

Waterfluence Large Landscape Program 2012 Annual Report



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1. Introduction

Program Description

Waterfluence influences large urban landscape sites to irrigate more efficiently by improving metrics and communications. For each site, we calculate and distribute ongoing water use reports comparing actual water use to a budget benchmark based on site-specific characteristics and real-time weather. It is difficult for customers to make such calculations, so we do it for them. To facilitate communications, the site reports are distributed to bill payers, site managers, board members, landscapers, and other relevant parties. The reports include financial and comparative information summarizing performance and potential for improvement. For targeted sites needing additional help, we also conduct on-site landscape field surveys to collect detailed site information and document cost-effective recommendations to improve efficiency. Since 2003, Waterfluence has provided this service with partnering water agencies and now serves 29 communities at over 2,300 sites throughout California.



Report Overview

This report summarizes the large landscape sites in the program with respect to their site characteristics, irrigation efficiency in 2012, and reduction in overwatering since joining the program. The summary focuses on aggregated data over all sites in the program—greatly increasing the sample size and statistical power of the findings. Staff from each participating water agency can view summary statistics for their sites within their program web portal.

2. Site Characteristics

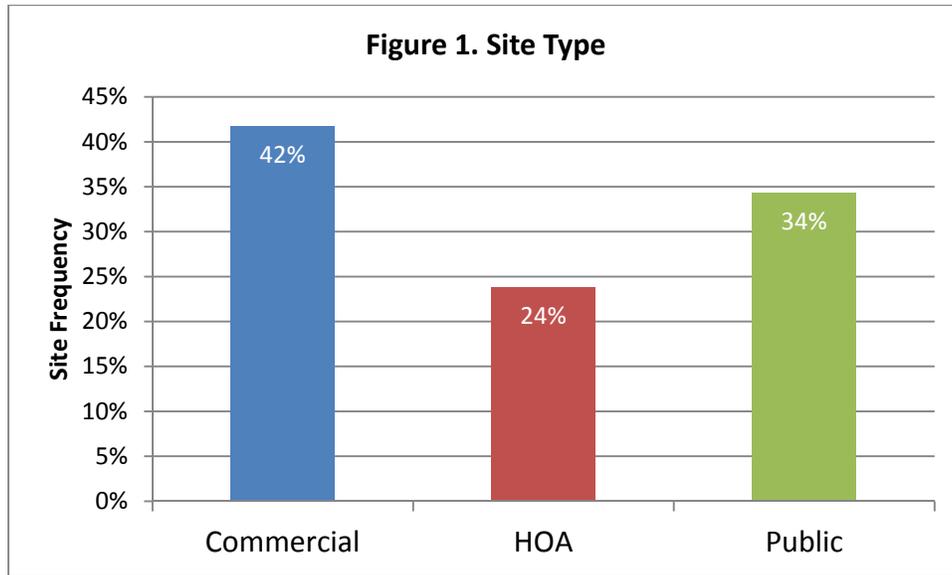
This section describes characteristics of sites in the program with respect to site type, size, and percentage of irrigated landscape in turf.

Site Type

Because of different irrigation management dynamics, we categorize all of sites into four general categories: commercial, HOA, public, and other. Commercial sites include office parks, retail buildings, and churches. HOAs, or homeowner associations, include residential multiple dwelling unit properties with common landscapes including apartment buildings. Public sites include parks, schools, and roadway landscapes and tend to be managed by in-house agency staff. The other category includes golf courses, cemeteries, and Caltrans; we exclude them from this annual evaluation as their site circumstances are

