

Colvin, Judith

From: mweo-bounces@water.ca.gov on behalf of Larry Rohlfses [larryrohlfses@clca.org]
Sent: Thursday, March 27, 2008 12:56 PM
To: mweo@water.ca.gov
Cc: Soehren, Rick; Alemi, Manucher
Subject: [MWEO] CLCA Comments on Model Ordinance

Attachments: CLCA_Cover_Letter.pdf; CLCA_Detailed_Comments.pdf



CLCA_Cover_Letter
.pdf



CLCA_Detailed_Co
mments.pdf

Judy,

Attached please find two attachments I'm sending you in response to DWR's proposed rulemaking with respect to the Model Water Efficient Landscape Ordinance: a cover letter and our specific comments.

Thanks you for giving us the opportunity to weigh in!

LARRY

cc: Kent Frame, Rick Soehren, and Manucher Alemi
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March 25, 2008

Attention: Judy Colvin
Department of Water Resources
Office of Water Use Efficiency and Transfers
901 P Street, Room 313A
Sacramento, CA 95814

RE: Comments on Draft Model Water Efficient Landscape Ordinance Update

Dear Judy:

The California Landscape Contractors Association, representing more than 3,000 licensed landscape contractors and associated industry suppliers, is pleased to submit the attached comments on the Department's proposed regulations to update the Model Water Efficient Landscape Ordinance.

CLCA strongly supports the need to update the Model Ordinance and optimize water efficiency in urban and suburban landscaping. Efficient use of water for landscaping is critically important to the future of our industry and for the future growth of California. We look forward to partnering with DWR, local agencies, and property owners to encourage positive change in public behaviors toward how water is used in landscaping.

CLCA recognizes that, in the recent words of the Governor's Delta Vision Blue Ribbon Task Force, "Californians are compelled to change the ways we behave toward the environment and water." The proposed update has the potential to change the behavior of property owners, local agencies, and the landscape industry.

Changing behavior is often difficult, and one particular aspect of the proposed regulation – dropping the ET adjustment factor from .8 to .7 – will be challenging for our industry. Lowering this number is controversial among our membership, and reasonable landscape professionals disagree on its impact. We are not entirely convinced that property owners will be able to achieve this goal without significantly limiting the choice of plant palette that was envisioned by the current Model Ordinance. Nevertheless, we have come to the conclusion that our members can adapt to designing and installing landscapes with a lower ET adjustment factor if the Department addresses most of the other concerns reflected in our attached comments.

In reviewing our comments, you will see that we have made a pragmatic analysis of the proposed regulation from the perspective of professionals who must keep customer costs and paperwork to a minimum, while still achieving an attractive landscape that meets water conservation standards. If property owners see the updated Model Ordinance as being too costly or overly complex, they may choose not to make landscape renovations that would save water or will seek to have work performed by unlicensed and unqualified persons, or simply circumvent the local permitting process. For these reasons, we are particularly concerned about applying the updated Model Ordinance to small residential properties with as little as 2500 square feet of landscaped area. If the updated model ordinance does apply to residential property, it

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should be gradually phased in so that landscape contractors can gain real life experience with the process before burdening homeowners with expensive and time-consuming requirements that may not be cost-effective.

CLCA also believes that the Model Ordinance draft does not adequately address major weaknesses of the current ordinance that Western Policy Research pointed out in 2001—inadequate enforcement of the maximum water allowance after project completion and a lack of integrated enforcement efforts between land use agencies and water suppliers. The maintenance and auditing requirements in Sections 492.13, 497.14, and 493.1 of the draft would accomplish very little to ensure that new or renovated landscapes will actually be irrigated under the Maximum Applied Water Allowance. The defects in the current Model Ordinance that were highlighted by Western Policy Research can only be remedied by applying a water conservation rate structure that rewards customers for living within a water budget. Yet the proposed regulation misses what is arguably the single most important revision to the current model ordinance, one that would assure that the landscape installed actually achieves targeted water savings over the long term.

