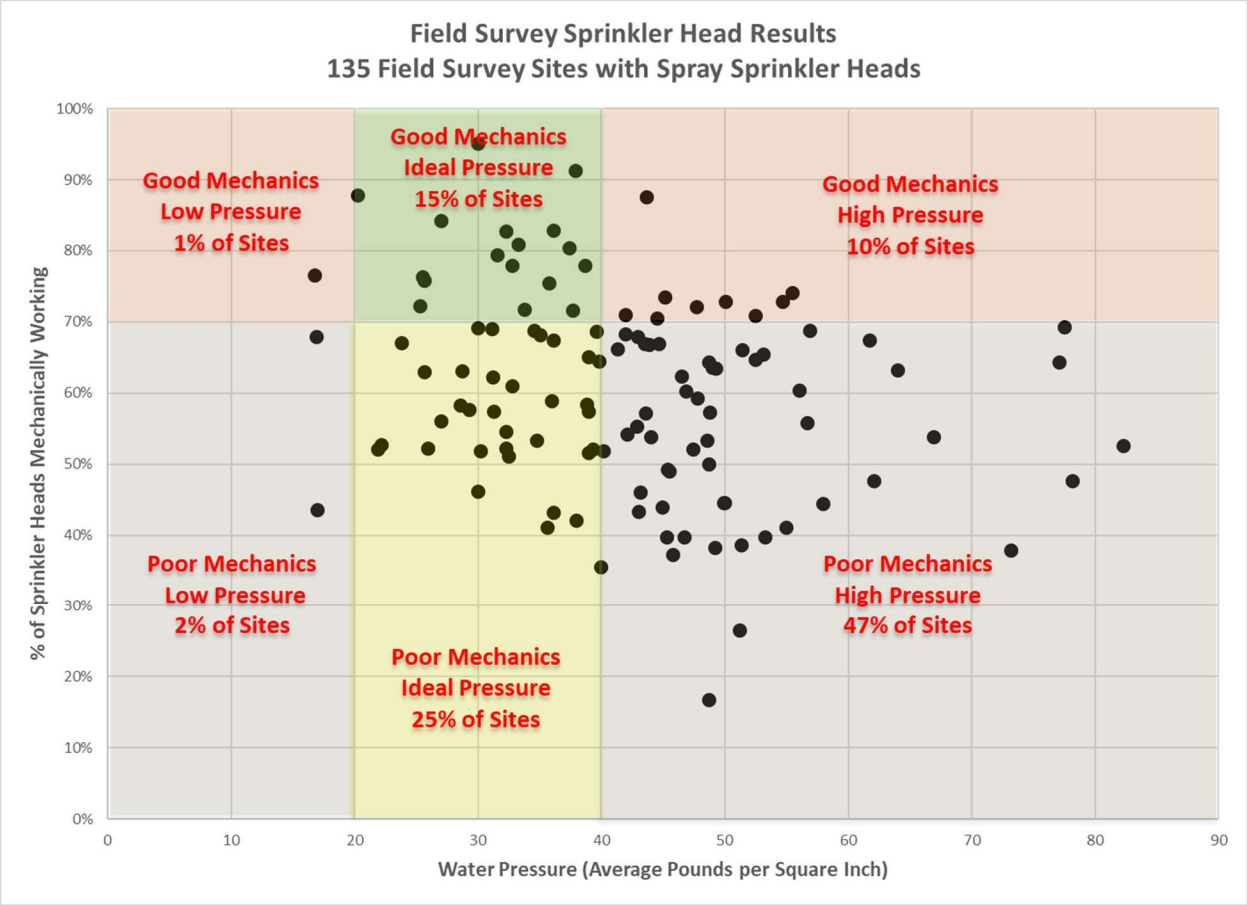
Landscape Field Surveys

Valley Water targets landscape field surveys at sites in most need of additional help. The account holder at pre-approved sites can accept a field survey offer from the Waterfluence website. The survey is free to sites and consists of an irrigation expert visiting the site to gather in-depth diagnostics and provide recommendations to improve efficiency. Field surveys complement water use monitoring by troubleshooting complicated irrigation issues and improving the accuracy of water budget inputs with "boots-on-the-ground" observations. Between 2014 and 2022, 252 sites received a field survey (6.6% of total sites) covering 692 irrigated acres. In 2020 surveys were curtailed due to the COVID-19 pandemic.