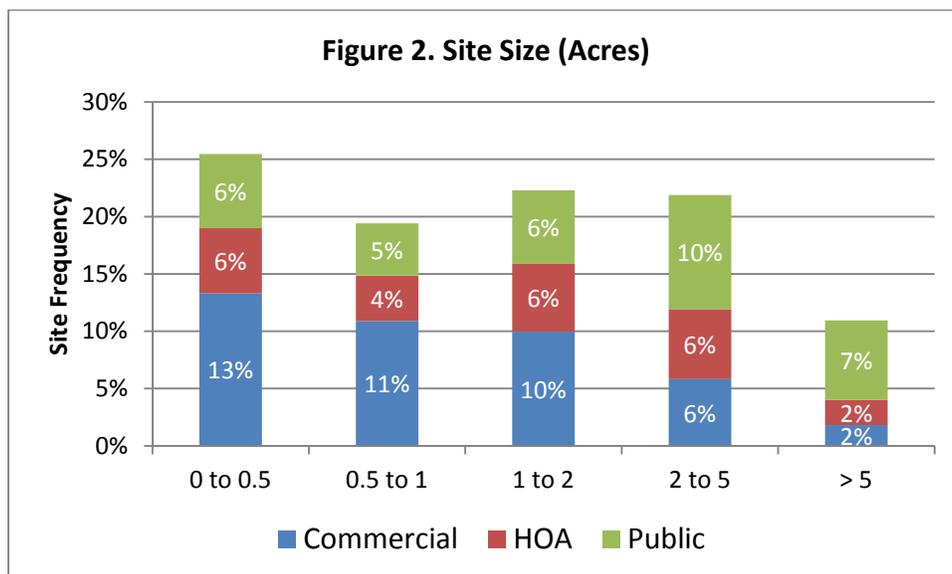
unique and their irrigated areas large. This evaluation includes the 2,148 commercial, HOA, and public sites participating in the program at the end of 2012.

Figure 1 shows site type frequency. Commercial sites are the most common comprising 42% of all sites. HOAs make up 24% and public 34% of total sites.



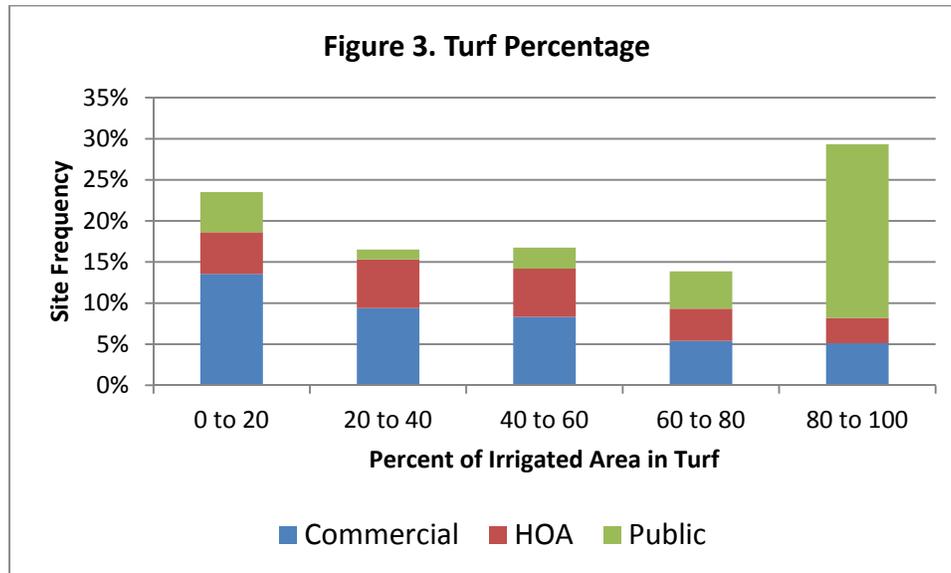
Site Size

Figure 2 shows the frequency of sites by irrigated landscape size. A quarter of sites have less than a half-acre of irrigated area. Two participating water agencies (Redwood City and Estero) cause this relative abundance of small sites by including all their irrigation customers in the program regardless of size—most other agencies selected only larger sites. Large sites exceeding 5 acres tend to be public sites including school playfields and parks. The average site in the program has 2.3 acres of irrigated area.



Turf Percentage

Figure 3 shows the frequency of sites by percentage of turf in the irrigated landscape. Non-turf areas include irrigated groundcovers, shrubs, trees, and water features. Water features such as pools, ponds, or fountains are rare (less than 1% of irrigated area). Sites with turf comprising over 80% of irrigated area tend to be the public sites such as schools and parks. Commercial, HOA, and public sites have 48%, 46% and 85% of their total landscape area in turf, respectively.



