

**Final Performance Report**

**California Friendly Landscape Pilot Rebate Program for New Homes  
and  
Groundwater Infiltration Using Porous Concrete Pilot Rebate Program**

**Agreement No. 03FG350094**

**September 30, 2010**

**Prepared for:**

**US Department of the Interior  
Bureau of Reclamation  
Southern California Area Office**



**Prepared by:**

**Metropolitan Water District of Southern California**





THE METROPOLITAN WATER DISTRICT  
OF SOUTHERN CALIFORNIA

October 19, 2010

Ms. Debra Whitney  
Water Conservation Specialist  
U.S. Bureau of Reclamation  
27708 Jefferson Avenue, Suite 202  
Temecula, CA 92590

Dear Ms. Whitney:

Final Performance Report for Federal Grant Agreement  
#03FG350094: California Friendly Landscape Pilot Rebate Program for New Homes

The Metropolitan Water District of Southern California (Metropolitan) is pleased to submit the enclosed final performance report on the California Friendly<sup>®</sup> Landscape Pilot Rebate Program for New Homes. The program ended on June 30, 2010 with ten builders and 226 homes participating. The target for California Friendly landscaping was exceeded with over 392,000 square feet of water efficient landscaping installed. Reclamation funded \$196,338 in incentives for landscapes at \$0.60 per square foot. The efficient landscapes are using approximately 25 percent less water than traditional landscapes, which improves regional water supply reliability.

One of the most important benefits of this program was its contribution to market transformation for water efficient new homes. The incentives encouraged developers to voluntarily incorporate water efficient fixtures and landscapes into new model and production homes, helping to build consumer awareness and increase market demand. Early in the program, the landscape specifications contributed to the adoption of Riverside County's water efficient landscape ordinance, one of the first in Metropolitan's service area. The evolution in consumer preference and builder support was an important factor in the recent adoption of higher efficiency standards for new residential development through California's mandatory green building code and Model Water Efficient Landscape Ordinance. These regulations will assist the state in achieving a 20-percent reduction in urban per capita water use by 2020 as required by law.

A portion of this grant was designated for the Inland Empire Utilities Agency (IEUA) Groundwater Infiltration Using Porous Concrete Pilot Rebate Program. Although permit approvals and the low incentive amount hindered participation, three projects were completed with over 6,000 square feet of porous concrete installed. Reclamation funded \$12,126 in

Ms. Debra Whitney  
Page 2  
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incentives for new porous concrete projects at \$2.00 per square foot. Lack of rainfall precluded calculations on water savings benefits; however the San Bernardino County Stormwater Management Department has agreed to monitor the sites and do the infiltration calculations when rainfall occurs. IEUA will share this information when it is available.

We have completed all work for the project. The agreement provided \$262,000 in funding from Reclamation, and \$208,464 has been paid in incentives. Therefore, we request de-obligation of funds in the amount of \$53,536 to close this agreement.

We appreciate the Bureau of Reclamation's support for California Friendly communities and look forward to working with you on future projects. If you have any questions, please contact me at (213) 217-5777.

Very truly yours,

  
Raymond Jay  
Contract Administrator

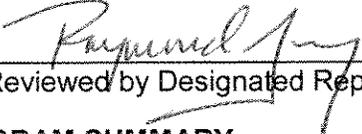
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Enclosure

## Final Program Performance Report

Contract Number: 03FG350094  
Project Title: California Friendly Landscape Pilot Rebate Program for New Homes  
Contractor: Metropolitan Water District of Southern California  
Contact Person: Raymond Jay, Contract Administrator  
Phone: (213) 217-5777  
Email: rjay@mwdh2o.com

Period Ending: June 30, 2010

  
Signed, Reviewed by Designated Representative

### I. PROGRAM SUMMARY

In September 2003, Metropolitan executed a \$182,000 grant contract with the Bureau of Reclamation (Reclamation) to provide funding for the California Friendly Landscape Pilot Rebate Program. In September 2004, the grant was increased to \$262,000 to provide funding for additional model homes within Metropolitan's service area. In November 2008, \$60,000 of the grant funding was committed to the Inland Empire Utilities Agency (IEUA) Groundwater Infiltration Using Porous Concrete Pilot Rebate Program. The pilot program elements included:

- Rebates for California Friendly landscapes and indoor water efficiency measures installed in new model and production homes within the Eastern Municipal Water District (EMWD) service area located in Riverside County;
- Rebates for California Friendly landscapes and indoor water efficiency measures installed in model homes throughout Metropolitan's service area; and
- Rebates for the use of porous concrete to enhance groundwater infiltration within the IEUA service area.