Year	Survey Count	Acres
2014	5	9.9
2015	22	55.9
2016	28	72.0
2017	29	78.0
2018	37	75.4
2019	41	260.6
2020	12	15.3
2021	50	78.9
2022	28	45.8
Total	**252**	**691.9**

We measured both mechanical fitness and water pressure associated with 135 field surveys with standard spray sprinkler heads conducted over the last 6 years. Only 26% of sites had greater than 70% of their spray heads in good mechanical condition (delivering water to intended rootzones via non-leaking, properly-aligned spray bodies and nozzles). Only 40% of sites had average water pressures operating in

their desired range (20 to 40 pounds per square inch). Only 15% of sites were both mechanically fit and operating at desired pressures; poor irrigation scheduling and/or inaccurate landscape area measurements caused these sites to be targeted for a field survey. Because field surveys are targeted toward low performing sites, these findings are not representative of all sites in the program.

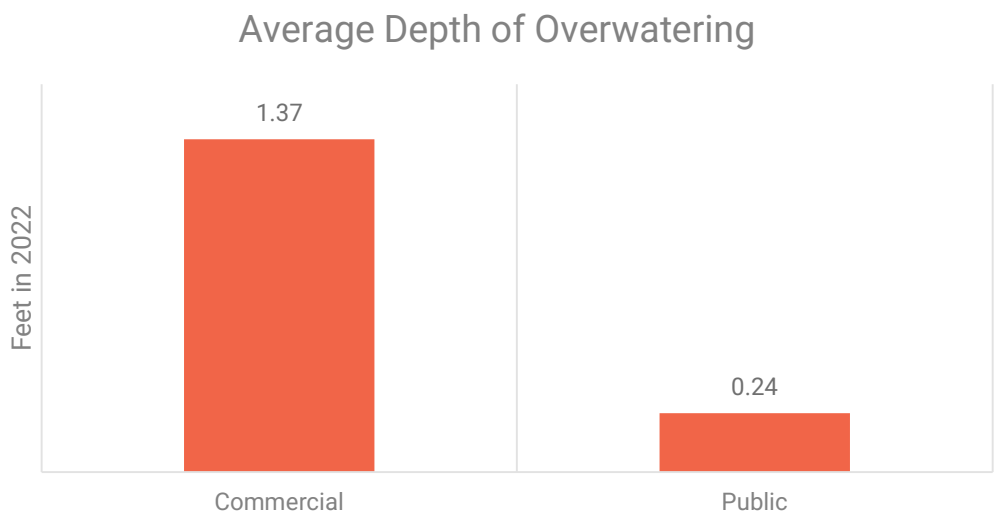


Irrigation Efficiency Opportunities

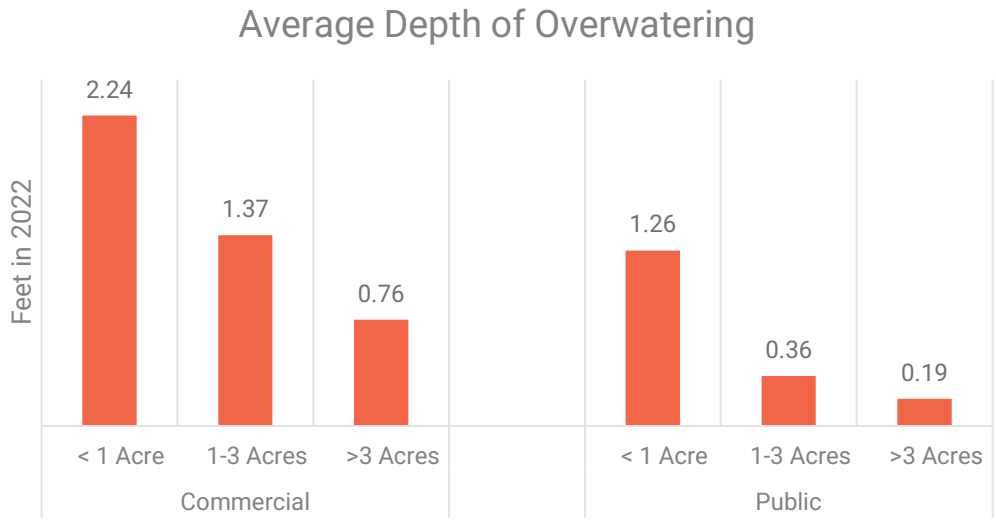
The program's key performance metric is minimizing the depth of overwatering—defined as the volume of water used above our calculated water budget divided by irrigated area. This metric is weather-normalized enabling year-to-year comparisons. As a benchmark, overwatering averaged 0.9 feet over all irrigated landscape in 2022.

