CITY OF BEVERLY HILLS

PUBLIC WORKS SERVICES DEPARTMENT

MEMORANDUM

TO: PUBLIC WORKS COMMISSION

FROM: Trish Rhay, Assistant Director of Public Works Services - Infrastructure & Field Operations

Donielle Kahikina, Deputy Director of Public Works Services, Operational Support

Michelle Tse, Senior Management Analyst MST

DATE: July 9, 2015

SUBJECT: WATER CONSERVATION OUTREACH UPDATE

ATTACHMENT:
1. Conservation Task Force – Ongoing Items
2. June 30, 2015 Study Session Report – Artificial Turf and Landscaping Alternatives
3. June 30, 2015 Formal Session Report – Swimming Pools
4. June 30, 2015 Study Session Report – Demonstration Garden Concepts
5. Water Conservation Postcard

This report highlights staff activities related to the City's Water Conservation and Outreach efforts.

General Updates

- An internal Conservation Task Force was created, which consists of representatives from each Department. Various tasks to promote education and outreach were identified and assigned with designated Leads. Attachment 1 shows current ongoing tasks. Updates are made regularly and the Commission will receive the list on a regular basis.

- Policies related to artificial turf and swimming pools were presented by Community Services and Community Development Departments, respectively, during the July 30, 2015, meeting for City Council consideration. For reference, staff reports related to these two policies are included as Attachments 2 and 3. Staff will provide update(s) during the July 9th Commission meeting on these items.

- Per City Council direction, staff presented preliminary cost estimates for demonstration garden concepts for Maltz Park and Sunset Reservoir at the June 30, 2015, City Council Study Session. A copy of the submitted staff report is included as Attachment 4. Staff will provide an update during the July 9th Commission meeting on this item.

- The City's supplemental funding to the Metropolitan Water District ("MWD") rebate program is now included as part of the MWD's rebate process. A demonstration on how

to apply for an MWD rebate program will be presented during the July 9th Commission meeting.

- The garden coaching program is now available to Beverly Hills water customers. To register for a consultation, customers can visit the City's webpage at www.beverlyhills.org/conservation. A demonstration on how to register for a consultation will be presented during the July 9th Commission meeting.

Public Education and Outreach

- Postcards were sent out to all Beverly Hills and West Hollywood water customers. The postcard includes information on water conservation tips and the City's outdoor watering schedule during the City's Stage D conservation program. For reference, a copy of the postcard is included as Attachment 5. Similar information is also being included as a utility bill insert.

- The City is currently developing a scope of work with the marketing firm Cook + Schmid to assist with the City's conservation outreach program. The contract scope will include the development and distribution of a high-impact educational package to be mailed to all residential addresses, including a tool-kit of materials (refrigerator magnet, exterior hose bib hanger, washing machine cling and flyer) to raise awareness of the drought conditions and water-saving tips, and an information packet with water-saving tips for City staff tasked with water enforcement efforts so they can be as effective as possible in their interaction with customers. This firm previously worked with the City of Santa Monica in its water conservation marketing and outreach program. Staff anticipates the consultant will begin work in July 2015.

Enforcement

- Staff continues to provide public outreach on outdoor watering restrictions. A map of the outdoor watering violations is included in the July 9, 2015, Commission packet as reference. Staff is finalizing a contract with a hearing officer to issue citations to residents violating the City's outdoor watering restrictions. This contract is expected to be executed by the end of July 2015.

Water Rates, Penalty Surcharges, and Appeals Process

- Staff worked with HF&H Consultants, LLC on the water rate analysis and penalty surcharges. Additionally, staff worked with the Conservation Subcommittee in developing the penalty surcharge appeals process. All three items were discussed with the Conservation Subcommittee (Vice Chair Aronberg and Commissioner Wolfe) as well as the Public Works Liaison Committee (Vice Mayor Mirisch and Councilmember Brien) before being presented to the City Council during its June 30, 2015, Formal Session. These items are separately agendized for staff to discuss with the Public Works Commission during its July 9, 2015, meeting.

City of Beverly Hills Water Conservation Task Force

DRAFT for Tuesday, July 7, 2015

Attendees: George Chavez, Donielle Kahikina, Michelle Tse, Kevin Kearney, Therese Kosterman, Tatiana Szerwinski, Aaron Ledet, Michelle Ramos-Vergara, Cynthia de la Torre, Ken Pfalzgraf, Tania Schwartz, Ginelle Wolfe, Anne Salvatore, Ryan Park, Aram Chobanian, Megan Roach, Logan Phillippo

Goal: Disseminate an effective conservation message

Today's Meeting Schedule

1. Status updates from prior tasks (15 minutes)
2. Garden Guru Outreach Plan updates (5 minutes)
3. School/Camp Tool Kit and Outreach Plan updates (5 minutes)
4. BH Courier Content updates (5 minutes)
5. Group breakout (45 minutes)
    a. School/Camp Tool Kit and Outreach Group
    b. BH Courier Group
6. Present plan to task force and group recap (15 minutes)

1. STATUS UPDATES FROM PRIOR TASKS

Task	Lead	Due
Remaining tips distribution items		
Display the BH_20 logo on elevator LED screens in elevators	Logan, Ryan	July 7
Distribute postcards to businesses for counters	Megan	July 7
Produce a door hanger with conservation messaging		
Design the door hanger	Aram	Complete
Finalize Door Hanger Design and Messaging	Donielle, George, Therese	ASAP
Submit final print request and determine quantity	Logan	ASAP
Design and produce door hangers	Aram	July 7
Pick up door hangers and distribute to appropriate department leads (Com. Dev. and PWS reps)	Logan	July 7
Develop a tag to insert in utility bill		
Determine if it is possible to put a tag into the utility bill (ask Adolfo)	Aram	Complete
Communicate content for tag (water schedule, Spanish translation, etc.) to Aram	Donielle, George, Therese	Complete
Get Spanish translation to Aram	Therese, Ryan	ASAP

Design the tag	Aram	ASAP
Determine quantity of tags to produce	Tatiana, Logan	ASAP
Finalize tag design	Donielle, George, Therese	ASAP
Submit final print request with vendor	Logan, Aram	ASAP
Figure out how to insert the tag into bill (i.e. communicate with Adolfo)	Aram	Complete
Metal signs for medians		
Manage installation process and walkthrough with PWS	Dana	July 7
Signs for City fountains and water features		
Manage installation process and walkthrough (i.e. communicate with Frank from PWS)	Aaron/Therese	July 7
Signs for street crews		
Get frames and signs to PWS	Logan	ASAP
Distribute to crew and explain when to use/where to place	Aaron	ASAP
Valet/bathroom signs		
Confirm signs were distributed and where they were placed	Aaron	ASAP
Utility bill		
Update the CTF on the status of new utility bills	Tatiana, Michelle	July 7
Street banners		
Confirm funds of 40-50k for street banner production	Donielle	ASAP
Coordinate production of street banners	Megan	ASAP
*Do we have a plan to coordinate distribution, or is this included with production?		
Penalty surcharge letter to tenants/landlords		
Draft letter	Cynthia, Logan	Complete
Determine address list for distribution	Logan	ASAP
Coordinate mailing process, include tips flyer	Logan	ASAP
Update CTF regarding code enforcement program (i.e. communicate with Nestor)	Cynthia	July 7
Penalty surcharge letter to all customers		
Draft letter (contingent on CC approval of surcharges)	Michelle/Tatiana	July 7
Develop concept graphic that explains surcharges	Logan, Ginelle	July 7
Email to city all city employees regarding conservation expectations		
Draft content	Kevin	Complete
Coordinate review with Mahdi and make appropriate edits	Kevin	ASAP
Print copies for staff that work in the field and may not check email often	Kevin	ASAP

2. GARDEN GURU OUTREACH PLAN UPDATES

Task	Lead	Due
MWD Rebate Brochures		
Distribute brochures	Ginelle	July 7
*Is there anything else to do? Distribute to whom?		
Water tracker handout		
Provide information and design concept to Aram and submit graphics request	Ginelle, Michelle	July 7
Design the handout	Aram	July 14
Finalize design and content	Donielle, George, Therese	ASAP
Submit final print request and determine quantity	Ginelle, Michelle	July 14
Pick up handout from graphics and distribute hard copies	Ginelle, Michelle	July 14
*Who distributed the counter signs and postcards from before? That person will have info.		
Coordinate electronic distribute to cable and council	Therese	July 14

3. SCHOOL/CAMP TOOL KIT AND OUTREACH PLAN UPDATES

Task	Lead	Due
Water conservation pledge and reward program		
Meeting to discuss plan	Tania, Dana, Ginelle	July 2
Update Logan with specifics after meeting for tracking purposes	Ginelle	ASAP
Develop a schedule for attending summer camps to explain pledge and award program to students	Ginelle and ???	ASAP
Finalize structure of the pledge program and reward system	Tania, Dana	ASAP
Get final approvals for program	???	???
Develop a school competition		
Structure a school competition with details to present at the next Task force meeting	Ginelle, Logan	July 7
Discuss school competition structure with CTF	Task Force	July 7
Finalize school competition program and update assign tasks	Donielle, Logan	ASAP after July 7
Coordinate with school board liason	Tania	July 14
Pick up handout from graphics and distribute hard copies	Ginelle, Michelle	July 14
*Who distributed the counter signs and postcards from before? That person will have info.		

Coordinate electronic distribute to cable and council	Therese	July 14

4. BH COURIER CONTENT UPDATES

Task	Lead	Due
Develop content and concept graphic for pages in BH courier		
New tiered price structure	Logan, Ginelle, Michelle	July 7
Appeals process for water violations	Logan, Ginelle, Michelle	July 7
Penalty surcharges	Logan, Ginelle, Michelle	July 7
Kids Corner	Aaron	July 7
Garden Guru	Logan, Ginelle, Michelle	July 7
Artificial Turf	Dana	July 7
Swimming Pools	Cynthia	July 7
Rebates	Therese, Ryan	July 7
Garden Handbook	Logan, Ginelle, Michelle	July 7

5. GROUP BREAKOUT

a. School/Camp Tool Kit and Outreach Group

Dana, Tania, Ginelle, Michael, Aaron, George, Ryan

b. BH Courier Group

Michelle, Therese, Logan, Cynthia,

STAFF REPORT

Meeting Date: June 30, 2015

To: Honorable Mayor & City Council

From: Ken Pfalzgraf-Parks and Urban Forest Manager

Subject: Artificial Turf and Landscaping Alternatives for Residential Front Yards and Parkways

Attachments:

1. May 18, 2015 Study Session Public Works Department Staff Report "Artificial Turf and Live Plant Alternatives for Residential Front Yards and Parkways (including attachments)
2. City Lobbyist Statement re: AB 1164
3. Artificial Turfgrass Specification provided by Community Works Design Group

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INTRODUCTION

This report provides additional information previously requested by the City Council with regards to the use of artificial turfgrass in residential front yards and City parkways and other landscaping alternatives as a means of achieving water use reduction mandates.

BACKGROUND

As part of Governor Brown's executive order declaring a state of emergency drought in the state of California, the City of Beverly Hills was mandated to reduce water use by 32%. In response, the City immediately stopped irrigating in turfgrass medians and implemented other water saving mandates including reducing the number of days that landscaping in the City can be watered (to two days per week) and limiting sprinkler run times (to eight minutes per watering day). In addition, the City is considering a number of other options aimed at helping residents meet water use reduction targets, including the use of artificial turfgrass in residential front yards and in City parkways. At present, City code limits the use of artificial turfgrass at residential properties to side and rear yards only.

At the request of Councilmember Krasne, the City Council began discussion on the issue during the April 21, 2015 Study Session meeting. As a result of that discussion, staff was requested to provide a report on artificial turfgrass and landscaping alternatives for residential front yards and parkways, including information about artificial turfgrass product quality.

At the May 18, 2015 City Council Study Session, the Council expressed its wishes that the City is able to provide materials and resources to help residents make educated decisions on what they can do to save water around their homes.

With regards to artificial turfgrass, the May 18, 2015 staff report provided an overview of the current code; information detailing the advantages and disadvantages of both live plants and artificial turfgrass in terms of water conservation; and a brief synopsis of the environmental, health and safety topics that typically surface when the use of artificial turfgrass is being considered. The preference of the Design Review Commission to promote the use of drought tolerant/native plants in residential front yards in lieu of artificial turfgrass was noted, as was the concern of the City arborist that the use of artificial turfgrass in the parkways would elevate soil temperatures, which may negatively impact the health of the City trees, including the potential loss of City trees.

Turning the focus to live plant alternatives, staff introduced principals from the Green Gardens Group ("G3"), a landscape consulting firm that provides water saving advisory services to customers of governmental agencies including the Metropolitan Water District and the Los Angeles Department of Water and Power. The G3 presentation tracked several landscapes through the transition from spray irrigated live turfgrass to drip irrigated and waterwise. Several practical water saving methodologies were discussed including land forming for water retention, soil modification and rain catching. Examples of printed resources produced by G3 for other agencies, which are also available via the internet, were provided for Council review.

In closing discussion on artificial turfgrass and natural landscape alternatives at the May 18, 2015 Study Session, Honorable Mayor Gold summarized the issues and suggested future discussion should focus on three considerations:

- Outside of requiring a few minor modifications, current City code is such that property owners can transition spray irrigated live grass areas to waterwise drought tolerant/California native plantings irrigated by a drip system. Councilmembers agreed that information should be provided to residents about drip systems including how long a drip system should run during an irrigation cycle.
- If artificial turfgrass is allowed in front yards, how will the City ensure that quality products are being installed and maintained to a standard that preserves the City's aesthetic quality while protecting the City against artificial turfgrass related risks?
- If artificial turfgrass is allowed in City parkways, how will trees be protected from decline and loss?

DISCUSSION

The following address the three issues stated above:

Does the current City municipal code enable property owners to effectively transition live grass lawn areas to waterwise drought tolerant/native plantings and produce the desired water savings targets in the future? Are minor modifications to the current municipal code required to enhance the ability of property owners to make waterwise changes?

While doing routine windshield surveys of the City's trees, staff has noted an increasing number of properties that have converted traditional live turfgrass areas to more drought tolerant plantings. While some property owners have decided to retrofit their overhead spray systems to a subterranean drip configuration, others have left the spray system in place to irrigate their new plantings. For example, residents report the cost to remove parkway grass and replace with a drought tolerant Dymondia ground cover ranging from $4.00 to $12.50 per square foot, with the higher cost including a change in the irrigation system from overhead spray to subterranean drip. Both property owners reported immediate water savings, which they felt would increase as the Dymondia plantings become established and require even less water (see Fig. 1).

Figure 1- Dymondia parkway planting, McCarty Drive

The only problem either of these sample property owners referenced in the interview was a question about the use of mulches to cover open dirt spaces while newly installed plants grow to become established and cover more ground. Current code classifies some materials which could be used as mulches under the category of "paving."

It is becoming increasingly apparent that as more of these aesthetically pleasing drought tolerant landscapes are installed throughout the City, neighbors are finding them attractive enough to consider conversion projects of their own. To encourage more residents to make the conversion from live turfgrass to drought tolerant landscapes in the interests of meeting water conservation targets, the City Council may consider the following:

- Provide a web-based plant list for drought tolerant landscapes which identifies durable and appropriate plants for specific uses in the landscape (e.g. low parkway plantings).
- Modifying current code to allow the use of stepping stones or pathways in no more than ten percent of the parkway surface to enhance pedestrian traffic flow from adjacent parking sites.
- Modify the landscape irrigation run time mandates to be appropriate for drip systems and low flow irrigation spray heads (i.e. after landscape is established, run times up to one hour for drip systems and 25 minutes for low flow spray heads on allowed water days).

In summary, an increasing number of live grass lawn to drought tolerant landscape conversions are being seen throughout the City. This trend indicates that some residents are willing to make an investment that will pay off in continued water savings while enjoying the aesthetic and environmental benefits of a live landscape. For the most part, these converted landscapes offer a better aesthetic than lawns which are currently receiving a fraction of the water they actually require to thrive during the hottest months of the year.

If artificial turfgrass is allowed in front yards, how will the City ensure that quality products are being installed and maintained to a standard that preserves the City's aesthetic quality while protecting the City against artificial turfgrass related risks?

At present, the City of Beverly Hills Municipal Code does not allow artificial turfgrass in residential front yards.

In response to the Governor's emergency drought declaration, governmental agencies throughout California are considering a number of water saving methods, including the expanded use of artificial turfgrass. Assembly Bill 1164 (AB 1164) includes language that looks to prohibit local agencies from enacting or enforcing any ordinance or regulation that prohibits the installation of synthetic grass or artificial turf on residential property. In turn, approximately $300 million would be appropriated over three years to provide matching funds for local incentives to replace water inefficient residential landscaping with drought tolerant landscaping.

During discussions on whether to expand the permissible use of artificial turfgrass to residential front yards in the City, several health and safety, including tree health and aesthetic concerns have been raised. In the interests of offering an option to those property owners who wish to consider the use of artificial turf in their private property yards as an effective means of reaching water use reduction targets, the City Council has requested that staff present a specification that is intended to ensure that those residents who might choose to use artificial turfgrass in front yard areas will install a high quality, long lasting product in a proper manner so as to avoid aesthetic problems (see Fig. 2), while limiting the City's exposure to risk liabilities.

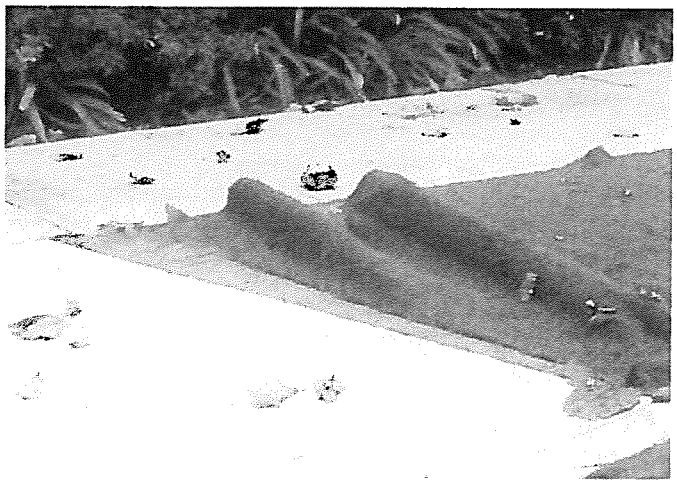


Figure 2- Poor quality artificial turfgrass installation

A sample specification from a landscape architecture firm that has designed several park and play area improvements in the City is attached. The specification is applicable for a residential application and requires an experienced contractor to properly install an environmentally friendly product with a 15 year warranty period and to provide a maintenance plant to ensure the long-term durability and aesthetic of the product.

The next step in allowing the use of artificial turfgrass in residential front yards would be to request the Planning Commission to develop an ordinance with new standards regarding the use of artificial turfgrass in residential front yards. Among the considerations in developing the ordinance would be defining what percentage of artificial turfgrass coverage in a residential front yard would be permissible and what proximities would need to be maintained in order to install artificial turfgrass into residential front yards without jeopardizing the health of any heritage and/or protected trees.

In summary, should the City Council choose to modify the Municipal Code to allow the use of artificial turfgrass in residential front yards, then it is recommended that stringent product, installation and maintenance specifications must be conditioned into a permitting process to avoid long-term aesthetic and liability problems.

If artificial turfgrass is allowed in City parkways, how will trees be protected from decline and loss?

The specification for the proper installation of a quality artificial turfgrass requires that the upper portion of the soil profile be removed and replaced. In addition, the specification requires that the sub-base material be compacted. Therefore, preparing the parkway for the proper installation of artificial turfgrass per specification will result in damage to tree roots and includes compacting soil above the remaining root system, which impedes both water and air flow. Finally, artificial turfgrass is known to elevate soil temperatures which will also have an ill effect on tree roots and ultimately, the City's parkway trees.

On June 23, 2015, the Recreation and Parks Commission moved unanimously (4-0) to not endorse the use of artificial turf in City parkways.

Considering the long-term effect on City trees, staff suggests that the City Council consider the use of artificial turfgrass in City parkways only as a last resort in water conservation and if used, require a separate tree irrigation system to provide for the proper irrigation needs of the parkway tree(s).