The proposed Model Ordinance requires a great deal of paperwork and "hoop jumping." These are often necessary, but CLCA urges DWR to ruthlessly remove any and all unnecessary obligations from this draft that may not result in a clear water conservation benefit. Conservation works best when people want to conserve, not when they are compelled to do so.

CLCA submits these comments in the spirit of improving the regulations and achieving our mutual goal of promoting efficient use of landscape water.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Rohlfs", with a long horizontal flourish extending to the right.

LARRY ROHLFES, CAE
Assistant Executive Director

California Landscape Contractors Association Comments on the Draft Model Water Efficient Landscape Ordinance Update

March 25, 2008

490.1. Scope

CLCA does not believe that cities and counties will be able to enforce the proposed Model Ordinance update. They do not have enough qualified staff to review the paperwork and inspect the projects.

490.3 Applicability

The proposed Model Ordinance update has significant cost implications for property owners, especially the owners of relatively small landscapes.

The proposed Model Ordinance update would add at least \$2,400 to \$3,000 to the cost of a typical 2,500-square-foot, six-valve project that currently is subject to the Model Ordinance (new and rehabilitated landscaping for public agency projects and private development projects that require a permit as well as developer-installed landscaping in single-family and multi-family projects). See Table I in Appendix A for an itemization of these costs. These projects would otherwise cost \$18,075 for design and installation on average. Some of these costs, such as the on-site soil assessment costs, are not required by the existing ordinance and would be completely new. Other costs, such as the cost of performing the water budget calculations, theoretically could be necessary under the existing Model Ordinance, but because the existing ordinance is nowhere near as specific about what the landscape designer must do to determine estimated total water use, for example, the costs of compliance are likely to be somewhat higher under the proposed ordinance.

It's also important to recognize that many of these types of projects will become subject to the Model Ordinance for the first time. This is because the proposed Model Ordinance update, unlike the current ordinance, will apply to charter cities and counties. In addition, cities and counties will no longer be able to claim that they do not need an ordinance. Furthermore, for the first time other landscape ordinances must be at least as effective as the Model Ordinance, and this will force stronger ordinances with consequent increased costs. For these commercial and other affected projects in areas of the state that are not currently subject to the Model Ordinance, the increase in costs would be far more dramatic—perhaps \$5,700 to \$6,700 for a 2,500-square-foot, six-valve project that would otherwise cost \$15,000 on average. See Table II in Appendix A for an itemization of these costs.

The proposed Model Ordinance update also would be new for single-family and multi-family residential owners. The ordinance would add between \$5,900 and \$6,900 in costs if the owner hired a design-build contractor to design and install the project. This would be for a landscape that otherwise would cost \$20,000 on average. See Table III in Appendix A for an itemization of these costs.

As currently conceived, the proposed ordinance would add between \$6,700 and \$7,700 in costs for a 2,500-square-foot, six-valve residential project if the owner installed the landscape himself or herself. See Table IV in Appendix A for an itemization of these costs. This would be for a landscape that otherwise would cost \$6,500 on average.

CLCA believes that our cost estimates are conservative. If any of our appendix estimates are judged to exaggerate the cost of a particular service or project, we are confident that the error could be

counterbalanced by numerous underestimates elsewhere in the appendix. Furthermore, our estimates do not include the increased permitting fees that we believe cities and counties will have to charge to handle their vastly increased workload from the residential market as a result of the ordinance. Nor do these figures include the significant costs that would be incurred after project completion, such as the cost of future water audits.

On the other hand, CLCA recognizes that our cost estimates must be balanced against an unknown amount of water savings that could result from the ordinance.

Whatever the expected water savings may be, CLCA believes that these significantly higher costs are “overkill” for small landscape projects and will discourage owners from landscaping their properties or encourage residential owners to evade the law by failing to apply for required permits.