The California Friendly pilot program incentivized homebuilders to include water efficient landscapes, devices, and fixtures in new model and production homes. The program was initiated at a time when the region was experiencing significant growth. Model homes were attracting large numbers of potential buyers and visitors interested in learning about the latest options to upgrade new and existing homes. However, water-efficient design increased costs and was only being used in custom homes or developments targeting the "green building" niche market.

To leverage the opportunity to impact market demand, Metropolitan partnered with Reclamation and EMWD to implement a pilot program within EMWD's service area. The program provided incentives to offset the incremental cost to equip new homes with California Friendly landscapes and upgraded fixtures. The program was expanded to provide incentives for model homes throughout Metropolitan's service area. Eligibility for the program's incentives required that model homes incorporate four water conserving features: California Friendly landscaping, a smart controller, high efficiency toilets, and a high efficiency clothes washer. Eligibility for production home funding required the installation of a smart controller and California Friendly landscaping in the front yard of each residence.

IEUA's pilot program provided an incentive of \$2 per square foot for the installation of demonstration porous concrete projects in areas where stormwater infiltration would benefit groundwater supplies.

Following is a financial summary of the California Friendly Landscape Pilot Rebate Program and participation summaries for the landscape and porous concrete program elements.

### Financial Summary

Program Element	Program Budget	Outlay		Remaining Budget*
		Federal	Local	
<b>Model and Production Homes:</b>				
Rebates: Reclamation	\$202,000	\$196,338		\$5,662
Rebates: MWD + Member Agencies	\$87,334		\$97,113	(\$9,779)
Program Plan / Development	\$89,223		\$80,520	\$8,703
Administration	\$27,069		\$25,460	\$1,609
<b>Porous Concrete:</b>				
Rebates: Reclamation	\$60,000	\$12,126		\$47,874
Rebates: MWD	\$27,000			\$27,000
Local Agency Construction Costs			\$91,874	(\$91,874)
Administration			\$6,633	(\$6,633)
<b>TOTAL</b>	<b>\$492,626</b>	<b>\$208,464</b>	<b>\$301,600</b>	<b>(\$17,438)</b>
Final Cost Share Ratio		41%	59%	
Cost Share Ratio per Agreement		53%	47%	

\*A total of \$53,536 in federal funding was not used; funding and in-kind services provided by Metropolitan and local agencies exceeded the local match requirement in the program budget.

### Participation Summary:

#### California Friendly Landscape Pilot Rebate Program

Participating Builders	# Units	CFL Total Sq Ft
Brookfield Homes	1	4,621
Centerstone Construction	1	3,501
Centex Homes	1	2,000
HG Fenton (multifamily)	2	77,976
KB Home	56	84,594
John Laing Homes	47	53,765
K. Hovnanian Homes	1	395
Lennar Homes	1	1,835
Pardee Homes	4	11,221
Shea Homes	112	152,641
<b>TOTAL</b>	<b>226</b>	<b>392,549</b>
Program Goal		336,667
% of Goal		117%



- **California Friendly landscape specifications:** Specifications were developed for the program requiring that landscapes meet a water budget that was ten percent more efficient than the state's 1990 model water efficient landscape ordinance (AB 325, 1990). The specifications are included in the marketing materials in Appendix B.
- **Marketing and outreach:** Metropolitan developed a variety of collateral materials to promote the program; program information and project profiles were also included on [www.bewaterwise.com](http://www.bewaterwise.com). Examples of program materials are included in Appendix B. Metropolitan staff and member agencies provided outreach to the building industry through individual meetings with interested builders and participation in regional events and conferences. In 2007, Metropolitan completed a marketing analysis of the program to identify ways to improve marketing, participation, and program effectiveness. The findings resulted in program modifications to make participation easier. A copy of the study is included in Appendix C.
- **Technical assistance:** Metropolitan provided technical assistance to builders and landscape architects during design and construction. This included providing information on eligible fixtures and devices, consultations with purchasing managers and landscape architects, and landscape plan review.
- **Verification:** Metropolitan inspected each project upon completion, verifying installation of indoor fixtures and landscapes. Incentive payments were processed after verification was completed.