FISCAL IMPACT

Costs related to landscape improvements on residential properties and parkways are the responsibility of the property owner. There will be staff time and related costs should the City Council direct staff to modify the Municipal Code. In addition, code changes may require additional staff time and related costs for construction inspection and code enforcement activities related to the use of artificial turfgrass. Cost estimates will be provided once direction is received on whether or not a permitting process to allow for artificial turf installation is to be developed.

RECOMMENDATION

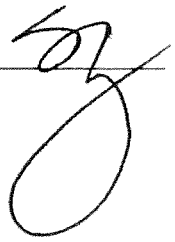
Staff seeks City Council direction in the following areas:

1. The modification of current municipal code and water restrictions to promote the conversion of residential live grass lawns and parkways to drought tolerant materials.

2. Modification of current municipal code to allow for the use of artificial turfgrass in residential front yards.

3. Modification of current municipal code to allow for the use of artificial turfgrass in City parkways.

Steve Zoet
Approved By



Attachment 1

STAFF REPORT

Meeting Date: May 18, 2015

To: Honorable Mayor & City Council

From: Trish Rhay, Assistant Director of Public Works Services - Infrastructure & Field Operations

Michelle Tse, Senor Management Analyst

Subject: Artificial Turf and Live Plant Alternatives for Residential Front Yards and Parkways

Attachments:
1. Synthetic Surface Heat Study
2. Safety Issues Related to Artificial Turf
3. Sample Parkway Design Guide

INTRODUCTION

This report is a follow-up to the City Council's direction from the April 21, 2015 Study Session to provide an overview of synthetic turf options and live plant alternatives for residential front yards and parkways.

DISCUSSION

During the April 21, 2015 Study Session, in response to a request by Councilmember Krasne, the City Council discussed the possible use of artificial turf in residential front yards and parkways to achieve water conservation. The discussion took place when the State declared a statewide water use reduction and is requiring the City to reduce water use by 36%. During the Study Session, the City Council directed staff to return with a review of synthetic turf options and live plant alternatives for use in both residential front yards and parkways.

The City's current Zoning Code limits the use of nonliving material in front yards. Thus, synthetic turf is limited to areas not visible from the public street. Parkways, the area between the outside edge of the sidewalk and inside edge of the curb, are a component of the public right-of-way. According to the Beverly Hills Municipal Code, the abutting property owner shall plant and maintain the parkway with grass or other plant material that is maintained at no more than six inches (6") in height as approved by the City's arborist. Changes in any of the existing regulations would require an amendment to the City's Municipal Code.

Both live plant and artificial turf presents advantages and disadvantages. The following is a summary of these considerations.

Artificial Turf	
Advantages	Disadvantages
• Requires relatively low maintenance • Requires considerably less water use than natural grass • Higher grade quality products have better aesthetics and look more like real grass • One-time installation cost	• Eventually deteriorates due to wear and tear; requires upkeep • If used in parkways, reduced water use will impact City trees • The manufacture and composition of synthetic turf (typically plastic), together with reduction in living plant material, could increase the community's carbon footprint • May trap heat, creating "heat islands"

Sample studies related to artificial turf are included in this report as attachments. One study reports that artificial turf creates "heat islands," with surface temperatures greater than asphalt and natural turf. There have also been reports that the rubberized infill made from recycled tires may contain carcinogens, posing health risks.

Parkways

If synthetic turf is allowed in parkways, the "heat islands" and reduced watering in these areas will impact the City trees planted in these areas. An alternative may be to use California native/drought tolerant plant options and include a drip irrigation system, which reduces overall water use while maintaining live landscaping. A sample Parkway Design Guide is included as Attachment 3, highlighting various ways in which drought tolerant and/or native plant alternatives can be used on parkways. A similar guide can be developed for both parkways and residential front yards.

Residential Front Yards

The Design Review Commission discussed the potential use of artificial turf on residential front yards during their May 7, 2015 meeting. The Commission prefers the use of drought tolerant/native plants over artificial turf. However if the City Council did allow for artificial turf, then the Commission recommends it would have to be a high quality turf product. The Commission also expressed there may be challenges with enforcing the use of high quality products.

The advantages and disadvantages for live plant alternatives are as follows:

Live Plant Alternatives	
Advantages	Disadvantages
• Requires less water than natural grass • Flexibility in design to promote live garden-like community • Large selection of native drought tolerant landscaping options • Native plants require less fertilizer and pesticides than natural grass	• Requires some maintenance (pruning, cutting, etc.) • May limit the yard's use as a recreational area • Initial cost of installation and some maintenance • Must be properly maintained and driveways kept clear to not be visual obstructions for vehicles and pedestrians

Staff has been working with Green Gardens Group ("G3"), a landscape professional group, to provide guidance and information on live plant alternatives that could be used to maintain the City's garden-like community while conserving water. G3 is one of the conservation program partners with Metropolitan Water District and is also working with Los Angeles Department of Water & Power ("LADWP") with their turf removal program.

G3 will be in attendance during the May 18, 2015 City Council Study Session to provide an overview of live plant alternatives that could be used in residential front yards and parkways. G3 will also highlight the distinctions between drought tolerant plant and native plant options.

FISCAL IMPACT

Costs related to landscape improvements on parkways and residential front yards will be borne by the resident. Any needed removal and replacement of impacted City trees along the parkway generally costs the City between $1,200 to $2,000 per tree.

RECOMMENDATION

Staff seeks City Council direction on the use of artificial turf or live plant alternatives in residential front yards and parkways.

George Chavez
Approved By

Attachment 1

"Synthetic Surface Heat Studies"

C. Frank Williams and Gilbert E. Pulley
Brigham Young University

Synthetic turf surfaces have long been regarded as a lower maintenance alternative to natural turf. However, synthetic surfaces like natural turf have their shortcomings. In the spring of 2002 a Field Turf synthetic surface was installed on one half of Brigham Young University's Football Practice Field. The other half of the installation is a sand-based natural turf field. Shortly after the Field Turf was installed football camps were started. The coaches noticed the surface of the synthetic turf was very hot. One of the coaches got blisters on the bottom of his feet through his tennis shoes. An investigation was launched to determine the range of the temperatures, the effect water for cooling of the surfaces, and how the temperatures compared to other surfaces.

On June of 2002 preliminary temperatures were taken at five feet and six inches above the surface and at the surface with an infrared thermometer of the synthetic turf, natural turf, bare soil, asphalt and concrete. A soil thermometer was used to measure the temperature at two inches below the surface of the synthetic turf. Also, water was used to cool the surface of the natural and artificial turf. It was determined that the natural turf did not heat up very quickly after the irrigation so only the artificial turf was tracked at five and twenty minutes after wetting. The results of the preliminary study are shocking. The surface temperature of the synthetic turf was 37° F higher than asphalt and 86.5° F hotter than natural turf. Two inches below the synthetic turf surface was 28.5° F hotter than natural turf at the surface. Irrigation of the synthetic turf had a significant result cooling the surface from 174° F to 85° F but after five minutes the temperature rebounded to 120° F. The temperature rebuilt to 164° F after only twenty minutes. These preliminary findings led to a more comprehensive look at the factors involved in heating of the artificial turf.

Three aspects of light were measured along with relative humidity. The synthetic surface was treated as two areas, the soccer field and the football field and the natural turf was one area. Four randomly selected sampling spots were marked with a measuring tape from reference points on the fields so it could be accessed for subsequent data collection. Bare soil, concrete, and asphalt sampling areas were selected and marked in a similar manner. The results are shown in table form below:

Table 1.

Surface	**Average Surface Temperature between 7:00 AM and 7:00 PM**	
Soccer	117.38° F	high 157° F
Football	117.04° F	high 156° F
Natural Turf	78.19° F	high 88.5° F
Concrete	94.08° F	
Asphalt	109.62° F	
Bare Soil	98.23° F	

Table 2.

Two inch depth	**Average Soil Temperature between 7:00 AM and 7:00 PM**	
Soccer	95.33° F	high 116° F
Football	96.48° F	high 116.75° F
Natural Turf	80.42° F	high 90.75° F
Bare Soil	90.08° F	

Table 3.

Shade	**Average Temperature between 9:00 AM and 2:00 PM**	
Surface Temperature of Natural Turf	66.35° F	high 75° F
Surface Temperature of Artificial Turf	75.89° F	high 99° F
Average Air Temperature	81.42° F	

Surface Temperature of A.T. (Artificial Turf) is significantly higher than air or soil temperature of A.T. The amount of light (electromagnetic radiation) has a greater impact on temperature of A.T. than air temperature. The hottest surface temperature recorded was 200° F on a 98° F day. Even in October the surface temperature reached 112.4° F. This is 32.4° F higher than the air temperature. White lines and shaded areas are less affected because of reflection and intensity of light. Natural grass areas have the lowest surface and subsurface temperatures than other surfaces measured. Cooling with water could be a good strategy but the volume of water needed to dissipate the heat is greatly lessened by poor engineering (infiltration and percolation).

Average air temperature over natural turf in the late afternoon is lower than other surfaces. Soil temperature of A.T. is greater than bare soil and natural turf. Humidity appears to be inversely related to surface and soil temperature. It is likely that energy is absorbed from the sunlight by the water vapor.

The heating characteristics of the A.T. make cooling during events a priority. The Safety Office at B.Y.U. set 120° F as the maximum temperature that the surface could reach. When temperature reaches 122° F it takes less than 10 minutes to cause injury to skin. At this temperature the surface had to be cooled before play was allowed to continue on the surface. The surface is monitored constantly and watered when temperatures reach the maximum. The heat control adds many maintenance dollars to the maintenance budget.

A budget comparison was made using actual dollars spent and for every dollar spent on the A.T. maintenance one dollar and thirty cents was spent on the natural turf (N.T.) practice field. While construction costs are very unbalanced, for every dollar spent on the N.T. eleven dollars and seventy-seven dollars were spent on the A.T.

The area under the carpet of BYU's installation is designed to move water from the surface and into an extensive drain mat system. This part of the installation is two thirds of the overall cost of the A.T. Thus, for a 2.5 million dollars installation approximately 1.7 million dollars go for the subsurface and drainage. The most interesting thing about this is that the drain mat probably sees little or n° water. The surface is hydrophobic and the undersurface is poorly engineered to favor water retention rather than drainage. That seems like a high price to pay for something that does not work!

Artificial turf surfaces have their place in the turf industry. They can work in environments where grass will not grow and are marginal. However, they are costly and not maintenance free. It is important to take all the factors in to consideration before making a large investment. Don't take the manufacture's word for the factors of concern i.e. don't let the fox guard the hen house. The propaganda on BYU's installation is charts with surface temperatures less than the air temperature and claims for drainage of 60 inches per hour. The question still remains is A.T. 11.47 times better than natural turf?

Attachment 2

The Washington Post

Early Lead

Is there a link between artificial turf and cancer in soccer goalies?

By Cindy Boren October 9, 2014

Every day, hundreds of thousands of soccer goalies come home from competing on artificial turf fields and remove rubber crumbs from their hair, mouths, nose and abrasions, shaking the stuff from their clothing and gear.

The particles, called butadiene rubber or "crumb rubber," is made from synthetic fibers and scrap tires. It raises dust over the fields and smells like, well, former tires. Now, a number of people are questioning the safety of fields that contain those crumbs and an NBC News report cited incidences of cancer specifically among goalies. Because of a lack of research, it is not clear whether there is a causal connection yet, but it's a question worth exploring because the material can contain benzene, carbon black and lead and it's prevalent on the soccer fields at schools and parks across the country. The turf is the latest iteration of the artificial playing surface, one that carried the promise of a softer impact for athletes — important in an era of increasing awareness of the dangers of concussions.

In 2009, Amy Griffin, the associate head soccer coach at the University of Washington, was visiting two female goalies who had been diagnosed with non-Hodgkin's lymphoma, when a nurse brought a disturbing trend to her attention. NBC's Hannah Rappleye reports:

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> Later, the young woman with the chemo needle in her arm would say, "I just have a feeling it has something to do with those black dots."
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> Artificial turf fields are now everywhere in the United States, from high schools to multi-million-dollar athletic complexes. As any parent or player who has been on them can testify, the tiny black rubber crumbs of which the fields are made — chunks of old tires — get everywhere. In players' uniforms, in their hair, in their cleats.

> But for goalkeepers, whose bodies are in constant contact with the turf, it can be far worse. In practices and games, they make hundreds of dives, and each plunge sends a black cloud of tire pellets into the air. The granules get into their cuts and scrapes, and into their mouths. Griffin wondered if those crumbs – which have been known to contain carcinogens and chemicals – were making players sick. "I've coached for 26, 27 years," she said. "My first 15 years, I never heard anything about this. All of a sudden it seems to be a stream of kids." Since then, Griffin has compiled a list of 38 American soccer players — 34 of them goalies – who have been diagnosed with cancer. At least a dozen played in Washington, but the geographic spread is nationwide. Blood cancers like lymphoma and leukemia dominate the list.

> *How Safe Is the #Artificial #Turf Your Child Plays On? http://t.co/7hR3qajfge @HRappleye reports. pic.twitter.com/oFpjpTwRkr*
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> *— NBC Investigations (@NBCInvestigates) October 8, 2014*

The turf, whether toxic or not, is also drawing attention as "the next battlefield for workplace gender discrimination," as Quartz puts it. FIFA plans to use the turf, rather than natural grass, for the women's World Cup next summer in Canada, a decision that prompted a lawyer representing Abby Wambach and other stars to file a lawsuit in the human rights tribunal of Ontario. The issue gained traction when Sydney Leroux tweeted a photo of her legs after a game — and it was immediately shared by Kobe Bryant, Kevin Durant and others.

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Whether there are greater dangers to health, though, is uncertain. "NBC's own extensive investigation," Rappleye writes, "which included a review of the relevant studies and interviews with scientists and industry professionals, was unable to find any agreement over whether crumb turf had ill effects on young athletes, or even whether the product had been sufficiently tested."

While more testing is needed, New York City moved to stop installing crumb rubber fields in its parks in 2008 and the Los Angeles Unified School District did the same in 2009. In Maryland, the Safe Healthy

Playing Fields Coalition supports legislation to require warning signs at artificial turf fields and opposes a bill to use state funds to construct artificial turf fields.

Meanwhile, Griffin continues to do her own research on the topic, telling Rappleye that she sends crumbs from each field her team plays on to a lab for testing.

"I'm looking for answers, because I'm not smart enough to come up with them on my own," Griffin said. "I would love someone to say, 'We've done some tests and we've covered all of our bases — and, yes, it's safe.' That would be awesome. I would love to be proved wrong."

Attachment 2

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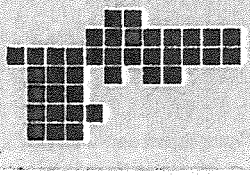
Attachment 3

PARKWAY DESIGN GUIDE



City of West Hollywood
March 2010

WHY ARE PARKWAYS IMPORTANT? 1

The parkway is the strip of land between the street and the walkway. In other geographic regions, it is known as tree lawn or planting strip. The parkway and walkway together make up the sidewalk, which is part of the public right-of-way. Street trees are planted in the parkway and are the most important plants in the parkway.

Parkways are important to individual property owners and the City as a whole for the following reasons:

- Parkways provide soil volume that street trees need to grow into healthy, mature trees that provide shade, collect stormwater, consume carbon and provide other environmental and health benefits.
- Parkways can collect stormwater and irrigation runoff and return it to the groundwater table.
- Parkways provide a buffer between pedestrians on the walkway and cars in the street.
- Parkways improve the curb appeal of your home, potentially increasing its value.
- Parkways provide a buffer between pedestrians on the sidewalk and cars in the street.
- Parkways enhance the visual quality of the city.

In West Hollywood, the adjacent property owner is responsible for maintaining all of the parkway except the street trees, which are maintained by the City. They can only be planted, trimmed and removed by the City and not by private property owners.

Parkways can be designed in a variety of ways, depending on the individual property owner's design objectives and commitment to maintenance. However, all parkways should require relatively little supplemental water, little mowing and little fertilizing to reduce their carbon footprint. In particular, conventional grass parkways that require high levels of supplemental water and regular mowing and fertilizing should be avoided. West Hollywood property owners are encouraged to covert their conventional grass parkways (and front yards) into drought-tolerant, sustainable parkways (and front yards). This brief document provides guidance for making that transition.

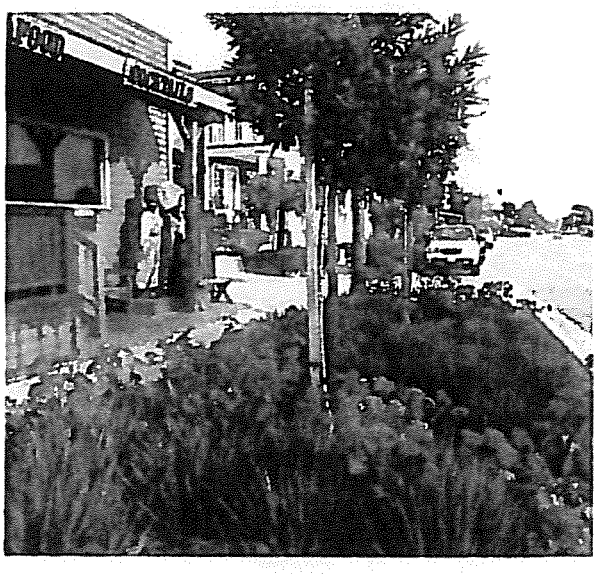
Typical residential parkway of the past, based on those on the East Coast and Midwest where supplemental irrigation typically is not required and where parkways are called "tree lawns."

In Southern California, we need to reduce the use turf grass to reduce water use and the greenhouse gases generated by lawn mowers. The parkway of the future will be drought tolerant, collect runoff and require minimal gas or electric powered maintenance

2 PARKWAY DESIGN CRITERIA

To reduce water use and carbon emissions and provide storm and irrigation water infiltration, soil volume for street trees, a buffer between pedestrians and the street, pedestrian access between the street and walkway, visibility of both motorists and pedestrians, erosion/fugitive dust control, and the visual benefits of landscaped parkways, all parkways shall be:

- As wide as possible up to 8' wide, given minimum walkways widths of 4' in residential zones and 5' in commercial zones.
- At the same elevation as the curb and walkway within 6" of them, for example, soil 2" below edge of curb and walkway elevations and covered with 2" of mulch, so the surface elevations of the walkway or curb and adjacent parkway are the same.
- At least 75% unpaved and either 1) slightly swaled, that is, sloping a few inches to the center at not more than a 3:1 slope, to collect storm and irrigation water if the plant materials in the parkway are not walkable or 2) at the same finished elevation as the walkway if the plant materials in the parkway are walkable.
- Irrigated in a manner that results in no overspray onto the walkway or street, e.g., buried in-line drip, and consistent with the City's landscape ordinance and State Model Landscape Ordinance (9-10-09).
- At least 50% covered with plant materials, which 1) do not require mowing more frequently than once every few months, 2) are drought tolerant and can survive with irrigation only occasionally from November - March, once a week April - June, and twice a week July - October (for example, plants listed in WUCOLS III[1] as having Moderate, Low or Very Low water use- see Table 1 for examples), 3) do not exceed a height of 2' within 5' of a driveway/curbcut and, excluding trees, 4' elsewhere, 4) do not have thorns or sharp edges adjacent to any walkway or curb, and 5) are located at least 4 feet from any tree trunk.
- Where unpaved, covered with a permeable natural material, e.g., mulch, stabilized decomposed granite, gravel, or stones, that prevent erosion and dust.