Specifically, CLCA believes that subsections (a) and (b) should apply to landscape areas that are equal to or greater than 5,000 square feet, rather than the 2,500 square feet in the current draft. Making this change would simplify the ordinance by making this section consistent with Section 492.9, which requires a dedicated (separate) landscape water meter for all projects greater than 5,000 square feet, except for single-family residences.

In addition, CLCA strongly believes that subsection (c) is totally inappropriate. Requiring homeowners to submit a Landscape Documentation Package and Certificate of Completion will not work and will be evaded or resisted.

Homeowners simply do not have the expertise to complete the Landscape Documentation Package or the Certificate of Completion. Consequently, they would be left with three choices: (1) hire a landscape architect and a landscape contractor (2) hire a design-build landscape contractor, or (3) hire a landscape architect and install the landscape using the architect’s plans and other documentation. Few homeowners would have the ability to follow through with this third option.

Homeowners would view this proposed Model Ordinance as arbitrary and capricious because only those landscapes that require a permit would have to comply with it. If a homeowner wants or needs a retaining wall in excess of three feet, an arbor, an outdoor kitchen, or a swimming pool, for example, he or she is required to take out a permit. If the landscape consists only of plants and irrigation, a permit generally is not required. In the eyes of virtually every homeowner, it would make no sense to tie the obligation to complete a Landscape Documentation Package and Certificate of Completion to a decision to build a retaining wall. Most homeowners would divide a single landscape project into two or more projects in order to evade the requirements of the model ordinance: a 1,000-foot project with an arbor and a 3,000-foot project with everything else, for example.

DWR’s staff has indicated to CLCA verbally that the intent is only to require compliance if a permit is required for the landscape irrigation or planting. If the proposed model ordinance update were changed to make that clear, it still would be viewed as arbitrary and capricious by homeowners. Most cities and counties do not require a permit for this work, but some do. There is no reason why Model Ordinance compliance should be linked to whether or not a local agency happens to require a permit for landscape irrigation or planting. Moreover, there does not seem to be much point to subsection (c) at all if the vast majority of local agencies do not require a permit for planting and irrigation, and therefore would not have to comply with it.

CLCA therefore recommends that the 2,500-square-foot trigger in subsection (c) be replaced by a 20,000-square-foot trigger. If this change were made, the ordinance would still apply to the owners of residential “estates.” These owners would be more likely to afford the increased costs of model ordinance compliance, and those increased costs would be “in scale” with the cost of a 20,000-square-foot landscape. This approach would allow the state to “test” the ordinance as it applies to

the residential market. If it works, California could lower the square footage trigger at some future date.

491. Definitions

Change Number 15 to the following: “established landscape” means the point at which plants in the landscape have developed significant root growth into the *site native soil beyond the original planting hole*. Typically, most plants are established after one or two years of growth.” ... This seems more descriptive of the goal of establishing a mature plant root system.

Change Number 27. One hundred percent of non-irrigated planting areas in a landscape design plan should be included in the definition of landscape area. Excluding non-irrigated areas would encourage owners to irrigate property when they might otherwise be inclined to leave portions of the property unirrigated. The spirit of this definition could be easily evaded by running drip line into the non-irrigated area. If an owner decides not to irrigate a portion of a landscape, he or she should receive “credit” for that and be allowed to apply a little more water than otherwise on the irrigated areas, as long as he or she stays under the overall water budget. Allowing owners to include 10 percent of the non-irrigated planting area in the landscape area requires one more computation in an already overly complicated process. Finally, it should be pointed out that the AB 2717 Task Force did not recommend that non-irrigated planting areas in a landscape design plan be excluded from the definition of landscape area; it recommended that “areas designated for non-development by the local land use agency” be excluded. CLCA suggests that the first part of the definition be changed to something like the following: “Landscape area includes all of the *porous areas as well as water features in a landscape design plan* ... “

Change Number 33 to define “low volume irrigation” according to the volume of water per minute or hour rather than inches of water per hour. The amount of water moving through the irrigation device is more important for a definition of the device than the amount of water that is actually applied.