### **Accomplishments Compared to Goals and Objectives**

The objectives for the California Friendly program elements were as follows:

- Successful distribution of Reclamation's grant funds as rebates to homebuilders for landscape installations in new model homes and production homes in EMWD's service area, and additional new model homes in Metropolitan's service area; and
- Installation of approximately ten acres of new water-efficient landscapes across 250 to 450 new homes, depending on the actual size of the landscaped area, with an ongoing water savings potential of more than 40 acre-feet per year. (This objective was established prior to the commitment of \$60,000 in funding to porous concrete incentives.)

Metropolitan substantially met these objectives with 97 percent of Reclamation's funding for landscape installation rebates distributed to homebuilders. Ten homebuilders participated with 226 homes in Riverside, San Bernardino, and San Diego counties. The production homes were all located with EMWD's service area. The target was 336,667 square feet of California Friendly landscaping; this was exceeded with 392,549 square feet being installed. Builders received over \$293,000 in incentives for water efficiency measures through funding provided by Reclamation, Metropolitan, and member agencies. Representative photos of the California Friendly landscapes installed through the pilot program are included in Appendix D.

### **Water Savings Benefits**

The 2008 water use for 28 California Friendly homes within EMWD's service area was compared to the water use of 28 traditional homes in the same neighborhood with similar lot sizes. Based on this limited sampling, the average annual use for a California Friendly home was 0.56 acre feet, which is 12 percent lower than 0.64 acre feet of average use in the traditional homes.

To assess outdoor efficiency, estimated indoor use was subtracted from total water use to yield estimated outdoor use. Indoor use was based on 60 gallons per person per day for three persons per household, or 0.20 acre feet per year. Outdoor use for the average irrigated landscape area for eight homes in the California Friendly group was compared to a comparable group of traditional homes. Based on the limited data, California Friendly homes are using 25 percent less water for landscape irrigation than traditional homes.

	Acre Feet/Yr – Est. Outdoor Use	Avg. Landscape Area (SF)	Water Applied – Inches per Year	Percent of Reference Evapotranspiration
California Friendly	0.3552	4,379	42.41	75%
Traditional	0.4340	3,965	57.22	101%

The program was anticipated to result in efficient landscapes that used approximately 3.2 acre feet/acre/year on average. The analysis above indicates that the California Friendly landscapes are using an average of 3.5 acre feet/acre/year. This water use is expected to be even lower for projects that were completed in 2010 as a more stringent water budget was used to meet the projects' green building objectives and consumer demand. For each of the projects, additional savings would accrue from indoor water use efficiency measures that the builder and homeowner may install.

### Market Transformation

This program was noteworthy for its role in helping to transform the new home market with respect to water efficiency. The program was launched during a period of high growth in Southern California. Green building was becoming an established market niche; however the focus was primarily on energy efficiency. At that time, several factors limited use of water efficient design in the broader new home market: (1) water efficient measures and landscaping increased builder costs compared to standard fixtures and landscapes; (2) most landscape architects were not yet embracing water efficient design; (3) consumers still preferred traditional landscapes with cool season turf; and (4) availability of high efficiency toilets was somewhat limited, particularly in the styles selected for model home interiors. Builders were challenged by market conditions and the need to add value to new homes but not increase cost.

The pilot program sought to address these issues and use the existing momentum for new residential development and consumer interest in efficient homes. Enhanced, bundled incentives were offered to cover most of the increased cost to builders. Marketing materials were developed to assist builders in marketing their homes using a California Friendly New Home logo. Public outreach efforts helped build consumer awareness and increase market acceptance for water efficient landscapes. The program's influence was affirmed when EMWD received the Association of California Water Agencies' 2006 Theodore Roosevelt Environmental Award for Excellence in Natural Resources Management for the pilot program.

Consumer preferences and builder support continued to evolve over the program life. There was a marked difference between the landscape designs and quality of installation in the early projects compared to the projects at the end of the program. The first projects focused on using as much cool season turf as possible, whereas Brookfield Homes' Rockrose project (2010) included no turf at all. This evolution became an important factor in the recent adoption of California's mandatory green building code and Model Water Efficient Landscape Ordinance. Beginning in 2011, CALGreen, the state's green building code, requires that new homes be at least 20 percent more efficient indoors and meet the state's model water efficient landscape ordinance requirements. The landscape ordinance requires landscapes to have efficient

irrigation systems and a plant palette that will meet a water budget based on 70 percent of reference evapotranspiration. Many cities and counties have adopted new water efficient landscape ordinances or updated existing ordinances as required by law.