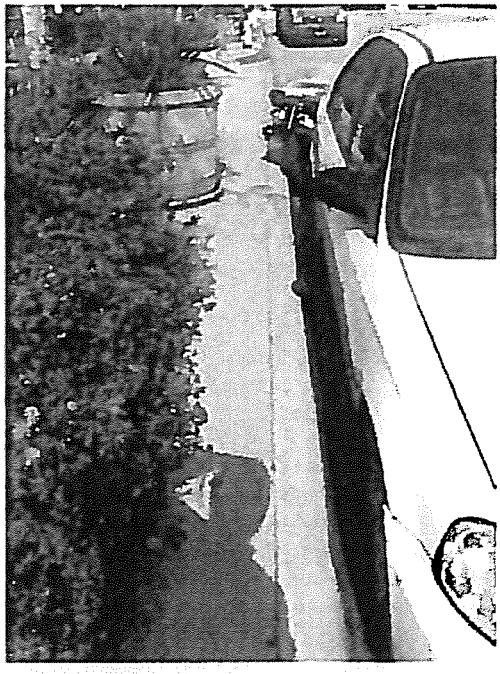
[1] WUCOLS, an aconym for Water Use Classification of Land scape Species, can be downloaded at http://www.water.ca.gov/wateruseefficiency/docs/wucols00.pdf

For parkways adjacent to curbside parking, if the parkway planting is not walkable (see Table 1 for examples of plants that are walkable) , a means of access from the curb to the walkway shall be provided . It may vary with the adjacent use and street characteristics, for example:

- On heavily trafficked streets (major and minor arterials), an 18" wide paved, walkable strip along the back of the curb that is at the same finished elevation as the curb should be provided.
- Where there are striped curbside parking spaces, a path across the parkway should be provided every two cars between two marked spaces.
- Adjacent to single-family homes and low-density multi-family housing (2 to 4 units/5,000 SF lot), stepping stones or a walkway across the parkway should be provided every 50 feet.

Where there is no curbside parking and the parkway is not walkable, a path or stepping stones shall be provided every 50 feet.

As specified on page 2, plants with thorns should not be planted adjacent to any walkway where someone might come in contact with the thorns.



A "landing strip" at the curb allows easy access from parked cars

A path across the parkway completes access from parked cars to the walkway

3 DESIGNING YOUR PARKWAY

WHAT'S YOUR TYPE?

Type 1 Parkway - Low-Maintenance, Walkable Plants

If you want a parkway that requires minimal design and maintenance, install walkable plants. Table 1 lists some examples. Most of the grasses listed do not require mowing. Sedge, Buffalo and Grama Grass can be mowed a few time a year to maintain a lawn-like appearance.

Type 2 Parkway - Low-Growing, Low-Maintenance Plants

If you want a parkway that requires a little more design and the addition of a walkway or stepping stones, but still requires minimal maintenance, plant low-growing grasses and/or groundcover. There are many choices; Table 2 lists some of them. Your parkway might be meadow-like in appearance with a mix of grasses and perennials, including some from Table 1 and some from Table 2.

Type 3 Parkway - Complement Your Front Yard

If you want a parkway that is an extension of your sustainable, non lawn front garden, use low- to medium-height grasses, shrubs and perennials. There are many plant choices with this parkway type. Table 3 lists some reliable drought-tolerant natives that are taller - but still less than 3 feet tall - that can be mixed in with plants in Table 2.

Note: there are many other plants that are suitable for parkways, which you can find in the on-line resources. Email us your parkway success stories and we will add them to the parkway list.

DIGGING IN

Preparing Your Parkway Soil

The most important thing you can do to ensure your parkway's success is to prepare the soil. Soil preparation saves you money in the long run because it reduces the need to replace plants, lowers water use and reduces fertilizer applications.

- Remove all existing turf - let it die and dig it out.
- Remove enough soil to create the swale described on page 2 and then remove 2-3" more.
- Till the parkway soil to depth of one foot.
- Amend it with compost.

Watering Your Drought-Tolerant Parkway

Too much water can kill drought-tolerant plants. So, don't over-water, especially in clay soil. The best approach is to water only when the soil is dry at a depth of 3" to 4". Or, turn on your in-line drip irrigation three times a week (45 minutes each time) to establish your parkway (first 3 months); then, once it is established, once a week from October through March and twice a week from April through September.

On-Line Resources

Use these resources see see images, recommended spacing, and detailed descriptions of these plants and others:

bewaterwise.com
theodorepayne.org
elnativo.com
smggrowers.com
monrovia.com
sunset.com and *Sunset Garden Book*
California Native Plants for the Garden Bornstein et al.

Table Legend
N = California or Southwest native
L= Low water use
M = Moderate water use
o.c. = on center

Table 1. Example Type 1 Walkable Plants - No Path Required

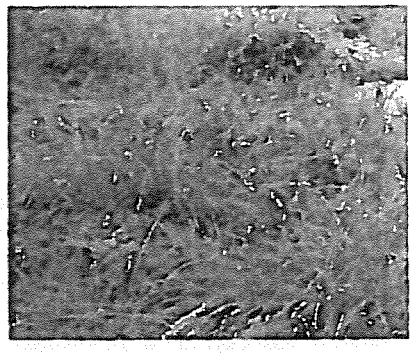
Botanical Name	Common Name	Water Use	Height x Spacing	Notes
Low Water Use/Low or No Mow Turf or Grass-like Perennials				
Buchloe dactyloides UC Verde™	UC Verde™ Buffalo Grass	N, L	6" x 6"	winter dormant (brown)
Bouteloua gracilis 'Hachita'	'Hachita' Blue Grama Grass	N, L	6" x 6"	
Carex pansa (*C. praegracilis*)	California Meadow Sedge	N, M	6" x 9"+	Grows in shade or sun
Low-Growing Perennials (12 inches or less)				
Achillea millifollium cultivars	Achillea cultivars	L	12" x 3'	mow 3-4x/year
Chamaemelum nobile	Chamomile	M	8" x 12"	
Dymondia margaretae	Dymondia	L	3" x 6"	slow growing

Other untested ideas: there are several lawn substitute seed mixes, including Fleur de Lawn and Ecology Lawn, that may work.

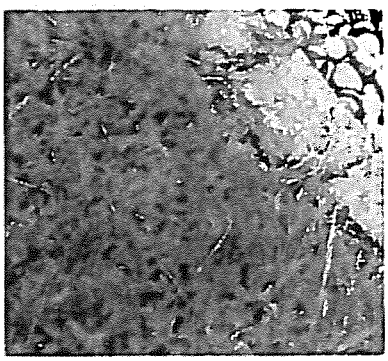
Buchloe dactyloides UC Verde™

Bouteloua gracilis 'Hachita'

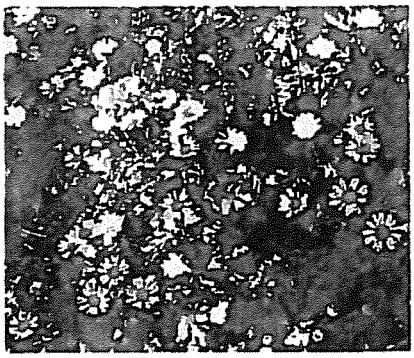
Carex pansa (*C. praegracilis*)



Achillea millifollium cultivar mowed



Chamomile

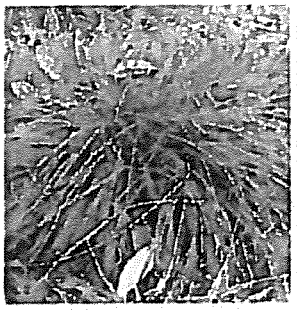


Dymondia margaretae

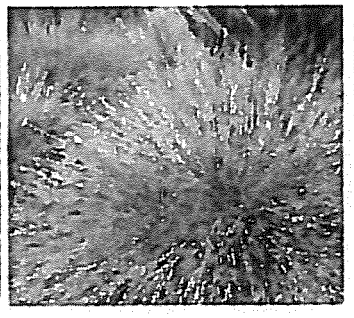
Table 2 Example Type 2 Low-Growing, Low-Maintenance Plants - Path Required

Botanical Name	Common Name	Water Use	Height x Spacing	Notes
Low-Growing Grasses or Grass-like Perennials (18 inches or less)				
Carex divulsa (C. tumincola)	Berkeley Sedge	N, M	12" x 2'	
Festuca glauca 'Siskiyou Blue' & other var.	Blue Fescue	M	12" x 12"	
Pennisetum alopecuroides 'Little Bunny'	Little Bunny Fountain Grass	L	12" x 12"	
Sesleria autumnalis	Autumn Moor Grass	M	15" x 2'	
Low-Growing Perennials/Succulents (18 inches or less)				
Achillea millifollium 'Terra Cotta'	Yarrow Terra Cotta & other cultivars	L	12" x 4'	mow 1/year for meadow
Aptenia cordifolia/A. cordifolia 'Red Apple'	Heartleaf Ice Plant	L	6" x 12"	
Delosperma cooperi	Trailing Ice Plant	L	8" x 15"	
Drosanthemum floribundum	Rosea Ice Plant	L	8" x 15"	
Dudleya hassei	Santa Catalina Live Forever	N, VL	8" x 18"	
Erigeron karvinskianus & E.glaucus	Santa Barbara & Seaside Daisy	N,M	12" x 2'	
Fragaria vesca ssp. Californicia or *F. chiloensis*	Woodland or Coastal Strawberry	N, M	8" x 2'	Grows in shade
Gazania rigens leucolaena	Gazania (grayish lvs.)	M	6" x 2'	
Gazania linearis 'Colorado Gold'	Colorado Gold Gazania (green lvs)	M	6" x 2'	
Hypericum calycinum	Creeping St. Johnswort	M	12" x 12"	Clip yearly; likes shade
Iris douglasiana & 'Pacific Coast Hybrids'	Douglas & Pacific Coast Iris	N, M	12" x 18"	Mix with grasses
Lantana Patriot series cultivars	Dwarf Lantana	L	12" x	
Lessingia filaginifolia 'Silver Carpet'	Beach Aster	L	12" x 4'	
Monardella villosa	Coyote Mint	N, VL	15" x 2'	
Nepeta mussinii (N. faassenii)	Catmint	M	15" x 18"	
Osteospermum fruitcosum	Trailing African Daisy	L	6" x 18"	
Oenothera caespitosa & other species	Tufted evening primrose	N,L	12" x 2'	
Rosmarinus officinalis 'Huntington Carpet' or other prostrate varieties	Prostrate Rosemary	L	18" x 2'	
Scaevola aemula varieties	Fairy Fan Flower		8" x 2'+	
Senicio serpens, S. mandraeliscae	no common name	L	12" x 2'	
Thymus species	Thyme	M	8" x 2'	
Verbena peruviana & hybrids	Verbena	L	6" x 2'	
Vinca minor	Dwarf Periwinkle	M	12" x 4'	Plant in shade
Low-Growing Shrubs (18 inches or less) - all require regular trimming at parkway edges				
Ceanothus 'Centennial'		N, L	18" x 4'	needs good drainage
Cotoneaster dammeri 'Lowfast', *C. salicifolia* 'Repens', *C. apiculatus* 'Tom Thumb'	Groundcover Cotoneaster varieties	M	18" x 4'	
Juniperus horizontalis & J. procumbens var.	Groundcover Juniper varieties	L	6-18" x 4'	see Sunset for list

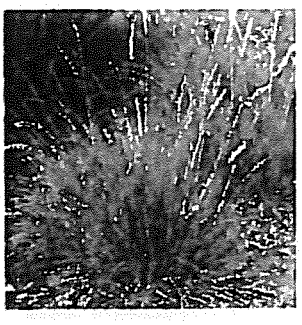
Carex divulsa



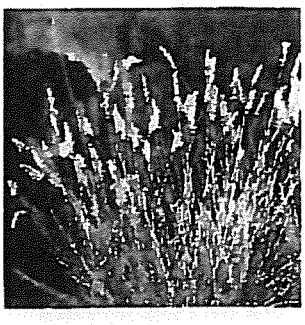
Festuca glauca



Sesleria autumnalis

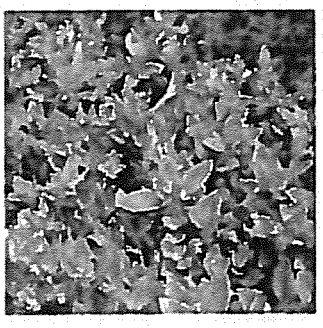


Pennisetum 'Little Bunny'



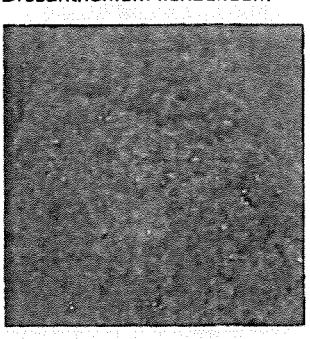
Achillea 'Terra Cotta'

Apena cordifolia 'Red Apple'



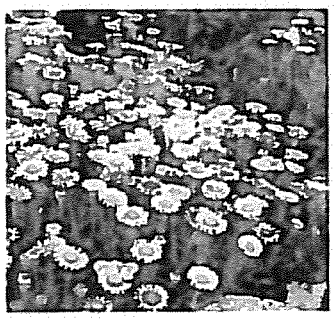
Delosperma cooperi

Drosanthemum floribundum



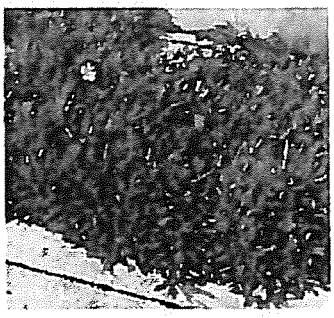
Dudleya hassei

Erigeron glaucus 'Wayne Roderick'



Gazania rigens leucolaena

Gazania linearis



Fragarea chiloensis

Hypericum calycinum

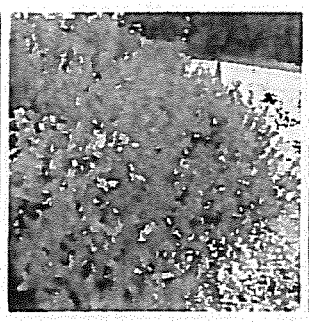
Iris douglasiana

Lantana 'Patriot Rainbow'

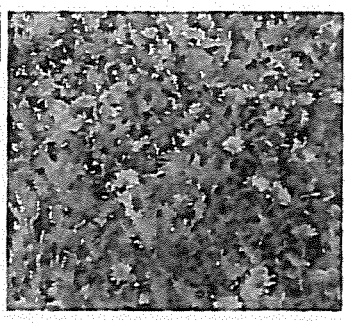
Lessingia filaginifolia 'Silver Carpet'

Mondardella villosa

Nepeta mussinii

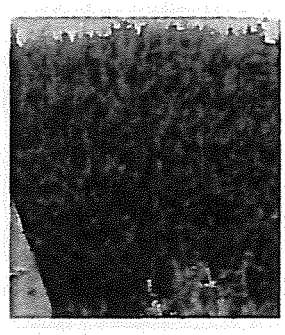


Osteospermum fruitcosum

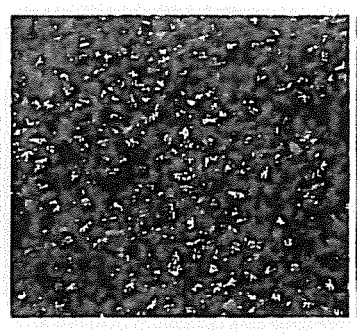


Oenothera caespitosa

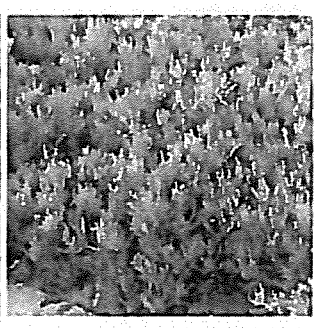
Rosmarinus officinalis



Scaevola aemula

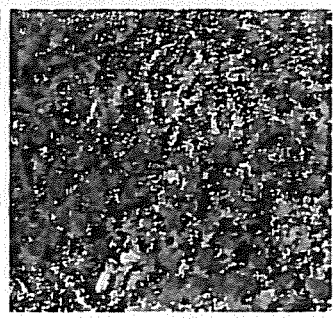


Senicio mandraeliscae

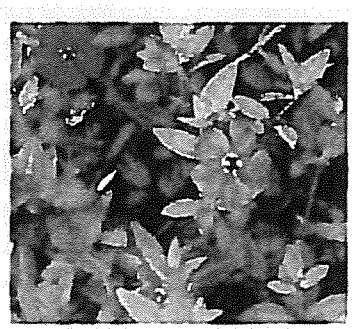


Thymus

Verbena peruviana varieties

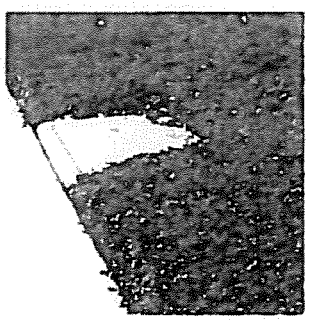


Vinca minor



Ceanothus 'Centennial'

Cotoneaster dammeri



Juniperus procumbens

Juniperus horizontalis var.

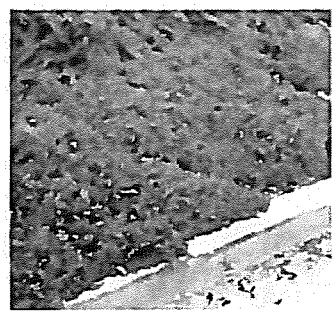
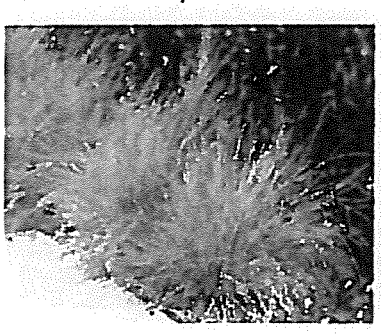


Table 3 Example Type 3 Medium Height, Drought Tolerant Plants - Path and More Maintenance Required

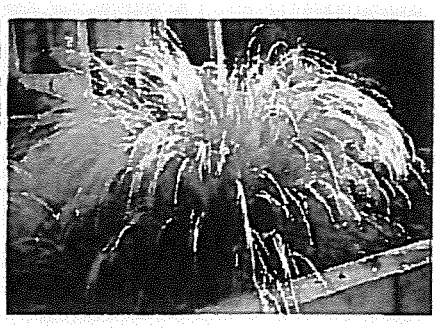
Botanical Name	Common Name	Water Use	Height x Spacing	Notes
18" to 36" Tall Grasses				
Helictotrichon sempervirens	Blue Oat Grass	L	2' x 2'	
Leymus condensatus 'Canyon Prince'	Canyon Prince Wild Rye	N, L	2' x 3'	
Nasella tenuissima (Stipa tenuissima)	Mexican Feather Grass	N,V L	2' x 2'	
Pennisetum orientale	Oriental Fountain Grass	L	18" x 18"	
Pennisetum setaceum 'Eaton Canyon'	Dwarf Red Fountain Grass	L	2' x 3'	
18" to 36" Tall Perennials/Succulents				
Aloe 'Blue Elf' & other small varieties	Blue Elf Aloe	L	18" x 18"	
Anigozanthos 'Bush Pearl', 'Bush Ranger' & 'Bush Devil'	Kangaroo Paws varieties		2' x 2'	
Limonium perezii	Statice	L	2' x 3'	+ flower height
Lomondra longifolia 'Breeze' & 'Little Con'	Lomondra cultivars	M	2' x 3'	
Penstemon heterophyllus 'Margarita BOP'	Foothill Penstimon	N, M	18" x 18"	
Phormium 'Tom Thumb' & 'Jack Spratt'	Small Flax hybrids	M	2' x 2'	
18" to 36" Tall Shrubs				
Arctostaphylos densiflora 'Pacific Mist'		N, L	2' x 6'	
Artemisia pycnocephala 'David's Choice'	David's Choice Sandhill Sagebrush	N,	2' x 3'	
Ceanothus gloriosus 'Anchor Bay'		N, L	2' x 6'	
Cistus salvifolius	Sageleaf Rockrose	L	2' x 3'	
Iva hayesiana	Poverty Weed	N, VL	2' x 3'	
Lantana montevidensis	Trailing Lantana	L	2' x 3'	Cut back yearly
Lantana 'Gold Rush', 'New Gold' & 'Chapel Hill Yellow'			2' x 3'	Monrovia
Mimulus hybrids inc. 'Jelly Bean Yellow'	Shrubby Monkeyflower hybrids	N, L	2' x 3'	
Rosa Flower Carpet varieties	Groundcover Roses	M	2' x 3'	Monrovia
Salvia apiana	White Sage	N, VL	3' x 4'	
Salvia 'Bee's Bliss'	Bee's Bliss Sage	N, L	2' x 4'	
Verbena lilacina & V. lilacina 'De La Mina'	Lilac Verbena	N, L	3' x 3'	