Change Number 46 to the following: “rain sensor” or “rain sensing ~~shutoff~~ *interrupt device*” means a component which automatically suspends the irrigation event when ~~it rains~~ *measurable rain occurs*. ... These devices can be set for different amounts of rainfall.

Change Number 47 to the following: “record drawing” or “as built” means a set of ~~reproducible~~ drawings which show significant changes in the work made during construction and which are usually based on drawings marked up in the field and other data furnished by the contractor. ... All drawings are reproducible.

492.2. Compliance with Certificate of Completion

Delete 2(a). It is not a common practice to inspect the irrigation system prior to backfilling. Doing so would be very impractical and would slow down the project considerably. Lateral lines typically are buried as they are completed. This allows the work to progress in all areas. If there are lateral leaks below the surface, they will become manifest during the final field observation after project installation. Flow sensors also would pick up future mainline leaks and breaks in the lateral lines. Mainline inspection is the only inspection that is typically done before backfilling.

The requirement in 2(b) to hire a landscape professional to conduct a final field observation would be prohibitively expensive for homeowners who are installing their landscapes themselves.

492.5 Landscape Documentation Package

1(b)(1) should be changed to the following: Soil Analysis Report *with Recommendations*. 1(b)(2) should be deleted. Requiring a qualified soil specialist or scientist to provide an on-site soil assessment as discussed in Section 492.7 would add \$600 to \$900 per sample to the cost of a project. Compare this to \$150 to \$250 for a laboratory analysis of a soil sample. This is a significant and unnecessary expense, especially for smaller projects. CLCA recommends that the Model Ordinance update instead require a laboratory soil analysis with recommendations along the lines of the recommendations mentioned in Section 492.7. Virtually all of the goals of Section 492.7 can be accomplished from the lab and without an on-site assessment by a qualified soil specialist, although addressing all of the goals—including the determination of soil infiltration rates—will probably increase the cost of a customary lab analysis.

492.6. Water Efficient Landscape Worksheet

Remove the requirement to fill out Section B of the Water Use Efficiency Statement (and remove Section B from the Sample Water Efficient Landscape Worksheet). This is a pointless exercise for the applicant as well as the local agency.

492.7. Soil Management Plan

1(e) should also list cation exchange. Information on cation exchange complex and cation exchange capacity is pretty standard in landscape soil analyses and provides important information for future plant health.

See above comments on Section 492.5.

CLCA questions the need to conduct a further analysis of soil toxicity in a water conservation ordinance.

492.8 Landscape Design Plan

Reference the California Invasive Plant Council in 1(a)(4).

Change 1(b)(3) to the following: “Installation of long, narrow, or irregularly shaped turf areas less than ~~eight (8)~~ *four (4)* feet in width in any direction shall be irrigated with subsurface irrigation or other low volume irrigation technology.” ... Nozzles currently exist that spray four feet or less. While it makes sense to restrict turf from median strips that are eight feet or less in width, as they can be miles in length, it is far less necessary to do the same for a typical landscape.

Delete 1(b)(4). Requiring irrigated areas (including turf) within 24 inches of non-permeable hardscape to be irrigated with drip irrigation or subsurface irrigation technology is a bad idea. This requirement, which suggests that future innovation in irrigation technology will not occur, would limit design creativity and result in unattractive landscapes, especially in the case of small projects. This requirement would typically add about \$1,000 to the cost of a 2,500-square-foot landscape (for irrigation lines, a possible extra valve, header boards, possible gravel or stone, possible mulch, etc.). The model ordinance should not dictate the appearance of a landscape as a general rule.

Delete 1(c)(2). It is CLCA’s belief that recycled water normally should not be used as a source of water for water features.