### **Other Benefits**

This program provided additional benefits to the region. First, the lower water demand for the homes improves regional water supply reliability. Second, approximately ten project landscape architects received technical training through individual consultations with Metropolitan on the California Friendly landscape specifications and plan review and comments. Third, the new homeowners received information on their California Friendly landscape and smart irrigation controller; this improved their knowledge of water conservation.

### **Key Findings and Recommendations**

Implementation of the pilot program provided important insights for future programs:

- Participation in the earlier part of the program might have been greater if the program requirements were simpler. (Participation towards the end of the program was limited by the slowdown in the building industry due to economic conditions.) Formal contracts with the builders were used in the beginning, which slowed the process and created an administrative burden. The builders were already working successfully with the energy utilities on rebate programs; this program would have benefitted from following a similar model.
- Many organizations are working towards the goal of efficient homes, including energy utilities, government, and environmental organizations. Energy and water-saving initiatives should be combined to benefit the consumer and assist homebuilders in building homes with greater long-term value.
- Other incentives to meet efficiency objectives should be considered, such as quicker plan check turnaround and reduced fees.
- Outreach efforts need to include not just homebuilders but equipment vendors, architects, landscape contractors, and government agencies responsible for plan review and approval. These other entities are key stakeholders and directly contribute to program success.
- Builders reported that new homebuyers were satisfied with California Friendly landscaping and the water efficiency measures included in their homes. However, follow up inspections revealed that homeowners were not always able to properly adjust their smart controllers. Builder customer service representatives provided assistance as needed. Homeowner education is necessary to assure that the planned water savings is achieved.
- Developer-installed landscaping is sometimes changed by homeowners or not maintained. The areas maintained by homeowner associations had the best persistence in terms of maintaining the original design and remaining water efficient. Homeowner education on how to maintain California Friendly landscapes would be beneficial.
- As a condition of participation, homebuilders were required to offer water efficiency upgrades for the production homes. Builders reported that homeowners rarely selected this option due to increased cost. Builders that had green objectives included high efficiency toilets as a standard for production homes and offered a California Friendly landscape option.

- In the early phase of the program, landscape designs included as much turf as possible while still meeting the required water budget. As a result, the landscapes included more turf than expected. At the end of the program, builders were embracing the concept of California Friendly and using little to no turf. It is important to work with the builders early in the design stage to ensure that they understand program goals and requirements. Projects that are receiving enhanced incentives should strive to be exemplary and be clearly differentiated from typical homes.
- Homebuilders were unable to provide detailed cost information on the incremental cost of installing California Friendly landscapes. However, water efficient landscapes are now required by law for most projects. Future programs that target higher levels of efficiency than required by state or local ordinance should include a means to collect detailed cost information from program participants.

### **III. POROUS CONCRETE PILOT REBATE PROGRAM**

#### **Implementation**

Implementation of the porous concrete pilot rebate program occurred over the 18-month period from January 2009 through June 2010. Details are in IEUA's progress report in Appendix E.

#### **Accomplishments Compared to Goals and Objectives**

The goal of the porous concrete pilot rebate program was to develop, implement, and demonstrate the transferability of a financial incentive program for the installation of porous concrete projects that would infiltrate urban runoff into the Chino Groundwater Basin. The objectives included:

- Achieve significant water conservation and augmentation of local groundwater supplies, consistent with local and regional water management plans;
- Reduce urban runoff and contribute significant improvements in local water quality consistent with the national pollution discharge elimination system permits held by the cities and agencies within IEUA's service area;
- Raise public awareness about the importance of local water supplies and the need for water conservation and improved infiltration of available urban runoff into groundwater basins where the water can enhance an existing groundwater management program;
- Develop a financial incentive program and supporting education materials; and
- Engage local cities, water agencies, the development community and concrete associations to participate in the design and implementation of pilot projects that will demonstrate the cost effectiveness and long term value of using porous concrete to infiltrate urban runoff into groundwater basins where the water can enhance an existing groundwater management program.

IEUA met most of these objectives through direct outreach to agencies within its service area, a workshop for public agencies, and a competitive grant program. Three projects were funded for the installation of 6,063 square feet of porous concrete. The average price for material and installation was \$17.10 per square foot. This represents a cost increase of \$13.40 per square foot over the installation of traditional, impervious concrete. Participation was limited due to lengthy permitting processes and the low incentive amount of \$2 per square foot relative to the increased cost. The grant was extended six months to accommodate two projects that were nearing completion. However, additional participation in the near future was not anticipated and a further grant extension was not requested.