Helictotrichon sempervirens

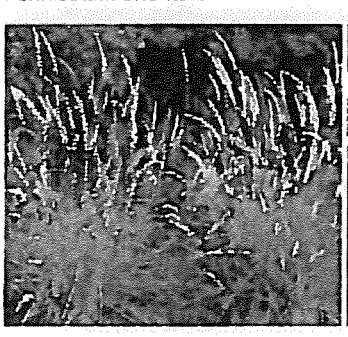


Leymus condensatus 'Canyon Prince'

Nasella tenuissima



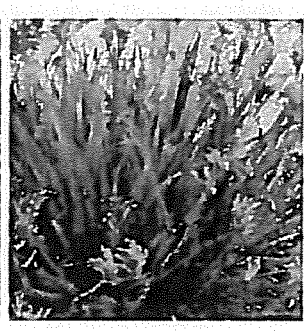
Pennisetum orientale



Pennisetum setaceum 'Eaton Canyon'

Aloe 'Blue Elf'

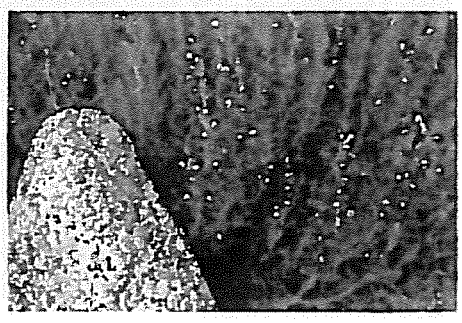
Anigozanthos 'Bush Pearl'



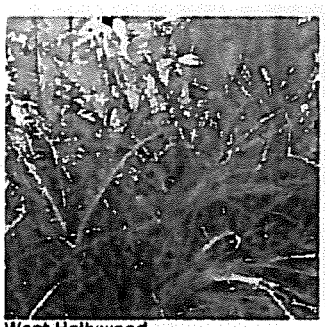
Limonium perezii

Lomondra longifolia 'Breeze'

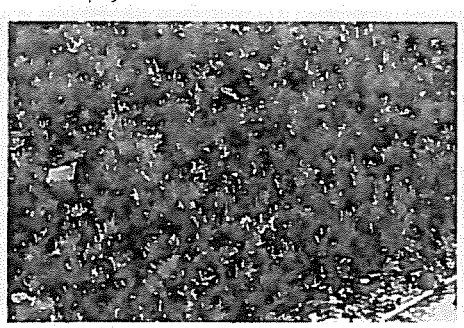
Penstemon heterophyllus 'Margarita BOP'



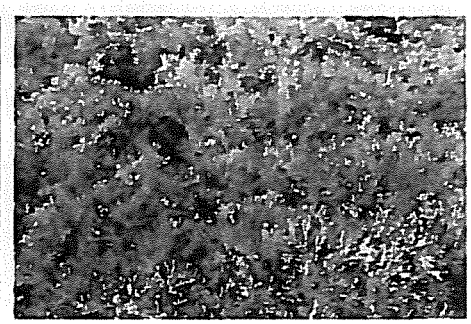
Phormium 'Jack Spratt'



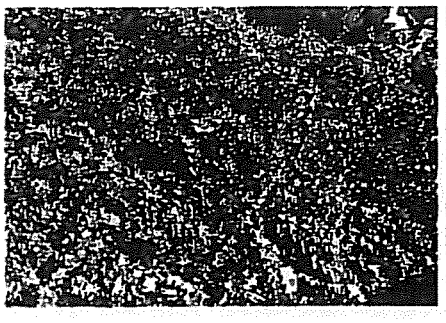
Arctostaphylos densiflora 'Pacific Mist'

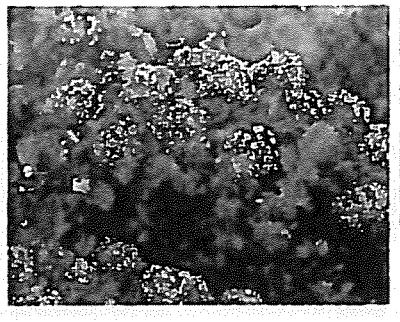


Artemisia pycnocephala 'David's Choice'



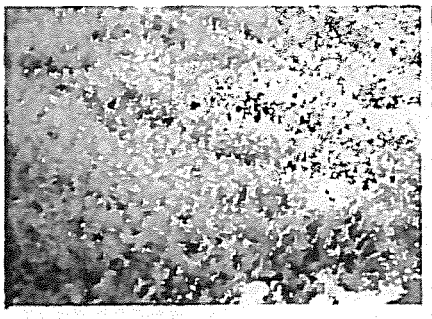
Ceanothus gloriosus 'Anchor Bay'





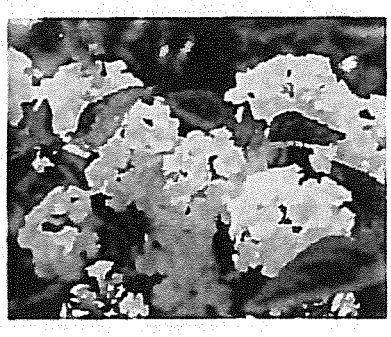
Cistus salvifolius

Iva hayesiana



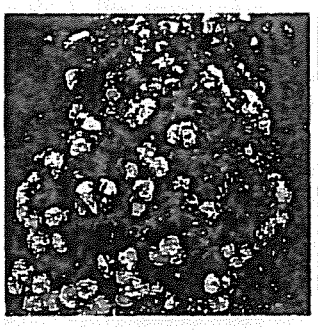
Lantana montevidensis

Lantana 'Gold Rush'



Mimulus 'Jelly Bean Yellow'

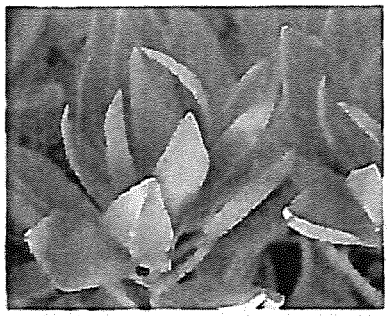
White Flower Carpet Rose



Red Flower Carpet Rose

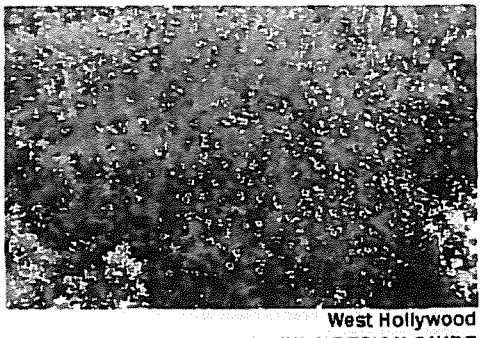
Amber Flower Carpet Rose

Salvia apiana



Salvia 'Bee's Bliss'

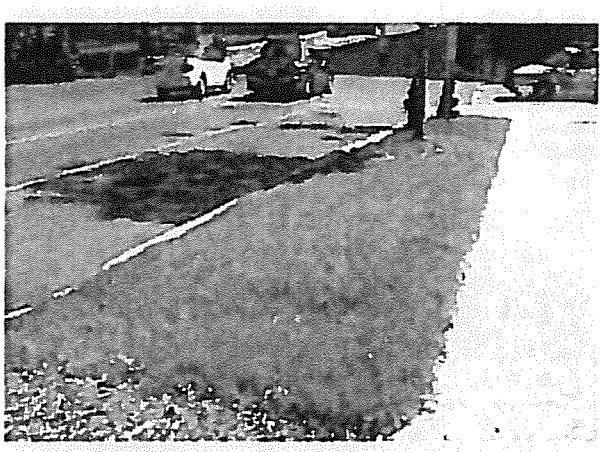
Verbena lilacina



4 EXAMPLES

Good Examples of Type 1 Parkways (Walkable Plants)

California Meadow Sedge (*Carex pansa*) can manage with little or no supplemental water from November - April and irrigation once a week the rest of the year. It can be mowed a few times a year for a more lawn-like appearance.



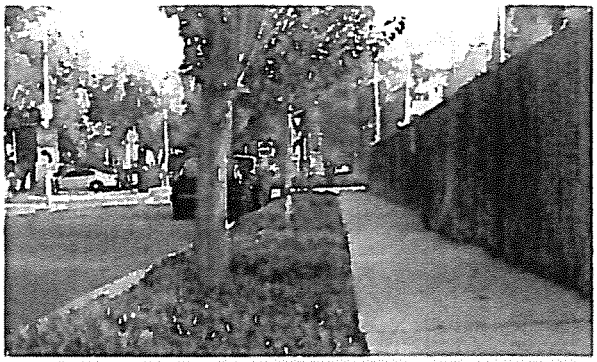
UC Verde Buffalo grass (*Buchloe dactyloides* UC Verde™) is a drought-tolerant cultivar of Midwest native Buffalo grass

Dymondia (*Dymondia margaritae)* (Rangley Ave.) is a low growing, walkable groundcover

Regularly mowed Yarrow (*Achillea millifolium)* is lawn-like.

Good Examples of Type 2 Parkways

Berkeley Sedge (*Carex divulsa*) (Westmount Drive) requires very little care and similar water to California Meadow Sedge.



Gazanias (Norwich Dr.) are a reliable relatively drought-tolerant groundcover that tolerates light traffic.

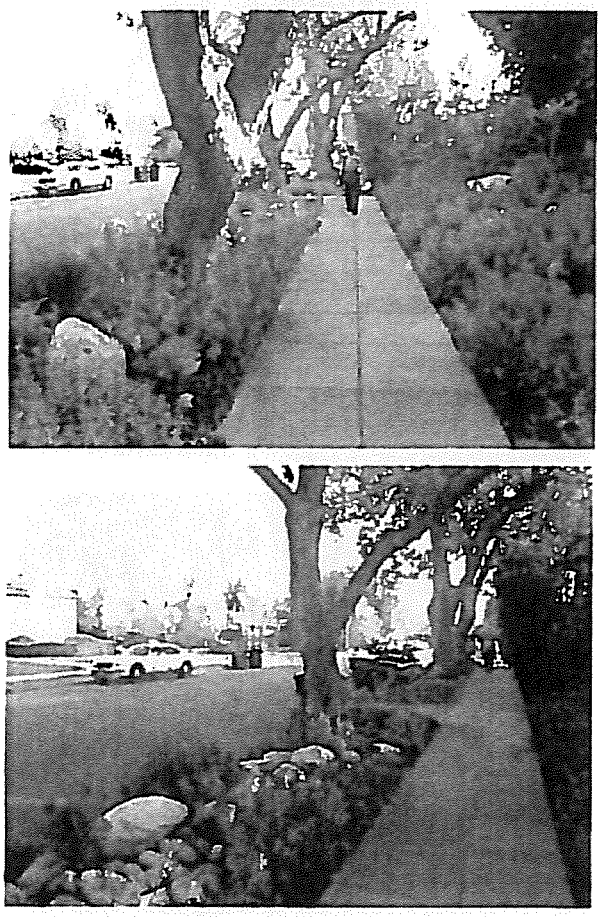
Autumn Moor Grass (*Sesleria autumnalis*) requires very little care and similar water to the Sedges.

A prostrate Rosemary like 'Huntington Carpet' (Poinsettia Dr.).

Blue Fescue (*Festuca* cultivars) (Dorrington Ave.) require good drainage and tolerate some shade

Dwarf Periwinkle (*Vinca minor*) is a good choice for a shady parkway.

Good Examples of Type 3 Parkways: Perennial Gardens



This mix of drought-tolerant perennials (Orlando Ave.) extends the front yard landscaping to the curb and incorporates river rock. It is beautifully maintained and would be a perfect example if the parkway were swaled rather than mounded

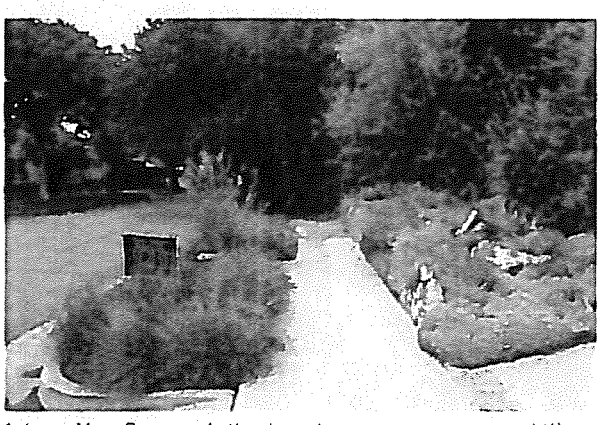
This mix of fairly drought tolerant perennials (Westbourne Dr.) provides color to brighten the street and includes a pathway.

Other Good Examples

Mexican Feather Grass (*Nasella tenuissima)* (Poinsettia Drive) needs to be cut back to about 9" high every winter. It self-seeds and spreads but can be managed

Native Deer Grass(*Muhlenbergia rigens)* needs a wide parkway.

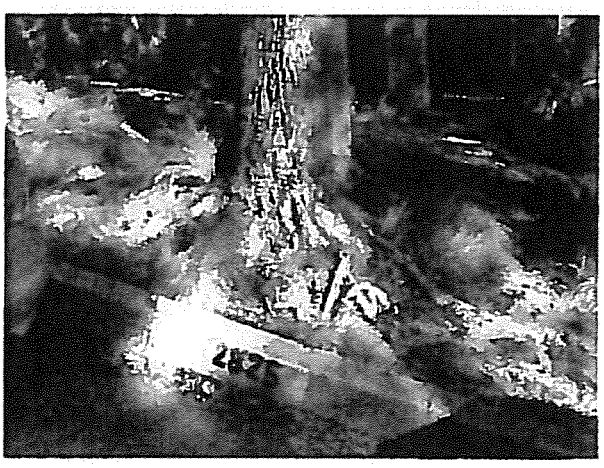
Lantana needs to cut back so it does not become too tall and woody



Autumn Moor Grass and other low, clumping grasses require little maintenance

Special Parkway Conditions

Pots or other elements may be appropriate in some locations. An encroachment permit is required for elements other than plants and paving.



While plants should not placed within 4' of a tree trunk to reduce competition for nutrients, grasses and clumping perennials may be planted between large surface roots farther away, provided they do not adversely affect the tree.

Attachment 2

SHAW/YODER/ANTWIH, inc.
LEGISLATIVE ADVOCACY • ASSOCIATION MANAGEMENT

DATE: June 23, 2015

TO: Cheryl Friedling,
Deputy City Manager
City of Beverly Hills

FROM: Andrew K. Antwih, Partner
Shaw / Yoder / Antwih, Inc.

SUBJECT: AB 1164 (Gatto) – Water conservation: drought tolerant landscaping

Purpose: Assembly Bill 1164 would prohibit a local government from enacting or enforcing any ordinance or regulation that prohibits the installation of synthetic grass or artificial turf on residential property, and would appropriate $300 million over three years to provide matching funds for local incentives to replace water inefficient residential landscaping with drought tolerant landscaping.

Background: With the state's historic drought entering its fourth year, government entities at all levels are considering methods to cut back on water use. Governor Brown has called for a 25% reduction in urban water use and approved emergency regulations to meet that reduction goal, including compelling the replacement of 50 million square feet of lawns throughout the state.

Many Californians have decided to replace their lawns with more drought tolerant landscaping options, including artificial turf and drought resistant plants, and many of them are able to take advantage of local turf removal rebate programs like the one operated by the City of Beverly Hills. However, some local governments and homeowner associations (HOAs) have placed bans on artificial lawns, citing aesthetic, property value, or safety-related reasons while defending their local control over these issues.

This bill would prevent artificial turf bans by local governments, including cities and counties. It should be noted that one city that has received attention for its ban is the City of Glendale, which is located in the author's district. Another bill, AB 349 (Gonzalez), would similarly prevent bans for HOAs. That bill passed the Senate Committee on Transportation and Housing on June 23 by a unanimous vote of 11-0, and the Governor, who previously vetoed a similar bill, has displayed openness to it in light of the continuing drought. Asm. Gonzalez is also the coauthor of AB 1164.

This bill has an urgency clause, meaning that it would take effect immediately, and also that it would require a 2/3rds vote in both houses of the Legislature to pass.

Impact: This bill would prevent the City of Beverly Hills from prohibiting the installation of synthetic grass or artificial turf on residential property. If the bill passed, the City's turf removal

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Sacramento, CA 95814

rebate program would likely be eligible for state matching funds from the State Water Resources Control Board.

Recommendation: Beverly Hills has been required by the state to reduce its water consumption, much of which is related to lawn upkeep, by 36%. The City has already put a number of new restrictions in place in response to this requirement. The City should consider the importance of retaining local control over housing requirements while remaining sensitive to the urgent need to achieve its reduction targets and prepare for continuing drought conditions. It should also consider the financial benefits of matching funds for the turf removal rebate program. We would recommend a **watch** position for now, and we would also note that the League of California Cities has not yet taken a position.

Status: AB 1164 passed the Assembly before the current language of the bill was amended in on June 22. It is currently pending before the Senate Committee on Transportation and Housing. It is likely that this bill will be sent to the Governance and Finance committee, which would have more significant jurisdiction over this policy. It will have to return to the full Assembly for a vote if it passes the Senate.

Support/Opposition:
Support: None yet registered.

Oppose: None yet registered.

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Sacramento, CA 95814

Attachment 3

SECTION 32 18 16
SYNTHETIC GRASS SURFACING SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

A. Section includes synthetic grass surfacing for installation with accessories as indicated on the Drawings and specified herein.

1.3 SYSTEM DESIGN

A. The synthetic grass surfacing system shall be specifically designed and recommended by the manufacturer for use specified on the plans.

B. The synthetic grass surfacing system shall be constructed to maximize dimensional stability, to resist damage during normal use, and to minimize UV degradation, including fading.

C. The synthetic grass surfacing system shall be resistant to staining, weather, insects, rot, mildew, and fungus growth, and shall be non-allergenic and non-toxic.

1.4 ACTION SUBMITTALS

A. Product Data: Submit manufacturer's product data, specifications and installation instructions for each product specified.

1. Include sources for component materials.

B. Material Certificates: Signed by manufacturer, certifying the materials and system proposed for the project comply with the specified performance criteria.

C. Shop Drawings: Submit shop drawings that include scaled plans, sections, and large-scale details showing the installation and attachment of the synthetic grass surfacing system.

1. Include locations of all seams in fabric surfacing.

D. Samples:

1. 18 inch by 18 inch samples showing details of finished installation. Include an example of a field joined seam between adjacent rolls and outside edge attachment.

1.5 INFORMATIONAL SUBMITTALS

A. Qualifications for Installer.

B. Qualifications for Manufacturer.

C. Maintenance Data: For synthetic grass surfacing system and maintenance equipment, to be included in maintenance manuals. Include the following:

1. Manufacturer's written instructions manual for routine cleaning, adjustment, grooming, and other maintenance procedures. Include activities and procedures that could be detrimental to the synthetic grass surfacing system and should be avoided.
2. Owner's manuals for field grooming and sweeping equipment.
3. Warranty information for field grooming and sweeping equipment.

D. Project Record Drawings: Record actual locations of seams and drains on the Record Drawings.

E. Warranty: 3 signed copies of signed warranty.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Firm specializing in the manufacturing of synthetic grass surfacing for a minimum of five years and who has completed work similar in design and extent to that required for the project and whose work has resulted in construction with a record of successful in-service performance.

B. Installer Qualifications: Firm experienced in the installation of synthetic grass, who is certified by the synthetic grass manufacturer to install their materials, who has successfully installed work similar in design and extent to that required for the project, in not less than 10 projects of similar scope, to the satisfaction of the Owner, in the last three years, who employs trained workmen that are experienced in the installation of the synthetic grass system proposed for the project, and whose work has resulted in construction with a record of successful in-service performance.