3. Overwatering in 2012

The program objective is to minimize overwatering at large landscape sites. This section summarizes overwatering based on 2012 calendar year water use. This information helps identify the kinds of sites with the most remaining water savings potential—which is useful in refining future program efforts. The subsequent section compares 2012 overwatering with pre-program overwatering to measure the program’s water savings impact.

In 2012, overwatering averaged 1.09 feet or 13.1 inches over all irrigated landscape. Results, however, varied widely depending on site type as shown in Figure 4. Only 8% of sites did not overwater at all in 2012. Overwatering by less than a foot occurred at 44% of sites. The remaining 48% of sites overwatered by more than 1 foot—with 21% overwatering by more than 3 feet. Commercial and HOA sites overwatered more frequently and to a greater depth than public sites. Hence, there is a lot of diversity in irrigation performance.

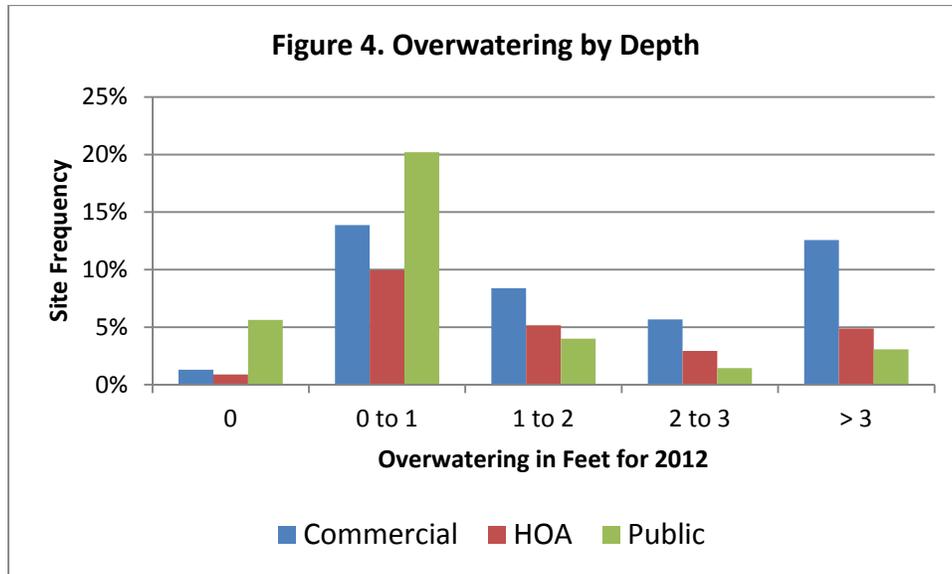
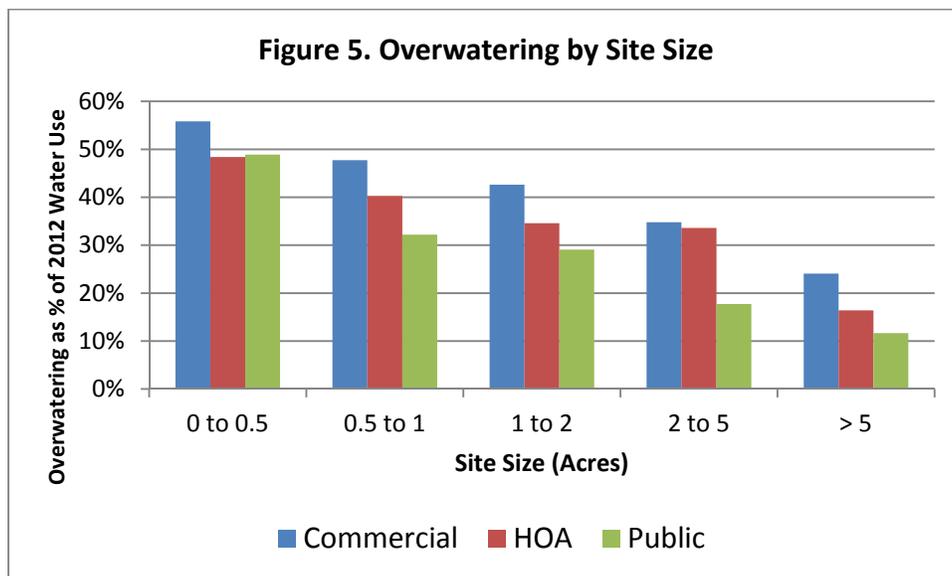