To guide future efforts to improve the program, we analyzed 2022 overwatering with respect to four elements: site type, site size, engagement mode, and magnitude.

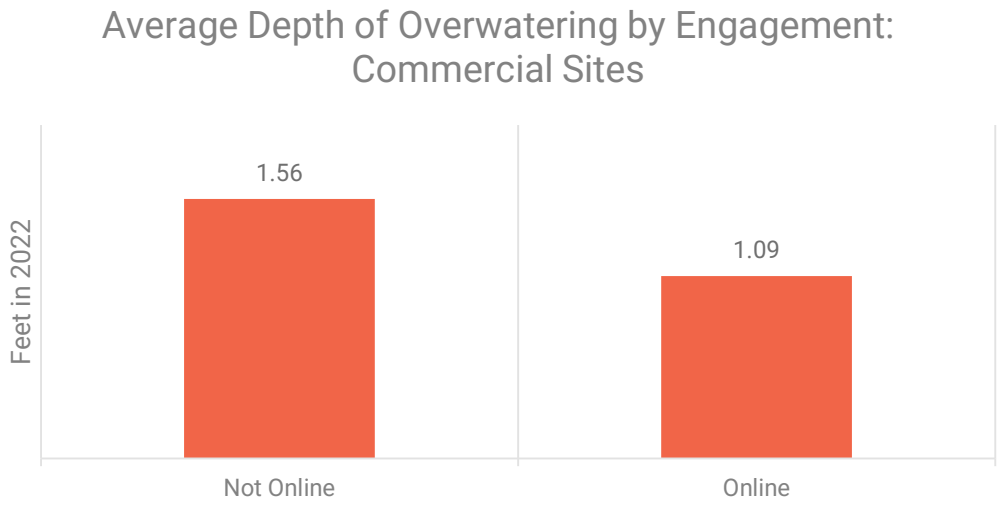
Site Type. Commercial sites overwater significantly more than public sites. Additional engagement efforts targeted toward commercial stakeholders can help close this gap, such as improved customer relationship management.

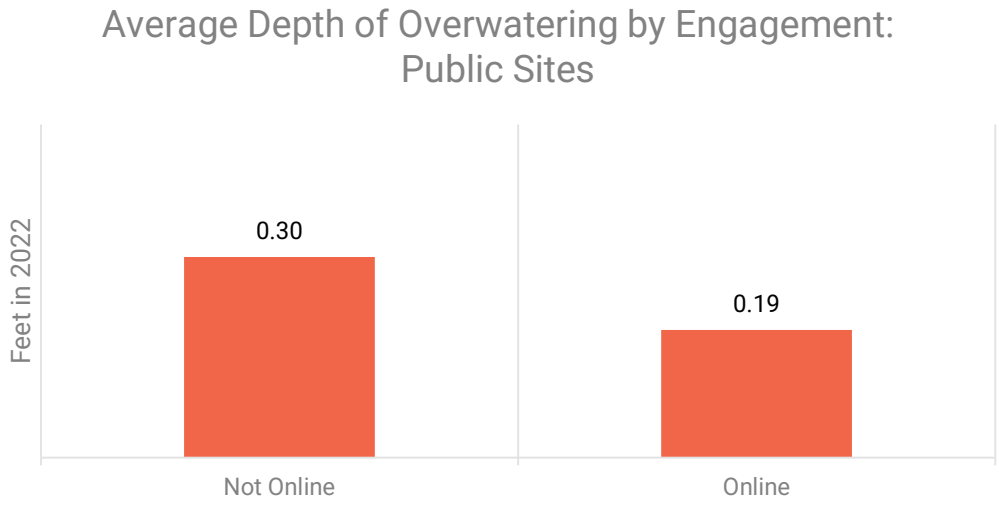


Site Size. Larger landscapes tend to be more efficiently irrigated. Although smaller sites use less water by volume, their potential to reduce overwatering on a percentage basis is greater. Small sites with less than one acre of landscape also make up 58% of total sites in the program.