Delete the following sentence in 1(d)(1): In mulched planting areas, the use of drip irrigation is highly recommended. ... There is no special relationship between mulch and drip irrigation. There are times when drip irrigation is not a good idea in mulched areas, such as with groundcover, annual color, large shrubs, or areas with heavy foot traffic. A compromise suggestion would be to recommend low volume irrigation in mulched planting areas.

Change 2(a)(3) to the following: Title block with name, license number, mailing address, email address, and telephone number of licensed landscape architect *or licensed landscape contractor*. ... Licensed landscape contractors are permitted by law to do design plans for design-build projects.

The requirement in 2(a)(6) to identify the topography with proposed contour lines and elevations is appropriate for a large project. It is “overkill” and not customary for design-build or owner-designed residential projects smaller than 20,000 square feet. A proper survey with plans by an engineer would add more than \$1,000 to the cost of a 2,500-square-foot project.

Delete 2(a) 9. Planting plans do not typically include the location of utilities. All that can be included are the points of connection of utilities. What is underground usually is not yet known. The planting plan should simply state that the installing contractor call Underground Service Alert.

Delete 2(f)(1) or make it clear that this provision only applies to landscape architects. Design-build landscape contractors do not need and typically do not do installation details for the landscape.

492.9. Irrigation Design Plan

1(a)(8) is a good example of a provision that is not appropriate for average or single-family residential projects of less than 20,000 square feet. High-flow check valves or other technology to interrupt operation in high flow conditions created by irrigation damage or malfunction are just too costly for all but the largest residential projects. A residential owner would have approximately \$900 in compliance expenses if the job were installed by a landscape contractor: \$50 for a master valve, \$300 for a flow sensor, \$25 for a valve box, \$75 for wiring, and \$450 for professional installation.

1(b)3 should be changed as follow: “Sprinkler heads shall have matched ~~application~~ *precipitation* rates for uniform coverage.”

Delete 1(b)(8). See above comment on 1(b)(3) of 492.8, Landscape Design Plan.

Delete 1(b)(9). See above comment on 1(b)(4) of 492.8, Landscape Design Plan.

The requirement in 2(a)(5) to identify the topography with proposed contour lines and elevations is appropriate for a large project. It is “overkill” and not customary for residential projects smaller than 20,000 square feet. A proper survey with plans by an engineer would add more than \$1,000 to the cost of a 2,500-square-foot project.

Delete 2(a) 8. Irrigation plans do not typically include the location of utility lines. All that can be included is the points of connection of utilities. What is underground usually is not yet known. The irrigation design plan should simply state that the installing contractor call Underground Service Alert. As an alternative to deleting 2(a)8, the ordinance could state that the plan should provide the location of points of connection to utilities.

Consider adding a new item requiring pressure compensating devices on all sprinkler heads to fine tune spray radius for maximum irrigation efficiency.

492.10. Grading Design Plan

Grading design plans are not typically done for residential projects.

With respect to public agency and private development projects, the first paragraph should be changed as follows: “For the efficient use of water, grading of a project site shall be designed to minimize soil erosion, runoff, and water waste. A grading design plan meeting the following design criteria and specifications shall be submitted as part of the Landscape Documentation Package, *if the grading design plan is different from the grading plan previously submitted by the civil engineer.*” ... A grading plan will have already been submitted by a civil engineer and approved by the city or county. The landscape architect or landscape contractor may make modifications to it and thereby create a separate grading design plan. It is pointless to require the landscape architect or landscape contractor to submit the civil engineer’s plan for approval, for it would have been approved earlier. Our suggested wording change is intended to make it clear that only substantial modifications to the civil engineer’s plans are subject to approval. An alternative suggestion would be to not require the submittal of any grading design plan in a Landscape Documentation Package, since it seems to have little to do with water conservation and the original grading plan would already have been evaluated to prevent problems such as erosion and runoff.