C. Single-Source Responsibility: Obtain synthetic grass surfacing system materials, including drainage mat, adhesives and seaming materials, from a single manufacturer regularly engaged in manufacturing the materials.

D. Pre-installation Conference: Prior to the start of the synthetic grass surface system work, coordinate a conference, to be held at the Site, in accordance with Section 01 31 00, Project Management and Coordination, to review the construction schedule, availability of materials, installer's personnel qualifications and experience, equipment and facilities needed to make progress and avoid delays, installation procedures, testing, inspection, and certification procedures, and coordination with other work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to the site in original, unopened containers, wrapping, or packaging, with manufacturer's labels intact, identifying project, material, and production run or lot number for fabric roll.

B. Immediately following delivery, inspect materials and components for damaged or defective items, including materials that are not uniform in color, out of tolerance regarding edge alignment and minimum pile height. Materials that are found to be damaged or defective shall be replaced at no additional cost to the Owner.

C. Store materials in a secure, dry, well-ventilated location where protected from weather, exposure to UV, soil, dust, moisture and other contaminants. Store fabric rolls horizontally, on a flat surface.

D. Handle according to manufacturer's recommendations to prevent damage, deterioration, distortion, or soiling.

1.8 PROJECT CONDITIONS

A. Environmental Limitations:

1. Do not install synthetic grass surfacing materials when:
   a. Substrate surfaces/materials are wet, excessively damp, or have standing water.
   b. Rain is imminent or forecast within 48 hours following proposed time of installation.
   c. Weather conditions, or forecasted conditions, in the opinion of the installer or manufacturer's representative, will have an adverse effect on the installation.
   d. Humidity levels are outside of the limits recommended by adhesive manufacturer.
2. Install synthetic grass surfacing materials only when:
   a. Material surface temperatures, including aggregate base materials, are above 45 degrees F, and anticipated to remain above 45 degrees F for not less than 48 hours following installation.
   b. Ambient air temperature is 50 degrees F and rising, but not more than 95 degrees F, and forecast to remain above 50 degrees F for not less than 48 hours following installation.
      1) Ambient air temperatures shall be taken in the shade, away from artificial heat sources, such as exposed pavement and stone aggregate fill.

1.9 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Synthetic Grass Surfacing System Fabric: For repairs and/or replacement of areas displaying excessive wear.
   a. 100 sq ft of fabric, 15 ft wide roll.
2. Cleaning Solution: One gallon of industrial-strength cleaning solution, recommended in writing by fabric manufacturer, and fabric manufacturer's written cleaning instructions.

1.10 WARRANTY

A. Warranty: Submit a written warranty for the synthetic grass surfacing system agreeing to repair or replace materials and components of the synthetic grass surfacing system that develop defects in materials or workmanship within the specified warranty period and any other deterioration of the surfacing system or evidence of failure to meet performance requirements. Defects include the following:

1. Excessive Fading: Defined as the synthetic grass surfacing system shall remain a uniform color, without a change in appearance that is perceptible and objectionable, as determined by the Owner, when viewed visually in comparison with the original samples.
2. Ultraviolet (UV) and heat degradation.
3. Excessive Wear: Defined as the synthetic grass surfacing system pile height shall not decrease by more than 10 percent each year, or more than 50 percent within the specified warranty period beyond that attributable to normal use.
4. Tuft bind loss.
5. Fabric delamination.
6. Loss of backing integrity.
7. Seam and edge raveling.
8. Perimeter attachments.
9. Distortion, either vertically or horizontally, due to dimensional instability.

B. Warranty Period: 15 years from the date of Substantial Completion.

C. The warranty shall include that if the synthetic grass surfacing system is determined to no longer be serviceable within the specified warranty period, the manufacturer and installer shall, at no cost to the Owner, remove and replace those areas of the surfacing system not meeting the specified performance criteria.

D. The warranty shall not be limited by the amount of use and shall not be prorated.

E. Provide warranty signed by the Contractor, surfacing system manufacturer, and installer.

F. The above warranties are in addition to, and not a limitation of, other rights the Owner may under the Contract Documents.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. The synthetic grass surfacing system shall comply with the following:

1. Linear Density: Not less than 5,040 Denier; ASTM D 1557.
2. Pile Weight: Total pile weight 80 oz/sq yd; ASTM D 5848.
3. Primary Backing Weight: 8 oz/sq yd; ASTM D 5848.
4. Secondary Backing Weight: Average 20 oz/sq yd; ASTM D 5848.
5. Total Weight: 104 oz/sq yd; ASTM D 5848.
6. Tuft Bind: Not less than 8 lbs; ASTM D 1335.
7. Flame Resistance: Pass; ASTM D 2859.
8. Drainage Through Fabric: Not less than 30 inches per hour; ASTM F 1551.
9. Lead Content: Comply with ASTM F 2765 for maximum lead content. Meet all federal and state heavy metal compliance standards.

B. Provisions for Thermal Movement: The synthetic grass surfacing system, when installed, shall accommodate expansion and contraction, to a maximum of 1.0 percent, over the average range of temperature and humidity conditions experienced in Beverly Hills.

C. Uplift Resistance: The synthetic grass surfacing system shall be capable of withstanding wind loads in cladding wind load test report.

D. Drainage: The synthetic grass surfacing system shall allow for the free movement and drainage of surface water through the surfacing system.

2.2 SYNTHETIC GRASS FABRIC

A. Yarn: Athletic quality polyethylene parallel-long slit fiber yarn engineered specifically for outdoor use and stabilized to resist the effects of ultra-violet breakdown, heat, wear, water, fungus attacks, and airborne pollution.

1. Yarn:
   a. Field: Polyethylene with HeatBlock.
   b. Trim: Texturized Polypropylene.
2. Yarn Length:
   a. Field: 1-1/2 inches long, nominal.
   b. Trim: 1-1/4 inch long, nominal, +/- 15 percent.
3. Color:
   a. Field: Turf Green.
   b. Trim: Turf Green.

2.3 INFILL

A. Granular Infill: Manufacturer's standard granular infill to control odors made from 100 percent natural organic material and 97 percent pure clinoptilolite zeolite, installed in ratio, density, and thickness recommended by the manufacturer for the application.

2.4 ACCESSORIES

A. Perimeter Board: Wood and plastic composite materials made from reclaimed wood fibers and reclaimed or recycled thermoplastic polymer plastic material.

B. Drainage Pad: Recycled closed cell polyethylene foam pad with drainage channels on the bottom of the pad. Density of pad as recommended by synthetic grass manufacturer.

1. Poly-Green Foam, Poly-Green Foam LLC.
2. Or other as recommended by grass surfacing manufacturer.

-or-

C. Drainage Mat: Recycled polypropylene drainage core of fused, entangled filaments in a square waffle pattern with a geocomposite fabric bonded to one side.

1. Enkadrain 3811R, Colbond, Inc.
2. Or other as recommended by grass surfacing manufacturer.

D. Provide all additional materials, equipment and accessories necessary for a complete installation as recommended by the manufacturer. Included are all perimeter fasteners, backings, tools, labor, equipment, and means for protection of adjacent surfaces and materials.

2.5 FABRICATION

A. Fabric Rolls: Fabricate synthetic grass fabric in strips, 15 ft wide by length required to extend completely across the grass surfacing area, without intermediate cross seams.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine area to receive synthetic grass surfacing system, with installer present, for compliance with manufacturer's requirements and other conditions affecting performance.

1. Verify the finish elevations, slopes, and planarity of the base comply with requirements of the Project and surfacing system manufacturer.
2. Record findings, prepare a written report, signed by Contractor and installer, and submit copies of report to the Owner.

B. Proceed with installation only after unsatisfactory conditions have been corrected. Commencement of installation shall indicate acceptance of existing conditions.

3.2 PREPARATION

A. Thoroughly clean the area to receive the synthetic grass system of foreign material and all other substances and materials that may be detrimental to permeability and/or installation of the synthetic grass system.

3.3 INSTALLATION

A. General: All work shall be performed by skilled workmen, who are experienced and trained by the manufacturer in the installation of the synthetic grass system. Work shall be performed in accordance with the Drawings, reviewed shop drawings, and manufacturer's written installation instructions.

B. Synthetic grass surfacing fabric rolls shall be unrolled and allowed to relax prior to installation.

C. Fabric Roll Installation:
1. Synthetic grass surfacing fabric rolls shall be installed across entire width of area, parallel to long dimension, or as directed by the Architect, directly over drainage pad/ mat.
   a. Rolls shall extend from edge to edge and be attached to perimeter boards. Cross seams are not allowed.
   b. Rolls shall be rolled out in same direction and installed with uniform pile direction of fibers.
   c. Rolls shall be laid straight and true to line. Adjacent rolls, when laid together, shall form a tight fitting seam for the entire length of the fabric. Fitted pieces are not allowed.
2. Spot glue to drainage pad/mat and concrete slab at edges as recommended by the surfacing system manufacturer.
3. Attach the surfacing fabric to the perimeter boards with staples or nails as recommended by the surfacing system manufacturer

D. Seaming of Fabric:

1. Seams in the synthetic grass fabric rolls shall be glued together with seaming cloth, utilizing the manufacturer's standard seaming procedures and materials, ensuring that each roll is properly attached to the next.
   a. Seams shall be flat, tight, and permanent, with no separation or fraying.

b. Seams, when completed, shall display no visible signs of joining, with fibers brushed to provide full coverage of fibers over the seam.

E. Infill Material Installation: Install infill materials shall be applied as recommended by the surfacing system manufacturer, to ensure the voids between the fibers are filled and the fibers are being held vertically and non-directional

3.4 CLEANING AND PROTECTION

A. The installer shall keep the site clean and clear of debris throughout the project. Waste materials, including excess materials remaining after completion of the Work, shall be removed and legally disposed of offsite.

B. Installer shall provide all labor, supplies, and equipment required to completely remove stains and other blemishes from all finished surfaces.

C. Provide protection over installed synthetic grass surfacing systems, including closing the area to traffic, as required to ensure installed system will be free of damage at time of Substantial Completion.

3.5 INSPECTION

A. Inspection: After installation is complete, the synthetic grass surfacing system installer, synthetic grass surfacing system manufacturer's representative, and Owner shall inspect the installation. Any corrections shall be noted in a written report and completed prior to Substantial Completion.

3.6 DEMONSTRATION AND TRAINING

A. Train Owner's staff regarding maintenance and repair/replacement of the synthetic grass surfacing system, and maintenance. Training dates and times shall be coordinated by the Owner.

B. All training shall be completed prior to Substantial Completion of the project.

END OF SECTION

AGENDA REPORT

Meeting Date:	June 30, 2015
Item Number:	F-2
To:	Honorable Mayor & City Council
From:	Susan Healy Keene, Director of Community Development Raj Patel, Assistant Director of Community Development/Building Official
Subject:	PROPOSED ORDER OF CITY MANAGER TO IMPLEMENT A FURTHER WATER CONSERVATION MEASURE TO PROHIBIT ISSUANCE OF BUILDING PERMITS FOR SWIMMING POOLS UNLESS EQUIVALENT WATER USAGE IS OFFSET.
Attachments:	1. Section 9-4-307 BHMC 2. June 8, 2015 City Council Study Session Report 3. Santa Margarita Water District Summary

RECOMMENDATION

It is recommended that the City Council hold a public hearing regarding the City Manager's proposed order that prior to issuance of a permit to construct a new swimming pool, a permit applicant must demonstrate water savings equivalent to the estimated amount of water used during the first year of operation. The Emergency Water Conservation Plan details the requirements of each stage. In addition, Section 9-4-307 BHMC provides the City Manager the authority to order additional water conservation measures only after a public hearing is held (Attachment 1).

BACKGROUND

On May 5, 2015, the City Council adopted a Resolution to institute a State D water conservation program. The Stage "D" Requirement 9-4-304 (D)(2)(e) BHMC now in effect states:

> "Refilling of swimming pools, spas or ponds shall be prohibited unless required for health reasons:

While this provision addresses water usage for existing pools, there is no measure specific to the initial filling of new pools. On May 27, 2015 the Public Works (PW) Liaison Committee consisting of Vice Mayor Mirisch, Councilmember Brien, PW Commission Chair Shalowitz, and Commissioner Wolfe reviewed three options to address water consumption for new pools. The options included:

1) Continue to allow the initial filling of newly constructed swimming pools;
2) Adopt an ordinance to prohibit the issuance of permits for the construction of new swimming pools during the State's drought declaration;
3) Prohibit the filling of new pools, unless the property owner offsets the increased water use.

The PW liaison generally favored the third approach to allow the initial filling of new pools where the property owner offsets this additional water usage.

This recommendation was presented to City Council at their June 8, 2015 Study Session (Attachment 2). The Council considered several options including temporarily prohibiting the issuance of permits for new pools as well as potential conditions under which issuance of new pool permits would be acceptable. Discussion included the safety and construction concerns potentially created in allowing a new pool to be built but not filled with water for an unknown period of time. Staff was asked to return with more specific information on the following issues:

- Possibility of filling pools with water supplied from a source outside of California
- Details on how water use of new pools could be offset

A second PW liaison meeting was held on June 15th. Staff reported at the current time there was very limited availability of out-of-state water. Staff also estimated a minimum of four 5,000 gallon tanker trucks would be required to initially fill a new pool creating possible concerns related to truck traffic.

The liaison also discussed the possibility of an applicant demonstrating either on-site or off-site water consumption savings equivalent to the amount of water used to initially fill the pool and to make-up for evaporative losses during the first year. At that meeting, the PW liaison recommended staff proceed to allow construction of new pools in cases where the applicant can show equivalent savings in anticipated water usage.

DISCUSSION

Construction of a new pool requires issuance of a building permit. The current method of pool construction anticipates the immediate filling of a new pool with water. If building permits are issued and pools are not allowed to be filled, there may be an increased risk of cracking of the plaster through accelerated curing and structural damage due to hydrostatic pressure. In addition, enforcement of a prohibition on filling of a new pool is challenging as there is no efficient method of continuous monitoring of the site. The most effective method to control the use of water in new pools is to require an applicant to demonstrate conservation measures that offset the proposed water use prior to the issuance of a permit.

Water Used by Pools

In 2014, the Santa Margarita Water District, the second largest water district in Orange County, conducted a cumulative projected five year water use comparison between a pool, traditional lawn, and drought tolerant landscape. The annual water use is 28,035 gallons for a traditional lawn and 16,821 gallons for a drought tolerant landscape, An average size pool (475 square feet) with a pool cover (as required by the California Green Building Code) uses 26,643 gallons of water (17,765 gallons for the initial filling and 8,878 gallons of annual evaporative loss). The results of the study are summarized in Table 1:

Table 1: Santa Margarita Water Use Study

Cumulative Water Use Comparison (Gallons)				
	Pool w/o a Cover	Pool w/ Cover	Traditional Landscape (Grass Lawn)	CA Friendly Landscape (Drought Tolerant)
Year 1	32,561	26,643	28,035	16,821
Year 2	47,358	35,521	56,070	33,642
Year 3	62,154	44,398	84,105	50,463
Year 4	76,950	53,276	112,140	67,284
Year 5	91,746	62,154	140,175	84,105

The study concluded that although pools require thousands of gallons of water to fill initially, at the end of the third year, a pool used 39,707 gallons less than an equivalently sized lawn and 6065 gallons less than a drought tolerant landscape. (Attachment 3)

In Beverly Hills, there are currently 79 permits issued for the construction of pools which is consistent with the average number of pool permits issued over the past ten years. Based on historical permit activity, staff anticipates that 40 new pools could potentially be issued building permits between July 2015 and February 2016. The estimated total first year water use impact for 40 new pools is approximately 1,066,000 gallons of water or 0.03% of the city's reported annual water production.

Methods to Demonstrate Equivalent Water Savings

The PW liaison discussed alternatives to allow the construction and filling of new pools in a manner consistent with the city's water conservation efforts and suggested the concept of water use equivalency. If the water used for a new swimming pool could be offset by savings above and beyond any current requirements on the same property, the addition of a pool would have a neutral effect on the City's water consumption.

There would be two options for demonstrating equivalent water savings. The preferred alternative would be for a permit applicant to demonstrate equivalent onsite water savings. This would require the applicant to implement a variety of measures above and beyond the current California Green Building Code. If the appropriate onsite water savings is not possible, a second alternative would be to provide a financial contribution to the current citywide water conservation program which combines proposed capital programs and operations and maintenance designed to help reach the intended goal of a 32% reduction in overall water use.

1. Onsite Equivalent Water Savings

An applicant would demonstrate water savings equivalent to the first year use of a pool using a combination of measures that could include higher efficiency fixtures and appliances, rainwater capture and reuse, more water efficient landscaping, and the use of gray water and other alternate sources of water. The applicant's calculations would be verified prior to issuance of a building permit.

2. Offsite Equivalent Water Savings

If an applicant is unable to further reduce onsite water usage, funds could be contributed to the City's conservation effort with the intent of establishing increased water savings elsewhere in the City. The City's Water Enterprise Plan (WEP) contains a Water Conservation Program that includes elements such as establishing rebate programs, reducing system losses, and providing educational and outreach programs. The funds could be used to enhance these programs and also create additional opportunities for savings.

In developing a contribution amount, staff relied on costs identified in the WEP for water conservation efforts. The goal of the WEP was to reduce water usage by 20% by the year 2020. The WEP recommended simple, cost-effective measures estimated to save approximately 200 Acre Feet each year over the next six years. The implementation cost of these measures is approximately $4.8 million.

However, there is substantial additional effort and cost in achieving water conservation above the 20% target that is necessary to accomplish the new State mandate of 32%. Based on the totality of water conservation measures identified in the WEP, staff estimates the cost to conserve one gallon of water to be approximately $0.056. This amount would be applied to the total first year water use of a new pool including evaporation. The financial contribution would be directly related to the size of the proposed pool under the worst-case water use (pool without a cover). For example a 550 SF pool uses 37,704 gallons and the expected contribution would be approximately $2111.

FISCAL IMPACT

If new pools were permitted without demonstrating an equivalent water savings, the additional water consumption would impact the City's ability to meet the required water reduction target. Should the City fail to reach the reduction target, the State may impose

fines in the amount of $10,000 a day. If new pools are permitted, and water use is offset either by further conservation onsite or offsite through the city's Emergency Water Conservation Program, there would be no additional water usage to report and no further fiscal impact.

Susan Healy Keene
Approved By

ATTACHMENT 1

B. The notice shall contain a brief description of the facts of the violation, a statement of the possible penalties for each violation and a statement informing the customer of his or her right to a hearing on the merits of the violation pursuant to section 9-4-306 of this chapter. (Ord. 92-O-2139, eff. 4-2-1992)

9-4-306: **HEARINGS:** Any person receiving notice of a violation of any water usage percentage reduction provision set forth in section 9-4-304 of this chapter shall have the right to request a hearing to appeal the imposition of the water penalty surcharge. The city council shall establish the appeal procedures by resolution. (Ord. 09-O-2567, eff. 6-27-2009)

9-4-307: **ADDITIONAL WATER CONSERVATION MEASURES:** After holding a public hearing before the city council, the city manager may order implementation of water conservation measures including, or in addition to, those set forth in section 9-4-304 of this chapter, in order to encourage proper potable water use or to meet water conservation goals, regardless of supply. (Ord. 92-O-2139, eff. 4-2-1992)

9-4-308: **EXCEPTIONS:** Nothing in this article shall be construed to require the city to curtail the supply of water to any customer when such water is required by that customer to maintain an adequate level of public health and safety. (Ord. 09-O-2567, eff. 6-27-2009)

ARTICLE 4. WATER EFFICIENT LANDSCAPING

9-4-401: **PURPOSE:** Water is a precious commodity of limited supply. In accordance with the water conservation in landscaping act ("act"), the purpose and intent of this article is to:

A. Promote the values and benefits of landscapes while recognizing the need to invest water and other resources as efficiently as possible;

B. Establish a structure for planning, designing, installing, and maintaining and managing water efficient landscapes in new residential or commercial development projects and when landscaped areas are altered by more than fifty percent (50%) in total area;

ATTACHMENT 2

STAFF REPORT

Meeting Date:	June 8, 2015
To:	Honorable Mayor & City Council
From:	Trish Rhay, Assistant Director of Public Works Services – Infrastructure & Field Operations Michelle Tse, Senior Management Analyst MST
Subject:	Swimming Pools and Water Conservation Efforts
Attachments:	None

INTRODUCTION

During the May 5, 2015 meeting, the City Council adopted a Resolution to declare a Stage D conservation program given continued State drought conditions. Stage D calls for a 30% water use reduction and outlines several water use restrictions in addition to the restrictions imposed by the State Water Resources Control Board ("State Water Board").