Figure 5 shows overwatering as a percentage of total 2012 water use by site type and site size. It is clear that overwatering tends to decrease in percentage terms with increasing site size. With sites less than 0.5 acre, about half of all water applied is overwatering. With sites over 5 acres, only about 15% of water applied is overwatering. Within each size category, public sites perform the best, followed by HOAs, and then by commercial sites.

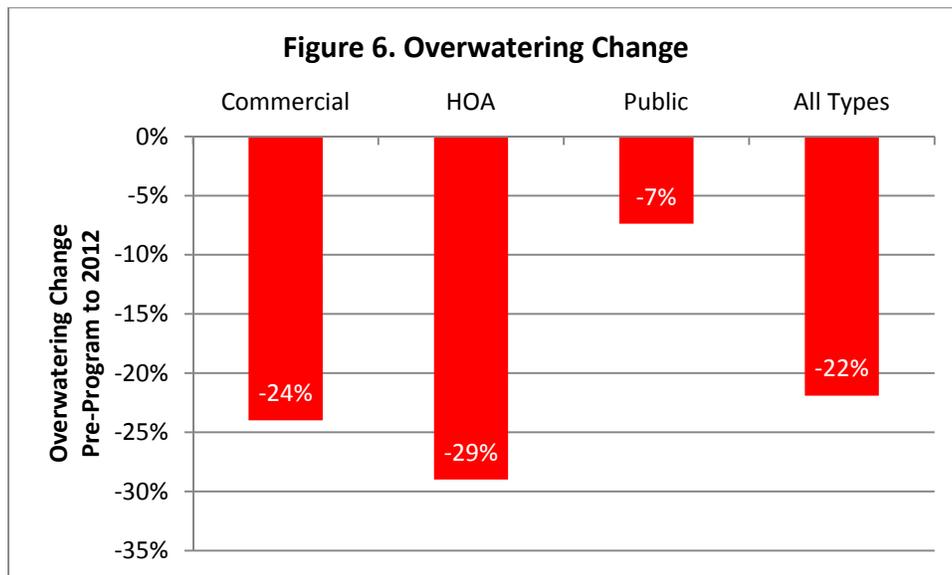


4. Water Savings

For each site, we compare overwatering in 2012 to overwatering in the 12 months prior to joining the program. Overwatering is defined as actual water use over the calculated water budget for each billing period. Because water budgets are based on real-time weather, the comparison periods are normalized for weather differences. The analysis includes commercial, HOA, and public sites joining the program anywhere from 2003 to 2011—a total of 1,786 sites. Sites entering the program in 2012 are not included in the water savings calculations, but will be next year.

Site Type

Overall, sites in the program reduced overwatering by 22% in 2012. The biggest reductions occurred with HOA and commercial sites. Public sites reduced overwater by only 7%—a somewhat expected result given public sites had less overwatering to begin with.



