

Scope of Services: Water Conservation Landscape Audit Program

BAWUA members will complete an application to select the level of service they desire for their customers. Contractor will contact participating members to establish details of the service for different customers. Contractor must send a Service Confirmation Form to participating members prior to providing any service directly to customers. Participating members will have five days to reject service. Contractor must work closely with each participating member to ensure the work does not exceed that member's budget for the Program.

Task 1. WATER USE BUDGETS

California Urban Water Conservation Council's ("CUWCC") Best Management Practice Number 5 ("BMP 5") requires signatory water agencies to provide water use budgets to their customers with dedicated irrigation meters. A water use budget is an upper bound estimate of water use at a site given its landscape area and local weather conditions, among possible other factors (e.g., types of plants). Each billing period, customers are to receive notices comparing their water budgets with actual water consumption. Customers that are over budget should be able to lower their water consumption through improved irrigation system performance and management.

Task 1.1. Inventory of Accounts

For each participating member, contractor will obtain water use billing information over at least a 12-month period to identify candidates to receive water use budgets. Candidates will include all dedicated irrigation meters. Contractor will also collect information for all non-residential mixed-use accounts. This information will allow contractor to identify mixed-use water meters that may have significant outdoor irrigation.

For each account, contractor will analyze the records and make a relational database link among accounts, sites, and customers. Some sites may have multiple meters. Some customers might have multiple sites. Contractor plans to make these relational distinctions to more effectively distribute water budgets.

Contractor will rank the accounts/sites/customers by level of water use. In reviewing this data, contractor may recommend that some sites are too small to be cost-effectively included as part of this program.

Task 1.2. Landscape Area Measurement

The most challenging task of developing water budgets is obtaining accurate landscape area measurements. Contractor will estimate landscape areas using three approaches.

1. The first approach will be to estimate the landscape area based on the water use records. Dividing total irrigation water use by an assumed depth of irrigation will provide contractor with landscape area estimates. Contractor will view these as

placeholder estimates to be improved upon over time as more information is collected. The advantage of this approach is that contractor can develop water budgets immediately for all accounts.

2. The second approach will be for contractor to contact the landscape sites and collect self-reported information on landscape areas (Irvine Ranch Water District made use of this approach). Contractor will send an introduction letter to each site explaining the water use budget program and ask for site-specific information. Contractor will emphasize that water use budgets will be more accurate and useful if the landscape area information is as accurate as possible. The letter package will include a reply card to be mailed to contractor with key information. The key information will include customer landscape area measurements (turf area and other irrigated landscape), contact information (allowing for multiple contacts), and communication preference for water use budgets (mail, fax, email). Within two weeks, contractor will begin making up to three follow-up telephone inquiries to each site. Contractor will ask participating BAWUA members to provide telephone numbers as part of Task 1.1, but contractor recognizes contractor will also need to use telephone directories to supplement missing numbers.
3. The third approach will be to integrate information collected from water use surveys, described in Task 2, to improve upon our landscape measurements. Over time, contractor will be able to obtain more and more field observations through this approach. If individual participating BAWUA members desire that all water budgets be based on field measurements of landscape areas, contractor can also complete this task at a negotiated fee not covered here.

Task 1.3. Water Budget Calculation

Contractor will develop a technical memorandum describing a recommended method for performing water use budget calculation. All budgets will include landscape area measurements and evapotranspiration. Options might include adjustments to budgets for various plant materials (e.g., turf verses other landscaping) and actual rainfall.

For water budgets at mixed-use sites, contractor will also establish a procedure for subtracting out estimated indoor water use (e.g., winter water use). Contractor will also establish procedures with working with revolving meter read dates.

BAWUA staff will be asked to comment on the technical memorandum and approve a method for calculating water budgets. Contractor will use one water budget calculation for all participating BAWUA members. The actual water budget values, however, will be customized to each site based on landscape area measurements and local weather conditions.

Task 1.4. Water Budget Distribution

BMP 5 states that agencies are to provide notices each billing cycle showing the relationship between the water budget and actual consumption. Contractor will create

and distribute a one-page water use budget each billing cycle to each site in the program. The water budget will have three components. The first component will compare historical water use to the water use budget for at least the prior 12 months via a graph. The second component will calculate and show how much money the site could save if they watered efficiently, using each agency's rate structure. The third component will provide additional information to promote other landscape programs such as water surveys and financial incentives, and could provide advice such as reminding customers to decrease irrigation run times in the fall.

This approach will allow the contractor to distribute water use budgets for a single site to multiple parties, including participating members. This is an important and key point to making water use budgets effective. In many cases, water inefficiency occurs at landscape sites because of the separation between the bill payer and the person responsible for adjusting the irrigation schedule. The real value of water budgets is to bring more accountability and communication to the situation. Contractor will do this by offering to send copies of the water budget to all parties identified through the mail/telephone contacts described in Task 1.2. There is an additional cost for every contact per site who will receive a water use budget.

Task 1.5. Monitoring and Tracking Data

BMP 5 requires submission of basic summary data to the CUWCC regarding the water budget program. The summary data must include the number of dedicated irrigation meters, the number of dedicated irrigation meters with water budgets, the aggregate water use over all dedicated irrigation meters, and the aggregate budgeted water use over all dedicated irrigation meters.

Contractor will provide an annual summary of the information required by CUWCC for each participating member. Contractor will also provide BAWUA with a summary of key data each month as part of our invoice process. The monthly invoicing data will also be broken out by participating member. BAWUA could share this information with interested members as needed.