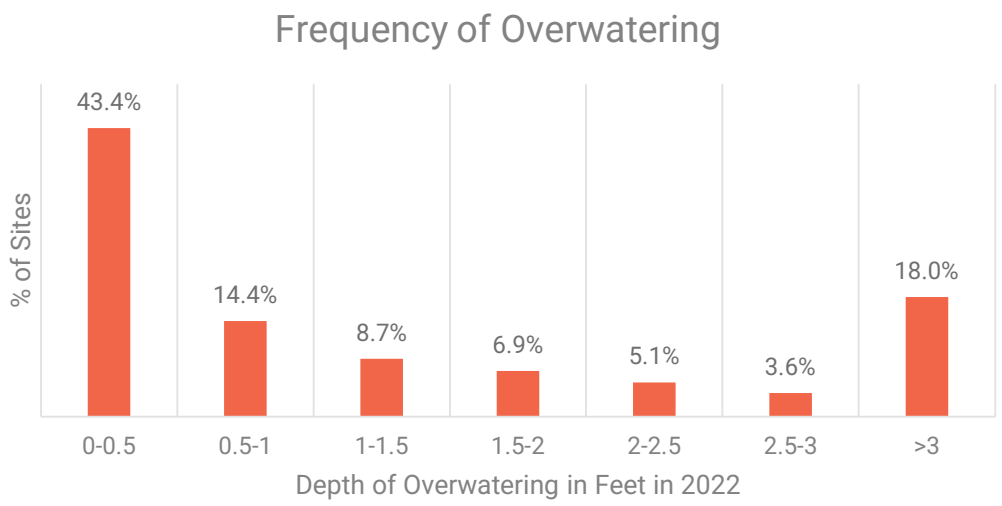


Online Engagement. A strong correlation exists between lower overwatering and online engagement on the Waterfluence website. Online commercial sites overwater by 28% less. Online public sites overwater by 43% less.



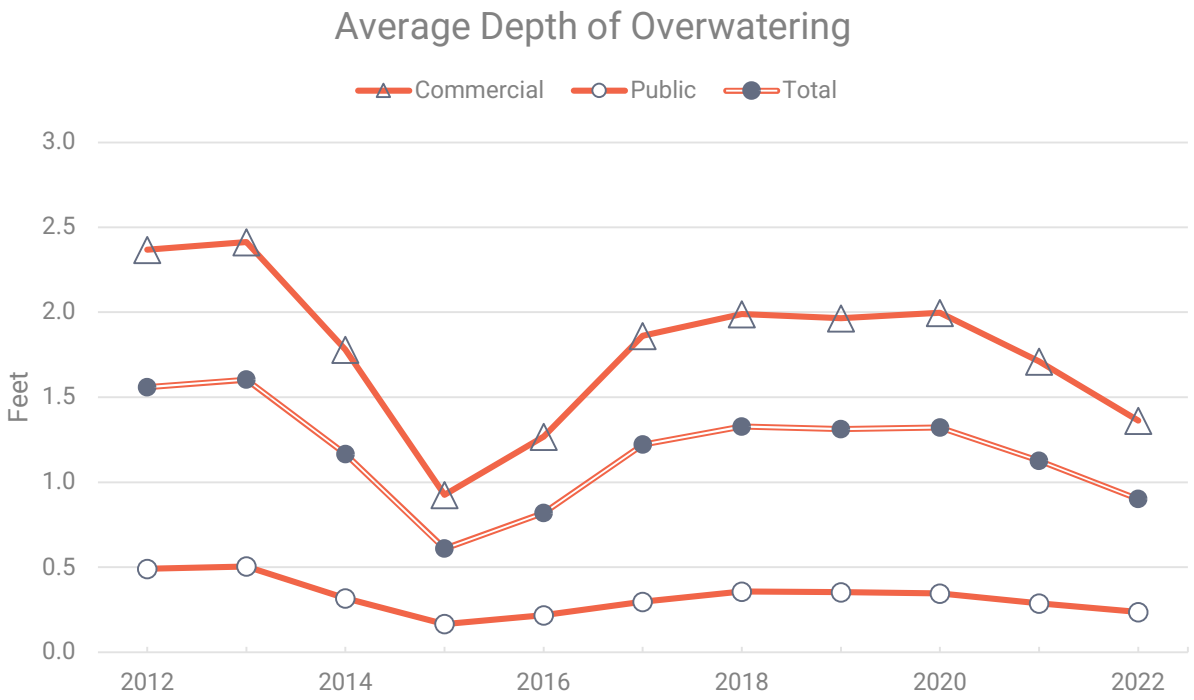


Magnitude of Overwatering. A key program benefit is that the problem sites in a community can be readily identified. Looking at the frequency of overwatering by magnitude, overwatering of more than 2 feet occurred at 27% of sites, predominately small and commercial. These sites are targeted for verification of water budget assumptions, landscape field surveys, program engagement, and financial incentives, among other tactics to improve performance.