Delete 2 (a) 7. Grading design plans do not typically include the location of utility lines. All that can be included are the points of connection of utilities. What is underground usually is not yet known. The grading plan should simply state that the installing contractor call Underground Service Alert. As an alternative to deleting 2(a)7, the ordinance could state that the plan should provide the location of points of connection to utilities.

492.11. Certificate of Completion

The wording of 2(a) and 2(b) should be modified to take into account “as builds,” which become the overriding plans for the project.

492.12. Irrigation Scheduling

Restricting irrigation to the hours of 8 p.m. to 10 a.m. in Item 2 may not work for new turfgrass and groundcover, hydroseeding, or seasonal overseeding.

The irrigation scheduling requirements in Item 4 and the requirement in 292.9 to install a weather-based irrigation controller, a soil moisture controller, or other self-adjusting controller do not appear to mesh with one another. More guidance on the relationship between the scheduling requirements and the controller requirements these two requirements is needed. Another suggestion would be to only require irrigation schedules for the plant establishment period.

492.14. Landscape Irrigation Audits and Audit Schedules

Change Item 1 to the following: At minimum, all landscape irrigation audits shall be in accordance with the “Irrigation Association Certified Irrigation Auditor Training Manual (2004),” the entire document, which is hereby incorporated by reference, *or other manual approved by DWR for this purpose.* This will give DWR some flexibility should it decide at some future date that other methods should become permissible as well.

The project applicant, who typically is not the owner, cannot be responsible for submitting a landscape irrigation audit report every five years, as stated in 3(d). That responsibility should fall to the owner. In addition, it would make sense to exempt the owner from having to conduct this audit if the owner can prove that the landscape's water use was under the Maximum Applied Water Allowance during the previous year.

Item 4 should not apply to projects under 5,000 square feet or to any residential projects. Projects under 5,000 square feet are not required to have a dedicated landscape water meter. Residential landscapes of any size are not required to have a dedicated landscape water meter. The local agency cannot compare the maximum applied water allowance with actual landscape water use unless that water use is measured by a dedicated landscape water meter.

4(b)(2) should be changed to the following: The local agency's cost of conducting the landscape irrigation audit shall be paid by the ~~project applicant~~ *owner*. ... The project applicant, who installed the landscape, should have no responsibility for an audit conducted five years later.

492.16. Recycled Water

CLCA applauds the concept of requiring all new construction to be plumbed for current and future use of recycled water. However, this should be mandated in statute or by the Building Standards Commission, not by a model landscape ordinance. Requiring recycled irrigation systems for residential properties with landscapes of 2500 square feet or more in the model ordinance update would discourage many local agencies from adopting the ordinance. CLCA understands that this Item 1 requirement is in the current ordinance. That may have been appropriate in an ordinance that applied mainly to commercial projects. It is not appropriate in an ordinance applying to homeowner provided landscaping. This is one more example of CLCA's assertion that the model ordinance update is not appropriate for residential landscapes.

493.1. Landscape Irrigation Audits

Change Item 1 to the following: At a minimum, all landscape irrigation audits shall be in accordance with the "Irrigation Association Certified Irrigation Auditor Training Manual (2004)" in Section 492.14, *or other manual approved by DWR for this purpose*. ... This will give DWR some flexibility should it decide at some future date that other methods should become permissible as well.

CLCA fails to understand how a local agency could comply with Item 4, which requires it to compare customers' landscape water use to local reference evapotranspiration, identify customers whose landscapes exceed 80 percent of local ETo, and annually conduct landscape irrigation audits on a minimum of 20 percent of those landscapes. Such existing sites, many of them residential landscapes smaller than 5,000-square-feet in size, would not have dedicated landscapes meters, and their exact size of could be difficult to determine.