One of the water use restrictions outlined in the City's Stage D conservation program is prohibiting the refilling of swimming pools except for health or safety reasons. During the May 5, 2015 meeting, the City Council directed staff to develop a more comprehensive policy after raising questions on how to handle situations related to the initial filling of existing and newly constructed swimming pools.

DISCUSSION

Stage D, as currently worded in the Beverly Hills Municipal Code, prohibits the refilling of pools, spas, or ponds except for health or safety reasons. Topping off pools with water to maintain water effectiveness and prevent standing water with breeding insects is considered filling for health reasons. The Municipal Code currently does not include provisions to address the initial filling of newly constructed swimming pools. The following sections outline options for the initial filling of new and existing swimming pools.

Construction and Filling of New Swimming Pools

Option #1: Continue to allow the initial filling of newly constructed swimming pools.
Option 1 would allow the application process, permit issuance, and construction for new swimming pools to continue as usual. There are currently 79 newly permitted pools under construction within the City. Based on the current rate of swimming pool applications, it is projected there will be an additional 30-40 pool applications over the next nine months. The estimated water consumption for current and projected new swimming pools is approximately

2,380,000 gallons, with 800,000 gallons coming from the projected 40 pools which are not yet permitted.

The following table highlights the advantages and disadvantages for Option 1:

Advantages	Disadvantages
• No impact to water customers wishing to construct new pools.	• While minimal, discretionary water consumption would be approximately 800,000 gallons. • There may be some potential negative water conservation messaging to our regulators and customers.

Option #2: Adopt an ordinance to prohibit the issuance of permits for the construction of new swimming pools during the State's drought declaration.
Under this approach, new swimming pool projects with a building permit already issued by the City will be allowed to fill when construction is completed. However, customers that have not yet been issued a building permit could still apply for a permit and submit plans for a new pool. The City would approve the plans but not issue a permit to construct the pool until the City rescinded the Stage D water conservation requirements. By not issuing building permits, it would minimize the impact of pools that may need to be filled in order to complete the curing process.

There are currently seven new pool applications that have been submitted to the City and not yet approved. As mentioned in Option #1, staff projects receiving 30-40 additional pool applications over the next nine months. Assuming it takes 20,000 gallons to fill the seven pending pool applications and a projected 40 pools during the next nine months, prohibiting the initial filling of these pools could save approximately 940,000 gallons of water.

There are several cities that have adopted similar policies of restricting the filling of swimming pools, such as the following:

- City of American Canyon
- City of Healdsburg
- City of Windsor
- Menlo Park Water District
- North Tahoe Public Utilities District
- North Marin Water District
- San Jose Water Company
- San Lorenzo Water District
- Santa Clara Valley Water District
- Santa Margarita Water District (but later rescinded)

Furthermore, this option would convey a strong message to the State regulators that the City is moving forward with significant actions to meet compliance with the 36% mandated reductions by February 2016.

The following table highlights the advantages and disadvantages for Option 2:

Advantages	Disadvantages
• Other cities have adopted similar policies to limit the filling of pools • Limiting pool filling during drought conditions sends a message to State regulators and residents that the City is committed to conserving water	• Pool construction projects will be put on hold • Lifestyle impacts • Not filling pools may impact property sales and property values

Option #3: Prohibit the filling of new pools, unless the property owner offsets the increased water usage

The filling of newly constructed swimming pools would be prohibited under the current Stage D conservation program. However, customers could be given the option to demonstrate how their water use for pool filling would be offset by water efficient improvements made on the property that are not otherwise required by law. Additionally, customers could be given the option to pay a fee to the City that the City would then use to implement water conservation measures elsewhere in the City that would offset the water used to fill the pool.

If the City Council wishes to pursue this option, staff would develop the framework by which the property owner could demonstrate that he or she will offset the pool water usage or pay a fee to allow the City to do so.

The following table highlights the advantages and disadvantages for Option 3:

Advantages	Disadvantages
• Customers would have the option to not fill their pool or take other actions to offset water usage or pay a fee to the City to allow the City to offset water usage. • Collected fees could be used to further city conservation programs, leading to water savings elsewhere	• Additional time is needed to further develop the framework and criteria

Refilling of Existing Swimming Pools

The current Stage D requirements clearly states that existing swimming pools shall only be drained and refilled for health and safety reasons, which includes certain repairs to fix leaks, structural, plumbing, or electrical deficiencies on a case by case basis. For contextual purposes, the City issued 64 permits for repair and/or remodel of existing swimming pools during the period January 1, 2014 through May 5, 2015.

Given the Stage D requirements, staff is recommending customers must submit a permit application to the Community Development department to drain, repair, and refill the pool. The application shall be accompanied by a statement from a licensed pool contractor stating the nature and duration of repairs/safety issue to be made and the date and method by which the pool shall be drained. Additionally, staff is recommending that effective May 5, 2015, which coincides with the City Council approval date to implement Stage D, a pool cover would be a condition for the refilling of pools. Pool covers can reduce evaporation rates by 30-50%. However, it should be noted that pool covers may be difficult for some types of public and private pool configurations.

These options for the filling of new and existing swimming pools were reviewed by the Public Works Liaison Committee during its May 27, 2015 meeting. The Liaison Committee generally favored providing flexibility to property owners to allow the initial filling of pools if the property owner offset the water usage through a fee paid to the City.

FISCAL IMPACT

Option 3 which allows property owners to fill a pool and pay a fee to the City to offset water usage impacts would likely make funds available to promote City water conservation programs.

RECOMMENDATION

The Public Works Liaison Committee generally favored an approach similar to Option 3, although the details of Option 3 were developed in conjunction with the City Attorney's Office after the Committee meeting.

For the refilling of existing swimming pools, staff is recommending existing swimming pools shall only be drained and refilled for health and safety reasons, which includes certain repairs to fix leaks, structural, plumbing or electrical deficiencies to be reviewed on an individual bases. Staff is recommending that permit applications to drain, repair, and refill the pool shall be accompanied by a statement from a licensed pool contractor stating the nature and duration of repairs/safety issue to be made and the date and method of which the pool shall be drained.

All new and refilled swimming pools shall be equipped with a pool cover to the extent feasible.

George Chavez

Approved By

ATTACHMENT 3

Santa Margarita Water District Widget

5	Enter Average depth of Pool (Feet)
475	Enter Pool area (Square Feet)
725	Enter area of hardscape and decking (Square Feet)
1,200	to pool install (Sq.Ft.)

17,765 Initial Pool Fill Volume (Gallons)
14,796 Annual Pool Water Use without Cover (Gallons)
8,878 Annual Pool Use with Cover (Gallons)
28,035 Annual Water Use of Efficient Landscape (Gallons)
16,821 Annual Water Use of CA Friendly Landscape (Gallons)

Cumulative Water Use Comparison (Gallons)

	Pool without Cover	Pool with Cover	Traditional Landscape	CA Friendly Landscape
Year 1	32,561	26,643	28,035	16,821
Year 2	47,358	35,521	56,070	33,642
Year 3	62,154	44,398	84,105	50,463
Year 4	76,950	53,276	112,140	67,284
Year 5	91,746	62,154	140,175	84,105
5 Year Water Cost	**$ 307**	**$ 208**	**$ 468**	**$ 281**

STAFF REPORT

Meeting Date:	June 30, 2015
To:	Honorable Mayor & City Council
From:	Donielle Kahikina, Deputy Director of Public Works Services, Operational Support
	Michelle Tse, Senior Management Analyst MST
Subject:	Demonstration Garden Concepts for Maltz Park and Sunset Reservoir
Attachments:	1. Conceptual Designs for Maltz Park and Sunset Reservoir

INTRODUCTION

During the May 18, 2015 Study Session discussion on artificial turf and live plant alternatives, the City Council inquired about the possibility of developing demonstration gardens at Maltz Park and Sunset Reservoir. These demonstration garden sites would serve as destinations for the community to learn and observe how drought resistant landscaping and design can be effectively integrated to maintain the City's garden-like qualities while promoting water conservation.

This report transmits preliminary design concepts and budget forecasts for design and construction for both the Maltz Park and Sunset Reservoir locations.

DISCUSSION

Staff consulted with Green Gardens Group ("G3") to provide preliminary design and planning level budgets for the Maltz Park and Sunset Reservoir locations. G3 is a landscape professional group that is currently working with the City to provide one-on-one landscape coaching sessions, as well as the development of a Beverly Hills landscape handbook, in support of the City's conservation efforts. G3 is also a conservation program partner with Metropolitan Water District and has also assisted the City of Los Angeles with their conservation programs.

Since Maltz Park and Sunset Reservoir have very different land uses, the former being a recreational area and the latter an active City reservoir, a unique design approach has been taken for each site as further described in the respective sections below, and shown in Attachment 1.

Some common design elements for the preliminary design concepts for both locations were developed with the following objectives in mind:

- Targeted water use reduction of 70% or greater
- Low maintenance landscapes that provide a continuous learning environment
- Drip or no irrigation required
- The two projects are to complement each other to maximize the public education benefit
- Opportunity to demonstrate techniques from the Beverly Hills landscape handbook
- Opportunity to provide hands-on outreach and training for local professionals and residents

Maltz Park

An "active" demonstration garden approach was taken with the Maltz Park site. The site is a recreational area, allowing for a walking experience through the park and the opportunity to experience varied landscape alternatives. The proposed design achieves the following objectives:

- Water reduction >70%
- Stormwater capture >1,000 sq. ft.
- Turf removal
- Permeable hardscape
- Seating and site amenities
- Curb cuts/drainage diversion

A preliminary budget forecast for Maltz Park is included in Table 2, assuming the entire park and adjacent parkways (approximately 48,700 sq. ft.) have been set aside for demonstration garden use.

Table 2: Preliminary Construction Budget Forecast for Maltz Park & Parkways

Project Area	Site Total Sq. Ft.	Construction Budget	Construction Price/Sq. Ft.
Parkways	4,200	$79,800	$19.00
Active/Groundcover Area	10,500	$199,500	$19.00
Contemporary Planters	1,300	$24,700	$19.00
Woodland Area	20,000	$300,000	$15.00
Hardscape Areas	6,000	$150,000	$25.00
Passive Capture	6,700	$127,300	$19.00
Totals	48,700	$881,300	$18.10

For budgeting purposes, preliminary cost assumptions place the Maltz Park demonstration garden construction cost at approximately $18 per sq. ft. An additional 10%-20% of the total construction budget would need to be budgeted for design costs. Under these assumed design parameters the Maltz Park total project budget is forecasted to be approximately $969k-$1.05 mil.

Sunset Reservoir

Given that this site is an active reservoir, a passive design approach was taken for this location. The reservoir is the main feed location from Metropolitan Water District

("MWD"), the City's water supplier, and therefore should to be protected from recreational use through installation of a perimeter fence. For this location the preliminary design concept for a demonstration garden takes advantage of the sloped perimeter around the reservoir while protecting the 39,000 sq. ft. area at the center of the site that covers the top of the reservoir. The design is intended to demonstrate how to maximize hillside erosion control through planting, while using taller plantings and grasses to discourage access through the site. The sloped perimeter also serves as an ideal model for active stormwater capture. The proposed design achieves the following objectives:

- Water reduction >70%
- Stormwater capture >1,000 sq. ft.
- Turf removal
- Curb cuts/drainage diversion

Preliminary budget estimates for Sunset Reservoir are included in Table 3, assuming 32,000 sq. ft. of the two acre site has been set aside for demonstration garden use.

Table 3: Preliminary Construction Budget Forecast for Sunset Reservoir

Project Areas	Site Total Sq. Ft. or Lin. Ft.	Construction Budget	Construction Price/Sq. Ft. or Lin. Ft.
Hillside Planted & Graded Area	28,000	$560,000	$20.00
Parkways	4,000	$80,000	$20.00
Fencing Per Linear Foot	800	$61,600	$77.00
Totals	32,800	$701,600	$21.39

For budgeting purposes, preliminary cost assumptions place the Sunset Reservoir demonstration garden construction cost at approximately $21 per sq. ft. An additional 10%-20% of the total construction budget would need to be budgeted for design costs. Under these assumed design parameters the Sunset Reservoir total project budget is forecasted to be approximately $770k-$840k.

Please note that the square footage costs for both locations shown here are for budgeting purposes only. Once a design for the each of the sites is more fully developed more accurate costs estimates can be established. However, in both cases the costs shown are in line with costs for recent demonstration gardens of similar size and complexity that G3 has been involved with.

FISCAL IMPACT

Funds are currently not budgeted for the design and construction of demonstration gardens for these locations. If the City Council directs staff to proceed with design development, staff will begin the Request for Proposal ("RFP") process to seek out landscape design proposals for the work and request a budget appropriation at a future City Council meeting.

City's conservation program in conjunction with MWD provides for rebates for turf removal in the amount of $3.75/sq. ft. for the first 2,500 sq. ft., and $2.00 thereafter with

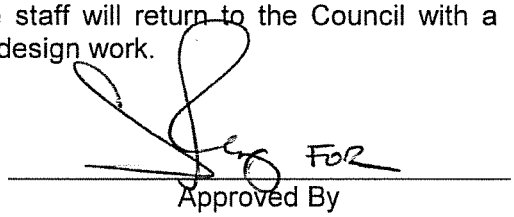
a maximum of $6,000 per property. Assuming these projects go forward, staff will peruse rebates for these sites.

RECOMMENDATION

Staff seeks City Council direction on the following:

1. Confirmation of the general design parameters for Maltz Park and Sunset Reservoir
2. Direction move forward with an RFP for design services for both locations

If the City Council directs staff to move forward with these projects, staff will work with the Public Works Commission Conservation Subcommittee and the Recreation and Parks Commission to develop an RFP for the two locations. It is expected this process will take approximately 3 months at which time staff will return to the Council with a recommendation for an award of contract for the design work.



Approved By
George Chavez

Attachment 1

Maltz Park Demonstration Garden

Total Demonstration Area = 48,700 SF

Parkways – 4,200 SF
Active Garden – 10,500 SF
Contemporary Beds – 1,300 SF
Woodland Garden – 20,000 SF
Hardscape – 6,000 SF
Passive Catchment – 6,700 SF

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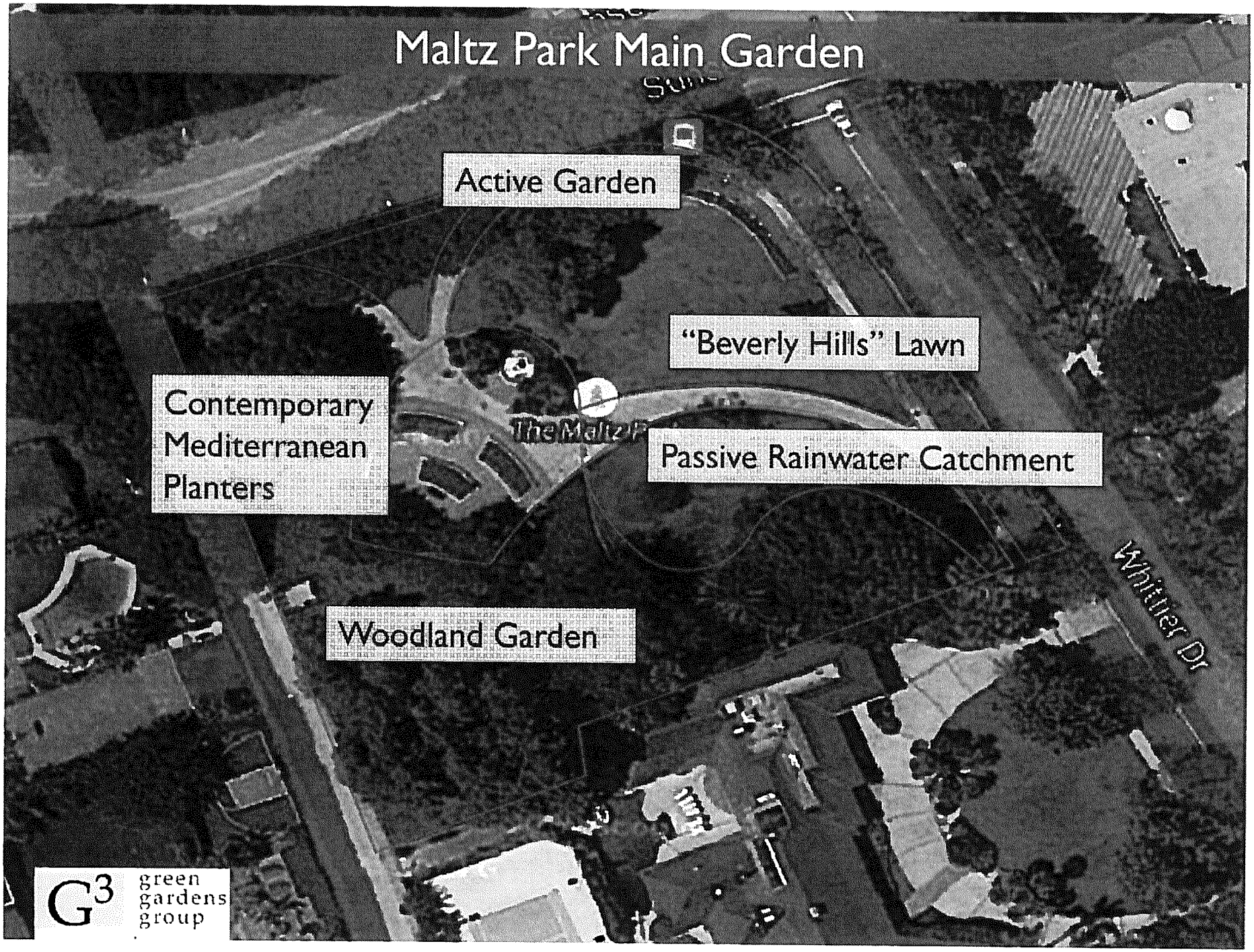
Maltz Park Recommendations

Maltz Park is a perfect spot for demonstrating the five plant styles promoted in the Beverly Hills Garden Handbook (Mediterranean, Contemporary, Chaparral, Groundcover Alternatives, and Woodland) as well as providing a large sample of "Beverly Hills" Lawn. This active use demonstration garden is modeled after the City of Santa Monica Airport Park Garden and various Ocean Friendly Gardens.