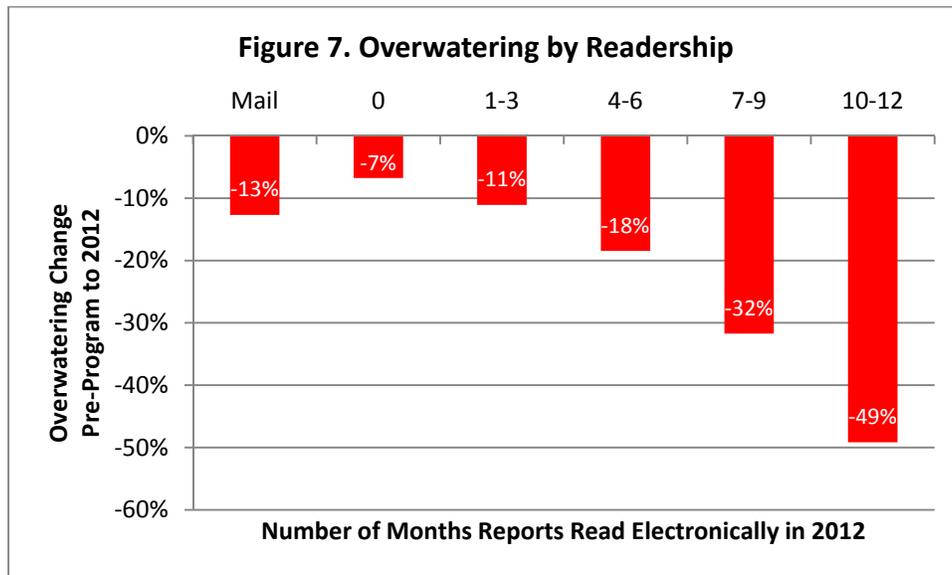
Report Readership

In 2012, the program distributed 30% of the site water use reports via mail and 70% via electronic access on the Waterfluence website. For electronic reports, we tracked the number of months in 2012 that at least one of the site contacts read a report.

Figure 7 shows that more frequent reading of the electronic reports correlates with less overwatering. Sites receiving mailed reports experienced a relatively modest 13% reduction in overwatering. Mailed reports are addressed to the water bill customer and it is often unknown by us if the reports are being read by people responsible for irrigation at a site.

For the electronic readers, some contacts that requested electronic access never did access their water use report—perhaps because of email logistics (e.g., spam blockers) or from disinterest. Correspondingly, the reduction in overwatering for this group was only 7%.

As the frequency of readership increased, however, so did reductions in overwatering. For active readers viewing their reports in 10 or more months during 2012, overwatering was reduced by a weighty 49%.

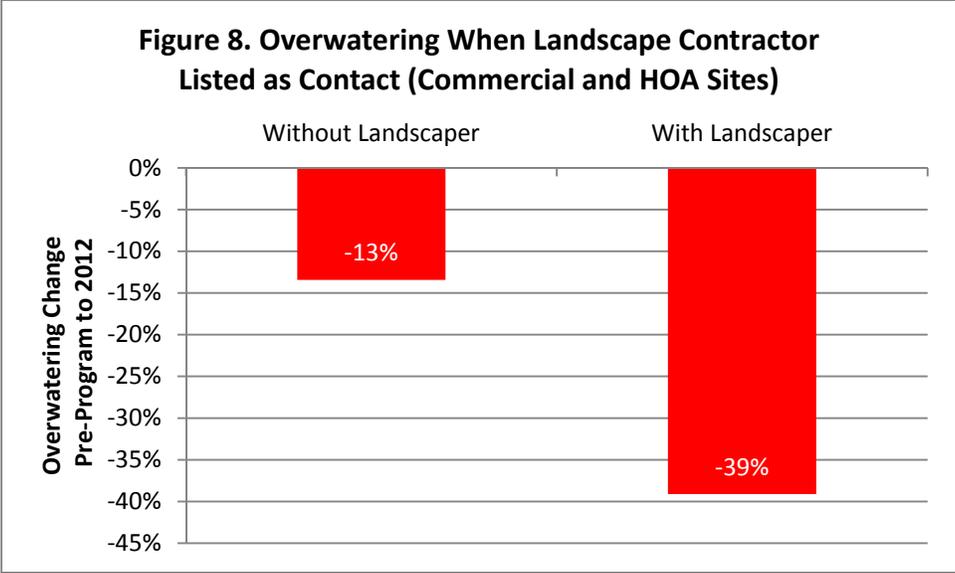


Landscape Contractors

Most commercial and HOA sites use landscape contractors to maintain their landscaping. The program allows for water use reports to be distributed to designated landscape contractors so that they can better monitor and manage their irrigation performance. Only about half of the commercial and HOA sites in the program, however, had a landscape contractor listed as an additional report contact at the end of 2012.