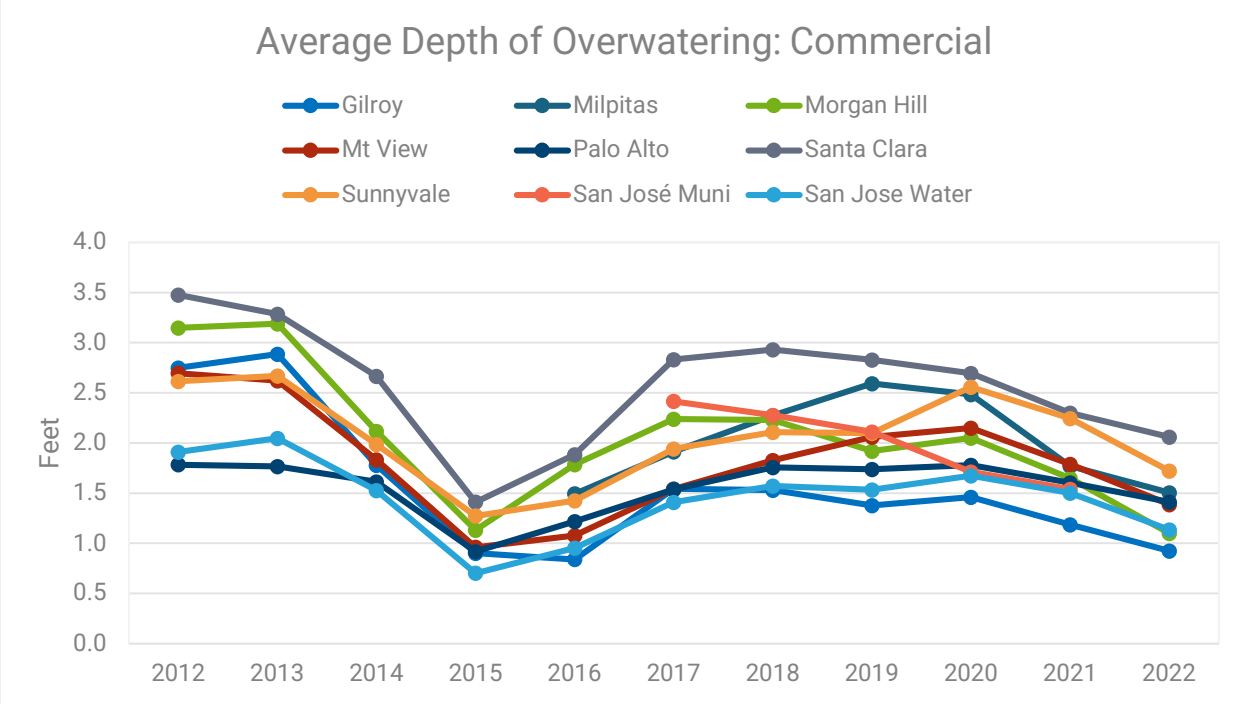


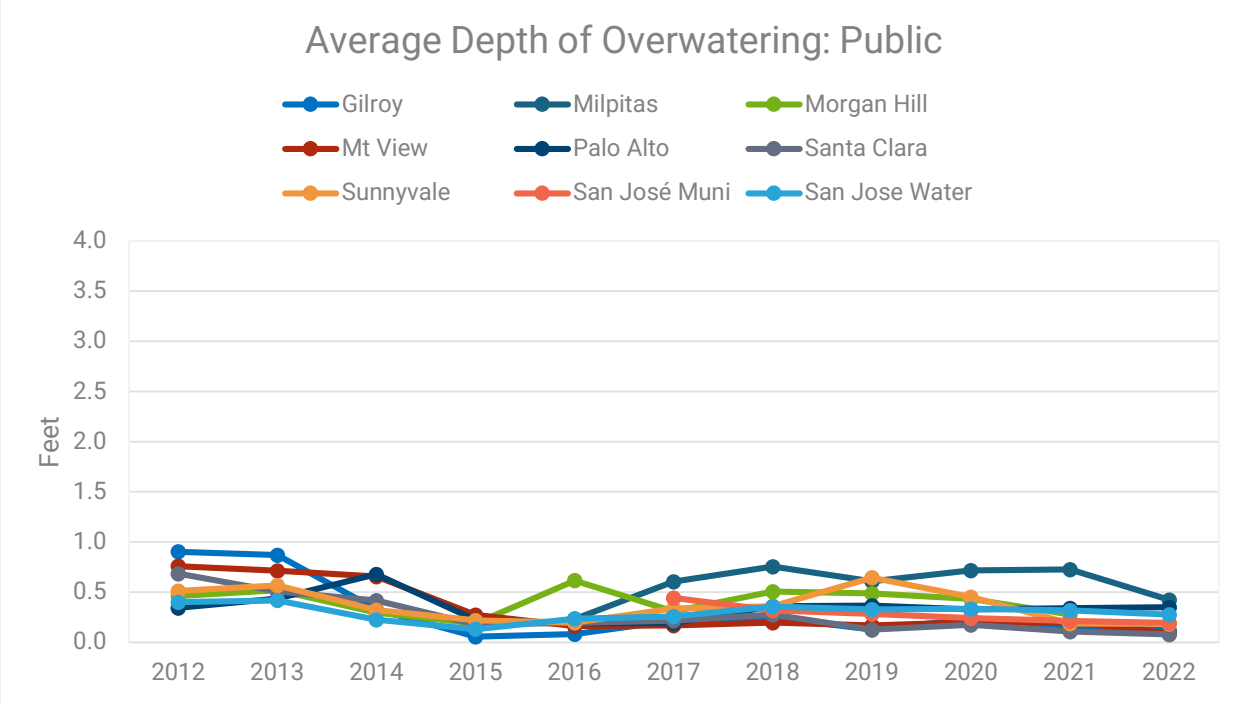
Irrigation Efficiency Trends

Overwatering is trending downwards. Overwatering at both commercial and public sites dropped significantly after 2013, reaching a low point during the 2015-16 statewide drought. Overwatering rebounded in subsequent years but is now 44% below 2013 levels and 31% below 2019 levels.



All retailers generally followed these overall trends between 2012 and 2022.





SB606 / AB 1668 Legislation

The State of California passed new legislation requiring, in part, water suppliers to annually report the total irrigated landscape areas of commercial, industrial, and institutional customers with dedicated irrigation meters. Reporting requirements are still being set by the State Water Resources Control Board with annual reporting to begin January 1, 2024.

For the Valley Water participating retailers, as of January 2023 Waterfluence has already measured over 90% of the landscape areas subject to this component of the legislation. Unmeasured areas include small sites using less than 500 CCF per year not previously targeted for program inclusion and some streetscapes managed by public agencies (e.g., San Jose Department of Transportation) where Waterfluence is resolving boundary issues with account holder input.