1. Active Area includes intuitive and experiential demonstrations of
   a. Walkable/playable groundcover alternatives to cool season grass
   b. Permeable paving pathways
   c. Climate-appropriate and CA native evergreen and flowering trees and shrubs
2. Woodland Area demonstration of planting under mature trees
3. Contemporary plant mixes demonstrated in raised planters with edibles
4. Passive rainwater capture seamlessly integrated into the landscaping


Maltz Park Main Garden
Active Garden
"Beverly Hills" Lawn
Contemporary Mediterranean Planters
Passive Rainwater Catchment
Woodland Garden
Whittier Dr
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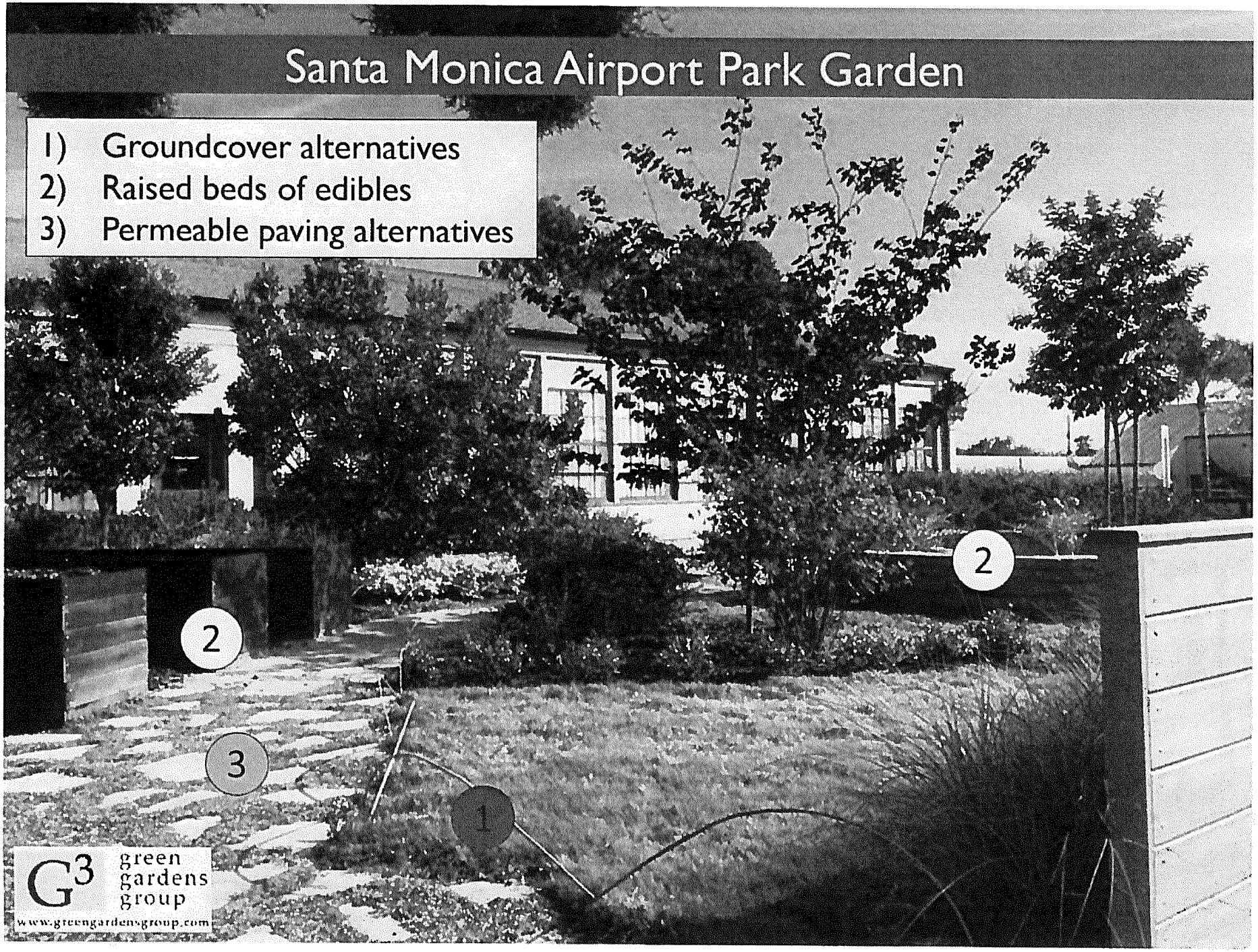
Santa Monica Airport Park Garden
1) Groundcover alternatives
2) Raised beds of edibles
3) Permeable paving alternatives
2
2
3
1
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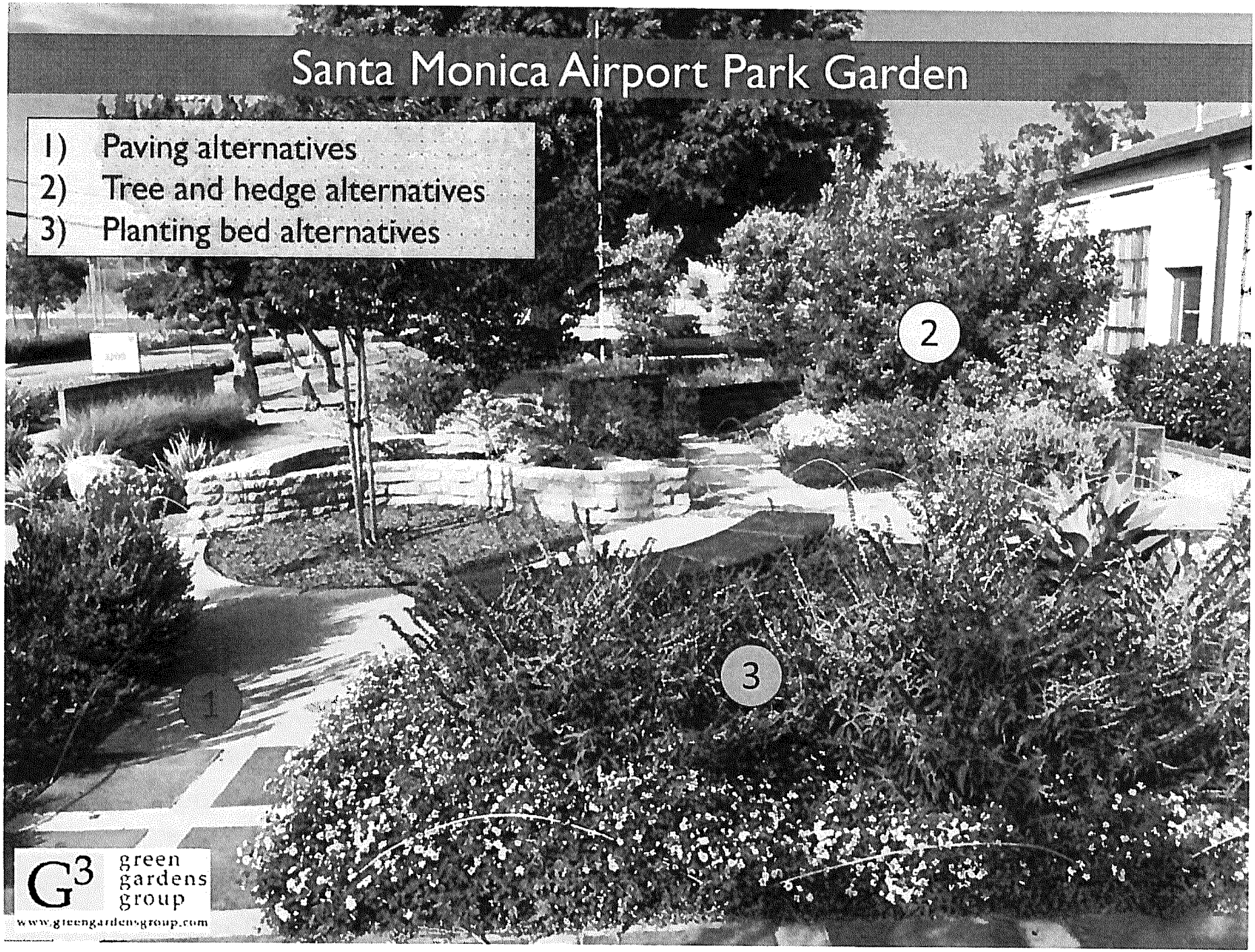
Santa Monica Airport Park Garden
1) Paving alternatives
2) Tree and hedge alternatives
3) Planting bed alternatives
2
3
1
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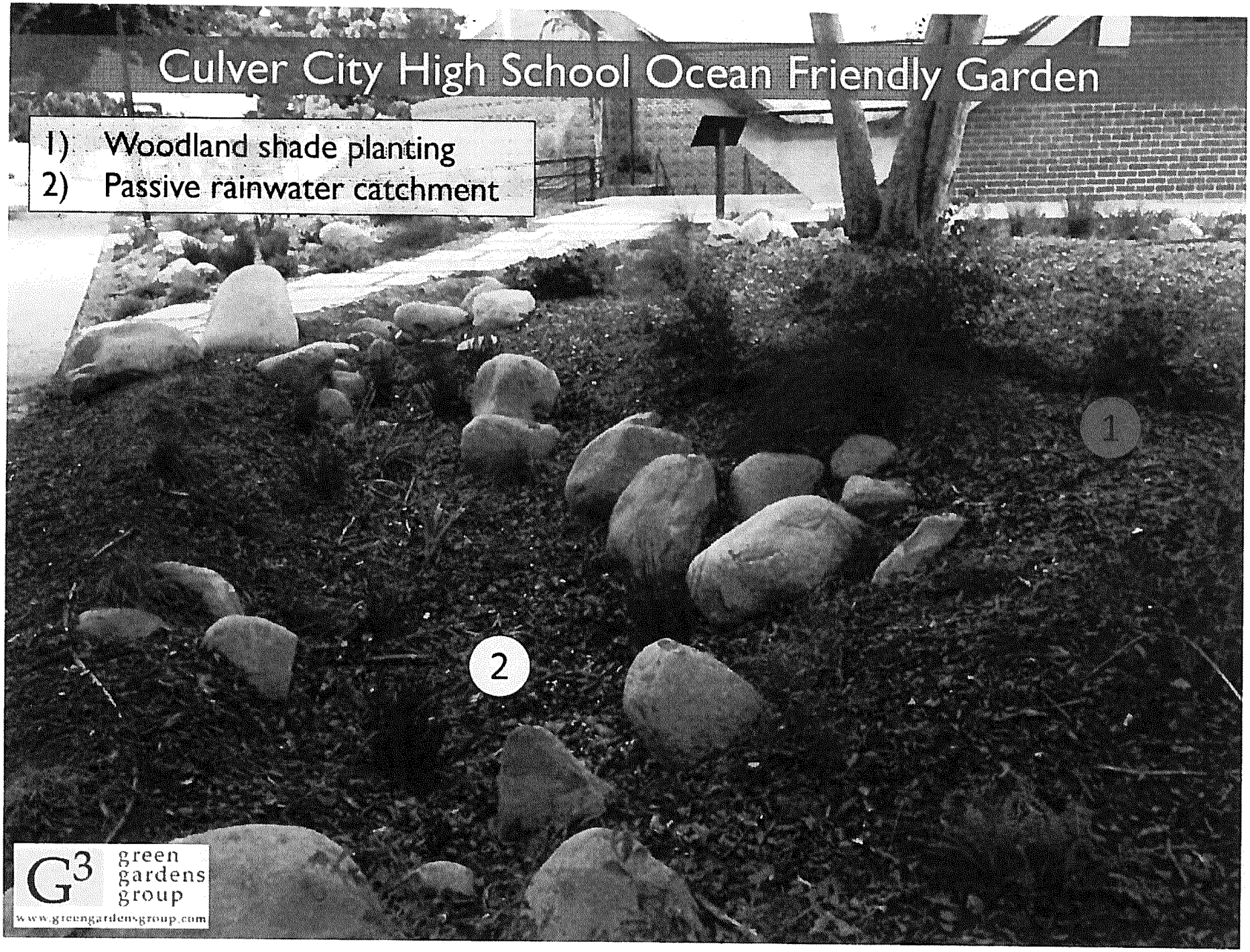
Rancho Santa Ana Botanic Garden

1) Woodland shade planting


Culver City High School Ocean Friendly Garden
1) Woodland shade planting
2) Passive rainwater catchment
1
2
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Maltz Park "Beverly Hills" Lawn

Close up of clover and daisies

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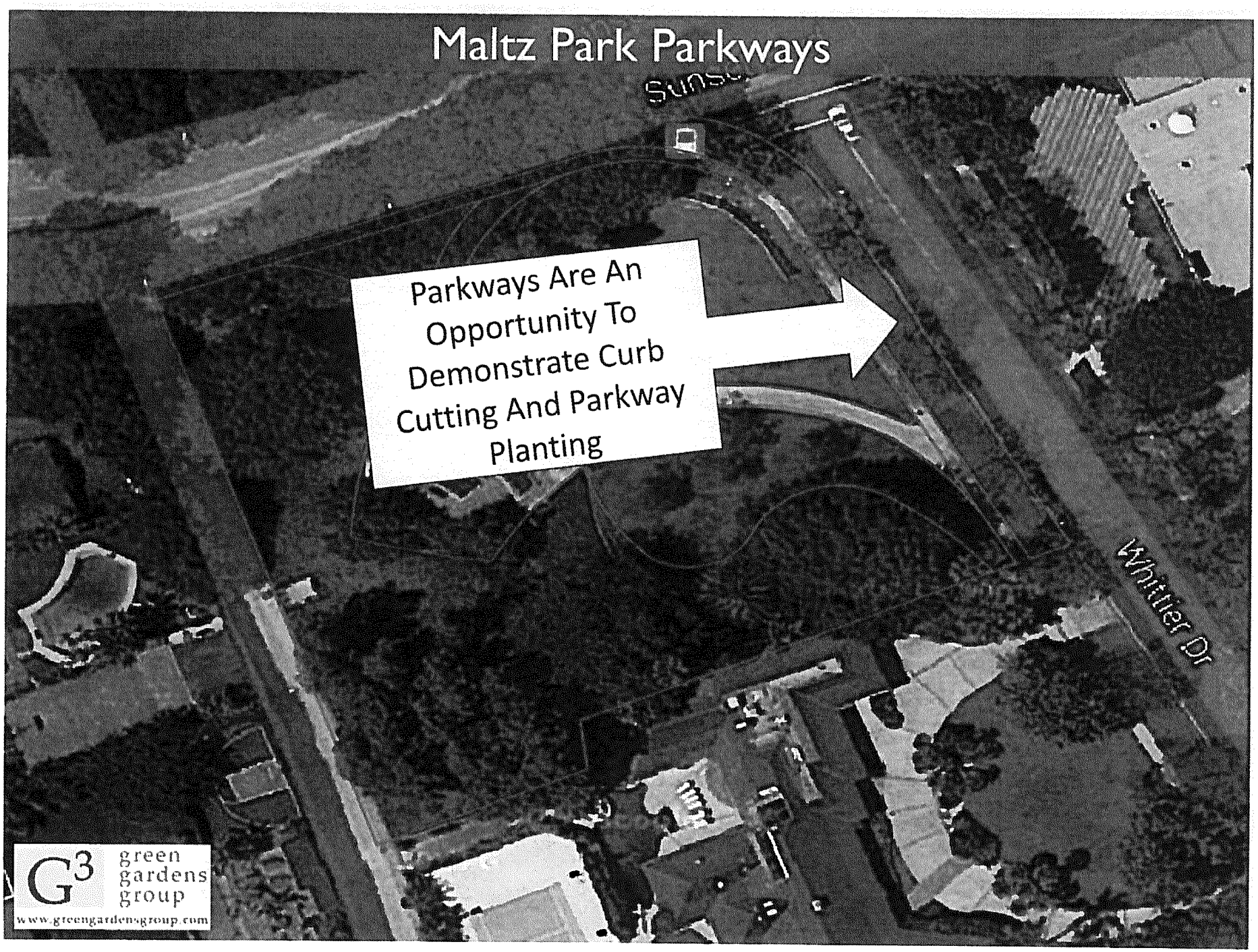
Maltz Park Parkways
Parkways Are An Opportunity To Demonstrate Curb Cutting And Parkway Planting
Whittier Dr
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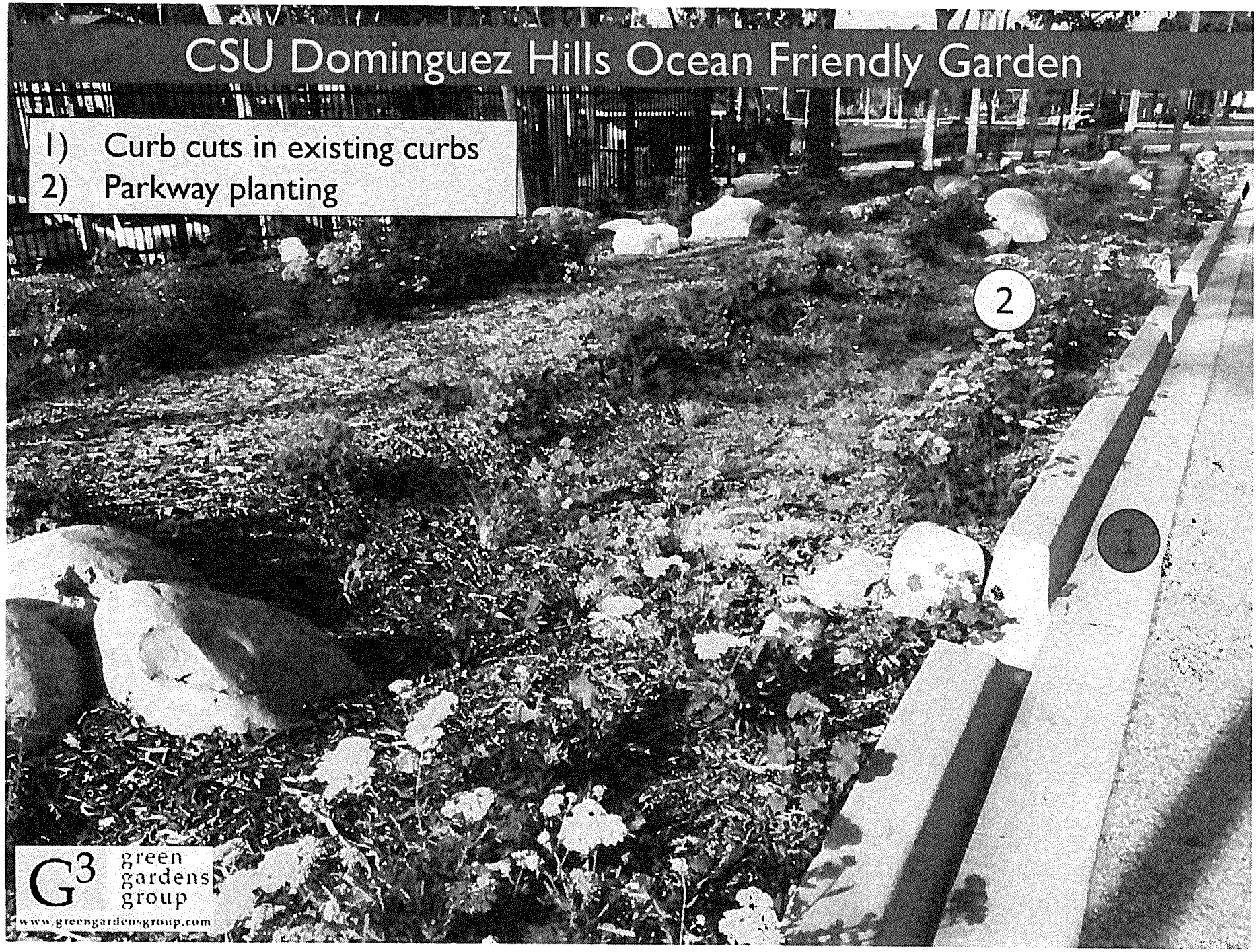
www.greengardensgroup.com


CSU Dominguez Hills Ocean Friendly Garden
1) Curb cuts in existing curbs
2) Parkway planting
2
1
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Santa Monica Garden/Garden
1) Step outs and pathways
2) Parkway planting demonstration
1
2
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Sunset Reservoir Demonstration Garden

Total Demonstration Area
= 32,000 SF

Perimeter – 28,000 SF
Parkways – 3,900 SF

Fencing - 800 Linear Ft.