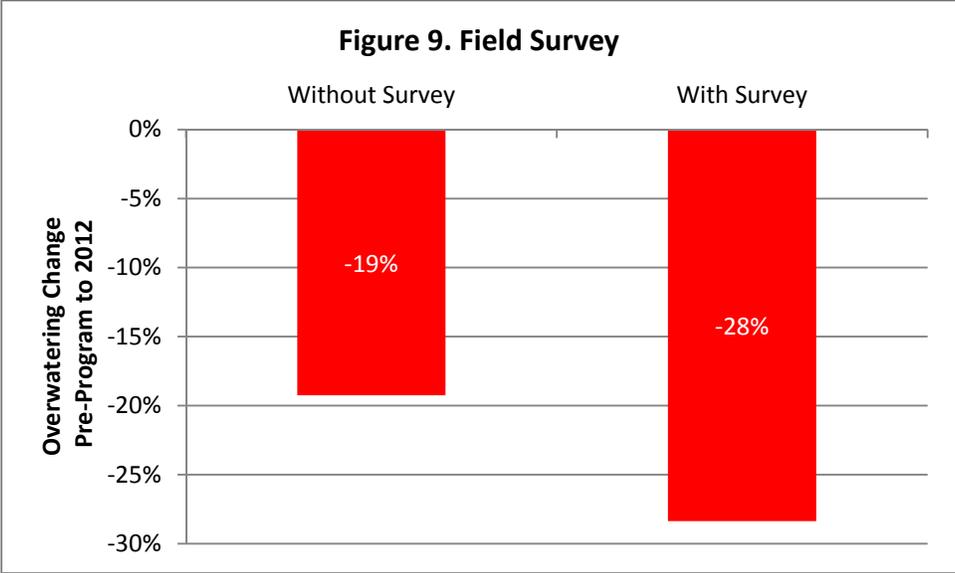
Figure 8 shows the 2012 reduction in overwatering associated with commercial and HOA sites with and without a landscape contractor listed as an additional contact. Sites without a listed contractor reduced overwatering by a modest 13%. Sites with a listed contractor reduced overwatering by 39%. Hence, the inclusion of a landscape contractor correlates with a tripling of the overwatering reduction.

This significant reduction was likely boosted by the publishing of the Waterfluence Landscape Maintenance Firm leaderboard shown at www.waterfluence.com/rankings starting October 2011. The leaderboard has generated significant interest with property managers seeking to distinguish the water management skills of prospective landscape contractors in their areas.



Field Surveys

A field survey consists of us sending an irrigation expert to a site to verify water budget assumptions, evaluate the irrigation system, and recommend ways to improve irrigation efficiency. Based on the 16% of sites receiving a field survey from 2008 to 2011, Figure 9 shows that sites receiving a field survey reduced overwatering by an additional 9% relative to non-surveyed sites.



5. Summary

The 2012 annual review provides the following insights and conclusions:

- Site Type. Commercial and HOA sites have the most potential water savings and react well to the program. A higher degree of disconnects among bill payers, property managers, and landscape contractors likely occurs at these sites, for which the program helps to rectify. Public sites maintained with in-house staff have fewer communication disconnects.
- Site Size. Irrigation efficiency tends to increase with site size. We suspect larger sites are better managed because of their higher water costs. Water agencies with lots of small sites, however, may find inefficient small sites sum to a large portion of the total volume of potential water savings. But still, small irrigation improvements at a large site can generate higher volumes of water savings than large improvements at a very small site.
- Overall Water Savings. The program decreased overwatering at by 22% in 2012 relative to the 12 months prior to sites joining the program. Water reductions were greater for commercial (24%) and HOA (29%) sites, relative to public (7%) sites.
- Report Readership. Overwatering decreased more for sites with contacts who read their electronic reports more frequently. Sites with contacts reading their reports in 10 or more months in 2012 decreased overwatering by 49%.
- Landscape Contractors. Commercial and HOA sites that added their landscape contractors to the water use report distribution list experienced a tripling of their reduction in overwatering from 13% to 39%.
- Landscape Field Surveys. Sites that received a field survey reduced overwatering by an additional 9% relative to sites not receiving a field survey.
- Cost Effectiveness. The program reduced overwatering at \$109 per acre foot saved to water agencies. This assumes a 22% reduction in overwatering and a \$72 per site per year program cost; the cost of water saved becomes higher when factoring setup and field survey costs.