In 2023, Valley Water expanded program participation to include all dedicated irrigation meter sites using greater than 200 CCF per year. This expansion plus the upcoming inclusion of more streetscape sites will increase program measured landscape areas to exceed 98% of the total.

Additional SB606 / AB1668 issues include segmenting landscape areas into new categories (e.g., special landscape areas) and by landscape installation date. SB606 / AB1668 regulatory compliance will be an ongoing topic in upcoming years.

Exhibit A. Public Site Count and Irrigated Acres by Retailer

Retailer	Type	Sites	Acres
Gilroy	Park	16	54.4
	School	7	39.9
Milpitas	Park	33	95.8
	School	14	56.2
	Streetscape	23	24.4
Morgan Hill	Park	1	0.5
	School	12	42.2
Mt View	Park	46	99.3
	School	5	10.7
	Streetscape	6	8.6
Palo Alto	Park	12	64.2
	School	15	23.3
	Streetscape	2	0.7
San Jose Muni	Golf	2	157.1
	Park	18	51.0
	School	20	74.4
	Streetscape	5	10.8
San Jose Water	Cemetery	3	133.1
	Golf	2	145.5
	Park	99	323.2
	School	104	545.6
	Streetscape	22	36.4
Santa Clara	Cemetery	1	24.1
	Park	26	82.8
	School	18	75.9
	Streetscape	9	4.4
Sunnyvale	Golf	3	134.9
	Park	30	167.4
	School	21	61.2
Grand Total	Cemetery	4	157.2
	Golf	7	437.5
	Park	281	938.6
	School	216	929.5
	Streetscape	67	85.2
	All	**575**	**2548.0**