Task 2. WATER USE SURVEYS

A landscape water use survey consists of sending trained staff to landscape sites to measure and recommend ways to improve both the technical performance and the management of irrigation systems. Water surveys are sometimes referred to as water audits, irrigation performance tests, and landscape water use analyses, among other terms.

According to BMP 5, a water survey includes the following five basic elements:

1. Landscape area measurements
2. Observations of irrigation system conditions and deficiencies
3. Testing of the technical performance of the irrigation system
4. Generation of irrigation schedules

5. Survey report and information packet to customers

Each element is a part of the curriculum of basic landscape water auditor training administered by the Irrigation Training and Research Center, Cal Poly San Luis Obispo, and the Irrigation Association. Details of these survey tasks are described in the *Landscape Water Management Handbook* (Walker and Kah, 1993).

Task 2.1. Inventory of Accounts

This is the same as Task 1.1, but includes the additional step of extracting data from the customer databases for the specific purpose of conducting water use surveys.

Task 2.2. Targeting

BMP 5 stipulates that signatories offer water surveys to at least 20% of their commercial, institutional and industrial customers each reporting period. To maximize the cost-effectiveness of the water survey program, participating BAWUA members should target sites likely to provide the greatest water use savings. Contractor will consider three factors to target prospective sites: water use analysis, site size, and site management.

1. **Water Use Analysis.** Although estimates of the amount of water used for irrigation at mixed-use sites are often inexact, having an approximate assessment of the magnitude of irrigation can be useful in targeting. In general, it is more cost-effective to conduct surveys at larger landscape sites because survey costs do not increase significantly with site size (i.e., surveys have many fixed costs) and the amount of water to be potentially saved tends to be greater at larger sites. Hence, contractor will rank water customers by estimated irrigation use, giving higher priority to higher water using sites.
2. **Site Size.** Cost-effectiveness does not always improve with site size. In fact, it may be that water surveys of midsized landscape sites (0.5 to 5 acres) offer the best returns. Because the largest sites (over 5 acres) are more likely to be run by concerned and motivated site managers, irrigation efficiency tends to be good. It is in the midrange where irrigation use is still significant and site managers tend to be less attentive to irrigation performance that water surveys may provide the most “bang for the buck.” Hence, contractor will also target these sites.
3. **Site Management.** Type of landscape management or ownership can be an indicator of irrigation performance. Some customer groups have notoriously high consumption relative to irrigated acreage such as business parks and homeowner associations, while parks and schools tend to use water much more conservatively. At some sites, landscape managers pay prompt attention to irrigation system performance, leaks, and irrigation scheduling. At other sites, decision makers are far removed from field operations and irrigation performance lags. It is at these neglected sites that water surveys might be most beneficial. Hence, contractor will target surveys toward those types of sites where information is available and when possible savings can be identified.

Task 2.3. Marketing

Contractor will market the water use survey services primarily through the water use budgets. Contractor will use the targeting criteria from Task 2.2 as part of our approach. On the water budgets of selected sites, contractor will market the program as a free service to them to get their water use more inline with their water use budget. The water survey is the action they take. The water use budget will contain information on how to contact contractor via a toll free number to sign up for a survey.

Also, the participating members can be used to channel survey sites to contractor. Members may know of inefficient sites and/or advertise the survey service via water bill inserts or newsletters. In addition, in the past contractor has identified additional sites by working with landscape contractors that service multiple sites within the BAWUA boundaries. Contractor must send a Service Confirmation Form to participating members prior to providing any service directly to customers. Participating members will have five days from receipt of the Service Confirmation Form to reject service.

Task 2.4. Survey Implementation

The biggest cost component of a survey program is the labor involved in its day-to-day administration (e.g., scheduling surveys with customers) and actual field work. Contractor will offer a complete “turnkey” survey program service. The type of surveys outlined are a distillation of 15 years experience in delivering survey services to many water member agencies and their customers.

To be cost effective, contractor proposes to conduct four levels of surveys.

1. **Introductory Survey.** All sites requesting a survey will obtain an Introductory Survey. An Introductory Survey includes a site visit, landscape area measurements, discussion with site representative, and a calculation of potential water savings.
2. **Full Survey.** For those sites with significant potential water savings, contractor will conduct a Full Survey. Full Surveys include a technical review of irrigation equipment, distribution uniformity analysis, development of irrigation schedules, a detailed survey report, and a follow-up telephone call within three months of initial visit. The report serves the dual purpose of informing the decision-maker as well as directing field staff. It is particularly important to document equipment problems because some excess water use is tied to inefficiencies in irrigation systems. When feasible, a full survey will be conducted right after the introductory survey.
3. **Follow-Up Survey.** Contractor will offer a follow-up survey for Full Survey sites wanting to assess new equipment changes, staff changes for those responsible for irrigation scheduling, or to address previously identified problems. The cost of a follow-up survey is considerably lower as site-based information has already been

collected. Follow-up Surveys will not be conducted in the first year of the Program.

4. Residential Survey. For large-acreage house sites contractor will offer a Residential Survey that includes a site visit, an irrigation system review, an analysis of water use and extant schedules. These elements and recommendations for system and schedule changes will be incorporated in a report forwarded to the customer.

Customers will have a target “wait time” of less than 30-days for their surveys irrespective of season. Entry to the survey queue would be on first come first served basis. Contractor will not exceed the number of surveys identified on the participating members’ applications. Customers can expect a 14-day turn around time for their survey report.

Task 2.5. Monitoring and Tracking Reports

Contractor will provide an annual summary of survey sites conducted for each participating member. Contractor will also provide BAWUA with a summary of key data each month as part of the invoice process. BAWUA could share this information with interested member agencies as needed.

Customer response cards (enclosed with each survey and sent to BAWUA) will allow tracking of consultant performance.