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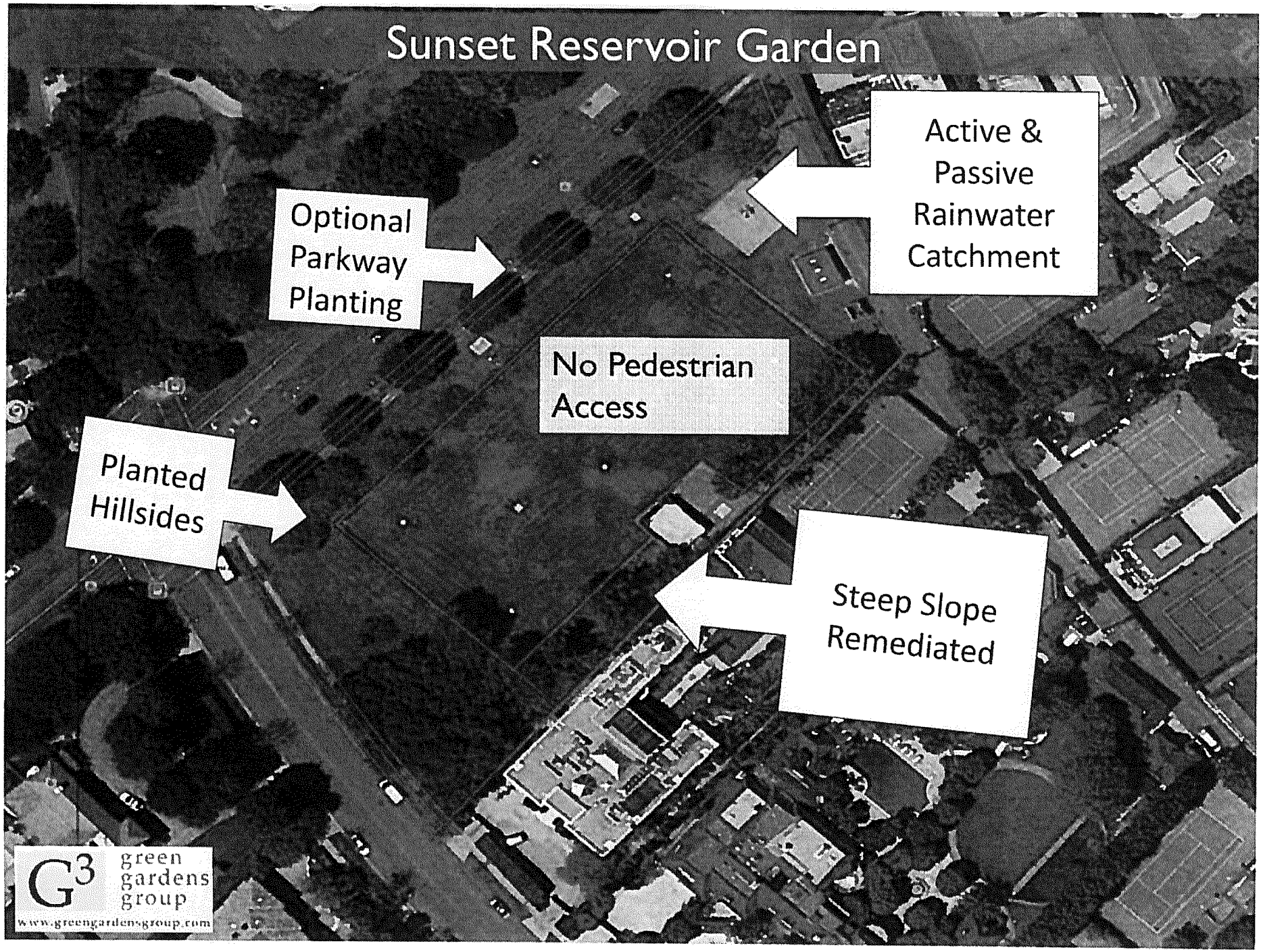
Sunset Reservoir Recommendations

Sunset Reservoir is a candidate for a more passive hillside demonstration garden that eliminates access to the reservoir cap.

1. 28,000 SF planted hillside gardens with climate-appropriate and CA native evergreen and flowering trees, shrubs and perennial grasses
2. Reservoir cap fenced to limit access
3. Steep hillside on southeast side is graded and covered in erosion control blankets for planting
4. Active and passive rainwater capture adjacent to building on alley demonstrates how to capture and release rainwater
    a. Above ground cistern plumbed to flow through without filling captures flow from roof and overflows to rain garden area
    b. Passive capture sponge garden receives overflow from cistern


Sunset Reservoir Garden
Active & Passive Rainwater Catchment
Optional Parkway Planting
No Pedestrian Access
Planted Hillsides
Steep Slope Remediated
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Santa Monica Garden/Garden & Private Residence

1) Active rainwater catchment

Santa Barbara Lawn Bowls Demonstration Garden

1) Passive rainwater catchment

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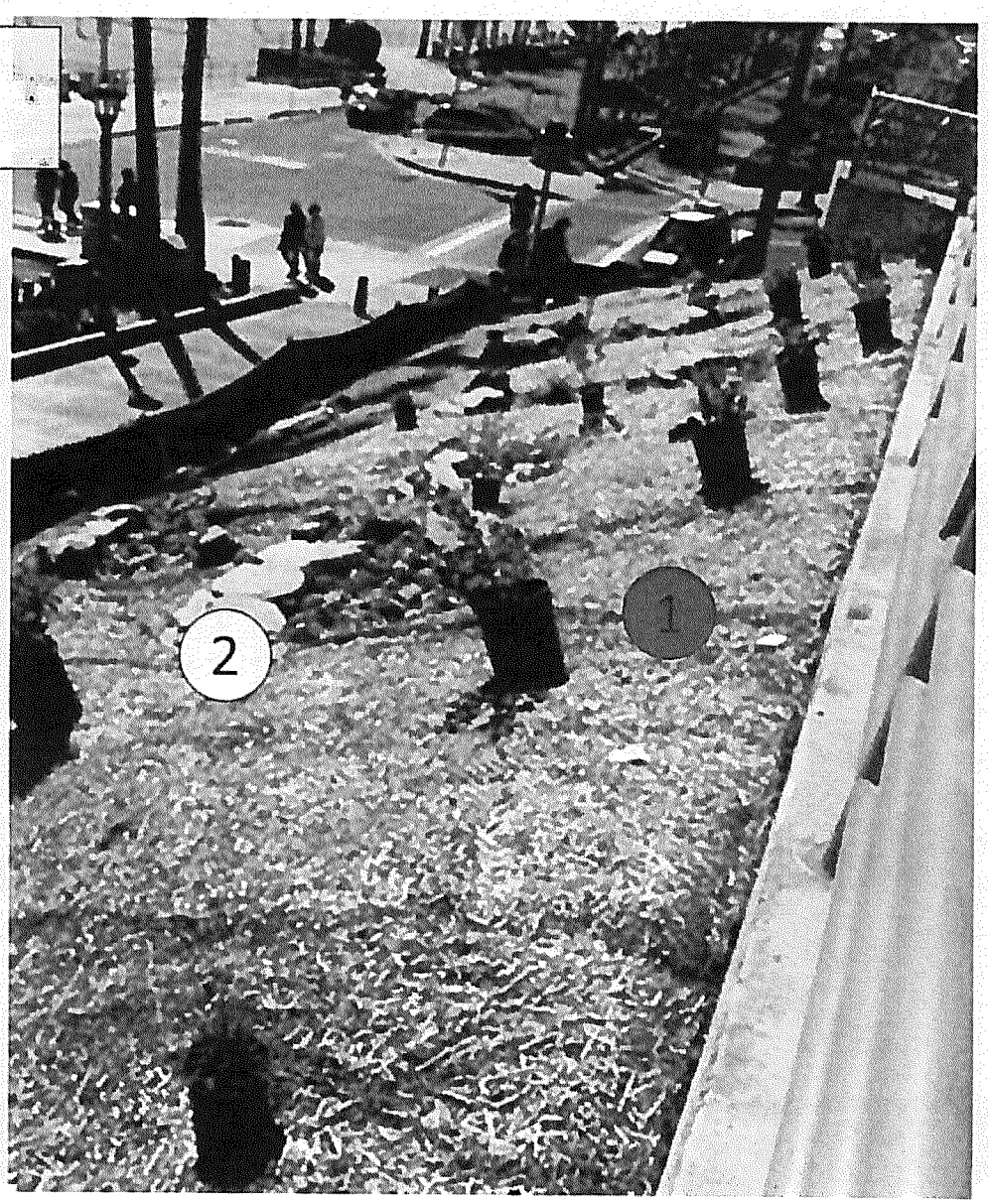
Manhattan Beach Strand Ocean Friendly Garden

1) Steep hillside stabilization
2) Passive rainwater catchment



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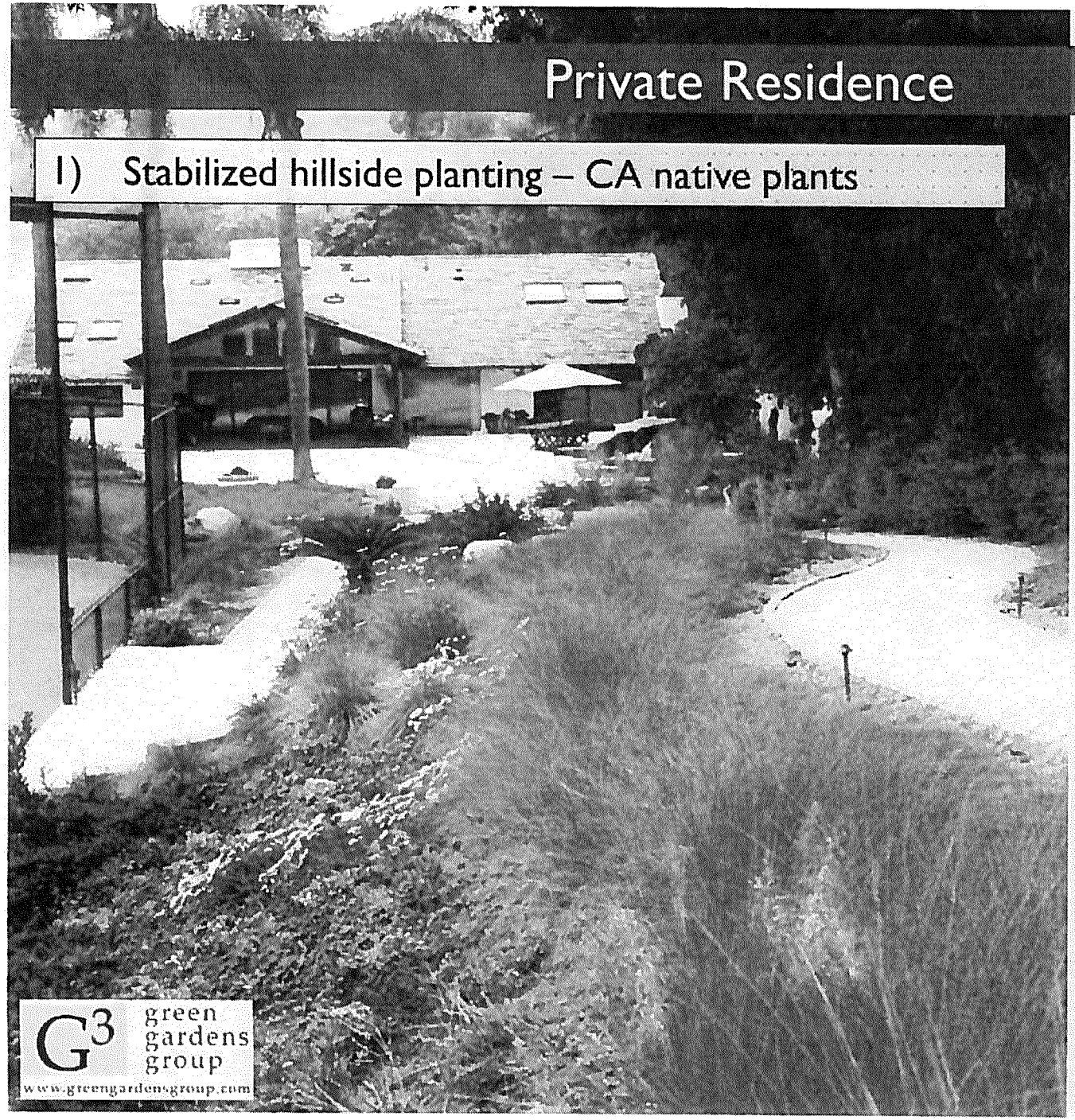
Private Residence

1) Stabilized hillside planting – CA native plants



G3 green gardens group
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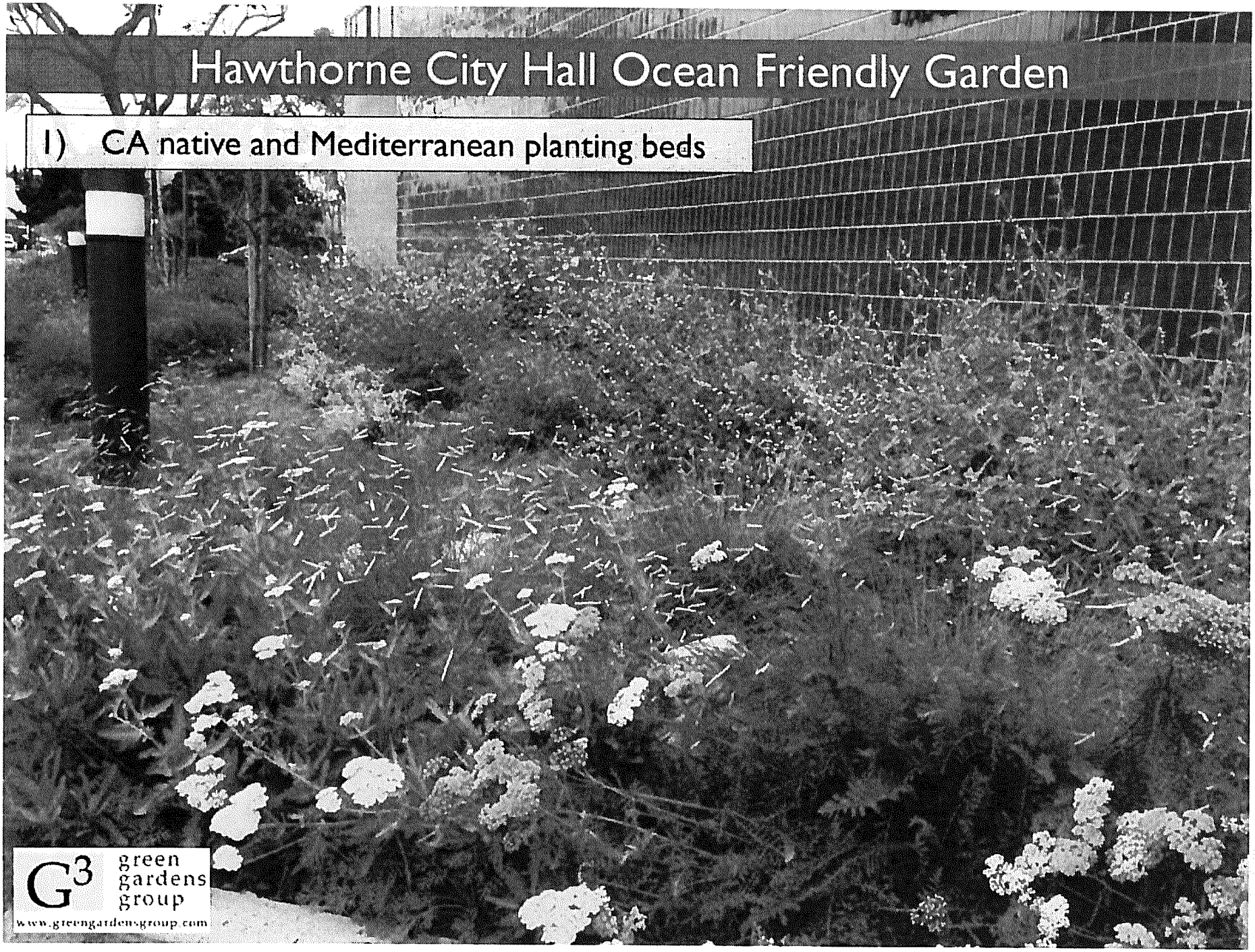

Hawthorne City Hall Ocean Friendly Garden
1) CA native and Mediterranean planting beds
G3
green
gardens
group
www.greengardensgroup.com

BH2O

Beverly Hills is Conserving

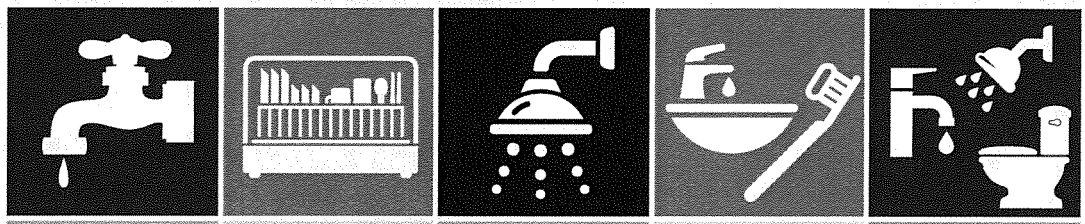
www.beverlyhills.org/conservation

Or call: 310-285-2467

DROUGHT CRISIS

Beverly Hills water customers MUST conserve at least 30%!

Conserve Water - Indoor Tips:



Collect the water used rinsing fruits and vegetables to water your plants.	Run dishwasher and washing machine only when full. Save up to 1,000 gallons a month.	Limit your showers to 5 minutes. Save up to 5 gallons a minute.	Turn off water while brushing teeth, shaving or washing your face. Save up to 4 gallons a minute.	Replace fixtures with high efficiency washing machines, dishwashers, toilets & faucets. Check Rebates beverlyhills.org/rebates

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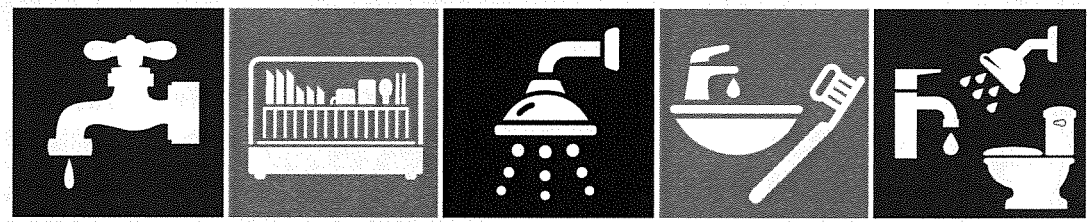

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Beverly Hills Mandatory Watering Schedule

Limit your outdoor watering to 2 days a week, 8 minutes per station, before 9 a.m. or after 5 p.m.

Residents Living	Mon	Tue	Wed	Thu	Fri	Sat	Sun
North of Santa Monica Boulevard		NO WATERING	NO WATERING	NO WATERING		NO WATERING	NO WATERING
South of Santa Monica Boulevard	NO WATERING		NO WATERING	NO WATERING	NO WATERING		NO WATERING

BH2O

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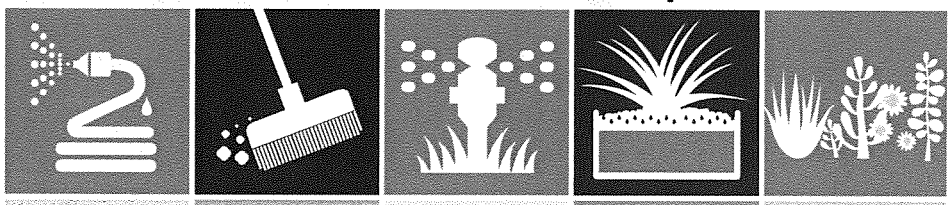
www.beverlyhills.org/conservation

310-285-2467

Track your water consumption with Water Tracker: Water.beverlyhills.org

Conserve Water - Outdoor Tips:



Check and repair leaks and broken sprinkler heads immediately! Adjust sprinkler overspray.	Use a broom instead of a hose to clean driveways and sidewalks.	Use a Smart Controller irrigation system to improve efficiency.	Spread a layer of organic mulch in planters to retain moisture.	Replace turf with drought tolerant plants. Rebates Available beverlyhills.org/rebates

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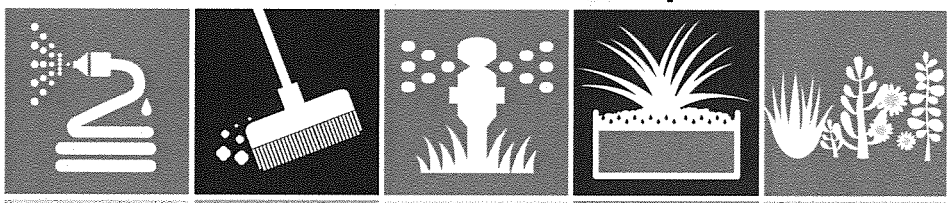

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