Appendix A

Itemized Estimated Costs of Four Typical 2500-Square-Foot Landscape Projects under the Draft Model Ordinance Update

Table I: Public Agency or Private Development Project Located in a City or County That Currently Has a Landscape Ordinance That Is Modeled after the Existing Model Water Efficient Landscape Ordinance

Extra paperwork—one hour at \$300 per hour.	\$300
On-site soil assessment.	\$500
High flow check valve.	\$900
24-inch area to be irrigated by drip or subsurface technology between irrigated areas and non-permeable hardscape (for header board, possible gravel or rock, possible mulch, possible separate irrigation lines, possible extra valves, etc.).	\$1,000
TOTAL	\$2,700

Table II: Public Agency or Private Development Project Located in a City or County That Does Not Currently Have a Landscape Ordinance That Is Modeled after the Existing Model Water Efficient Landscape Ordinance

Paperwork by landscape architect--seven hours at \$300 per hour.	\$2,100
Soil sample and on-site soil assessment.	\$700
High flow check valve.	\$900
24-inch area to be irrigated by drip or subsurface technology between irrigated areas and non-permeable hardscape (for header board, possible gravel or rock, possible mulch, possible separate irrigation lines, possible extra valves, etc.).	\$1,000
Installation of recycled water irrigation systems. Does not include costs of actually hooking up to reclaimed water (24-hour cross connection pressure test, purple valve box lids, purple sprinkler caps, etc.). Assumption is that the water meter will be near the backflow on a commercial site; therefore, any extra cost associated with the installation of a recycled water connection would be negligible.	\$0
Grading design plan with elevations.	\$600
Irrigation audit as specified by certified irrigation auditor.	\$850
Contractor involvement in soil test.	\$75
TOTAL	\$6,225

Table III: Single-Family Residential Landscape Designed and Installed by Landscape Contractor

Paperwork and field work by landscape contractor--10 hours at \$75 per hour. Includes two hours for as-built drawings and one hour for soil test coordination,	\$750
Soil sample and on-site soil assessment.	\$700
High flow check valve.	\$900
24-inch area to be irrigated by drip or subsurface technology between irrigated areas and non-permeable hardscape (for header board, possible gravel or rock, possible mulch, possible separate irrigation lines, possible extra valves, etc.).	\$1,000
Grading design plan with elevations. (The cost of this grading design plan is more than the cost of the grading design plan in Table II because a landscape architect working on a public agency or private development project will have the civil engineer's grading plan as a starting point.)	\$1,100
Irrigation design plan with elevations.	\$150
Installation of recycled water irrigation systems. Does not include costs of actually hooking up to reclaimed water (24-hour cross connection pressure test, purple valve box lids, purple sprinkler caps, etc.).	\$750
Irrigation audit as specified by certified irrigation auditor.	\$850
Obtaining permits (average three hours).	\$225
TOTAL	\$6,425

Table IV: Single-Family Residential Landscape Designed and Installed by Homeowner

Paperwork and field work by landscape architect--10 hours at \$100 per hour. (Note: landscape architects actually charge about three times this amount per hour on the average, but CLCA assumes that the job of completing this paperwork for residential projects may be delegated to lower paid staffers.)	\$1,000
Soil sample and on-site soil assessment.	\$700
High flow check valve installed by owner himself or herself.	\$450
24-inch area to be irrigated by drip or subsurface technology between irrigated areas and non-permeable hardscape (for header board, possible gravel or rock, possible mulch, possible separate irrigation lines, possible extra valves, etc.).	\$500
Planting plan, irrigation plan, and grading plan with elevations.	\$3,000
Installation of recycled water systems. Does not include costs of actually hooking up to reclaimed water (24-hour cross connection pressure test, purple valve box lids, purple sprinkler caps, etc.).	\$375
Preliminary field observation prior to backfilling by landscape professional.	\$200
Final field observation upon project installation by landscape professional.	\$200
Irrigation audit as specified by certified irrigation auditor.	\$850
TOTAL	\$7,275