It was intended that an advisory committee would develop a methodology for measuring benefits and evaluating projects; however, due to lack of rainfall this methodology was not completed by the end of the program. Lack of rainfall also precluded the ability to quantify water conservation savings or assess water quality improvements. The San Bernardino County Stormwater Management Department has agreed to monitor the program-funded sites and calculate infiltration when rainfall occurs. IEUA will share this information when it is available.

### **Key Findings and Recommendations**

IEUA noted the following key findings and recommendations:

- Installation costs were higher than anticipated due, in part, to the increased cost of building materials and the need for a deeper gravel base to maximize storage and infiltration capacity. The initial rebate of \$2 per square foot appears low; a higher rebate might result in increased use of porous concrete.
- Curb and gutter applications, especially in areas prone to runoff, appears to be an especially promising usage of porous concrete for both infiltrating water and avoiding nuisance flows.
- Municipalities are interested in installing porous concrete and those that have are extremely satisfied with the results.
- A review of approximately 30 sites in the Chino Basin indicates that installation designs vary; an additional design workshop would be beneficial to agencies.

### **IV. NEXT STEPS**

The California Friendly Landscape Pilot Rebate Program for New Homes concluded on June 30, 2010. Metropolitan and its member agencies continue to provide technical assistance to homebuilders on water efficient landscapes. Homebuilders are eligible for Metropolitan's rebates for irrigation equipment and high efficiency clothes washers, and other rebates available through the member agencies.

IEUA and Chino Basin stakeholders have begun a survey and evaluation of existing porous concrete treatments throughout the Chino Basin in order to evaluate groundwater infiltration and replenishment.

### **APPENDICES**

- Appendix A: California Friendly Cost Analysis
- Appendix B: California Friendly Marketing Materials
- Appendix C: 2007 California Friendly New Residential Construction Program Marketing Analysis
- Appendix D: California Friendly Project Photos
- Appendix E: IEUA Final Project Progress Report – Pilot Porous Concrete Rebate Program

**Appendix A:**  
**California Friendly Landscape Cost Analysis**

**COMPARATIVE ESTIMATED COST ANALYSIS  
FOR IMPLEMENTATION OF CALIFORNIA FRIENDLY LANDSCAPES**

	Typical Model		Active Family		Young Professionals		Empty Nesters		Production Front Yard	
	Current Type	Cal Friendly Equivalent	Current Type	Cal Friendly Equivalent	Current Type	Cal Friendly Equivalent	Current Type	Cal Friendly Equivalent	Current Type***	Cal Friendly Equivalent
<b>Turf Area (sf)</b>	3,075	3,075	2,276	2,276	1,776	1,776	700	700	1,030	1,030
<b>Shrub Area (sf)</b>	2,259	2,259	3,018	3,018	3,185	3,185	4,239	4,239	800	800
<b>Total Landscape Area</b>	5,334	5,334	5,294	5,294	4,961	4,961	4,939	4,939	1,830	1,830
<b>Standard (\$ per sf)</b>										
<b>Calif Friendly (\$ per sf)</b>										
<b>Soil Prep</b>	0.10	0.25	\$ 533	\$ 1,334	\$ 529	\$ 1,324	\$ 496	\$ 1,240	\$ 100	\$ 250
<b>Plant Material</b>	3.75	4.45	8,471	10,053	11,318	13,430	11,944	14,173	500	700
<b>Sod/Turf</b>	1.10	1.21	3,383	3,721	2,504	2,754	1,954	2,149	1,000	1,200
<b>Turf Irrigation</b>	1.25	1.31	3,844	4,028	2,845	2,982	2,220	2,327	400	650
<b>Shrub Irrigation</b>	1.85	1.85	4,179	4,179	5,583	5,583	5,892	5,892	200	350
<b>Mulch</b>	0.20	0.20	452	452	604	604	637	637	100	100
<b>Total (materials &amp; equip)</b>			\$ 20,862	\$ 23,766	\$ 23,382	\$ 26,676	\$ 23,143	\$ 26,418	\$ 2,300	\$ 3,250
<b>Cost per sf</b>			\$ 3.91	\$ 4.46	\$ 4.42	\$ 5.04	\$ 4.66	\$ 5.33	\$ 1.26	\$ 1.78
<b>Incremental Cost per sf</b>			\$ 0.54	\$ 0.62		\$ 0.62	\$ 0.66	\$ 0.77	\$ 0.52	
<b>Total Incremental Cost</b>			\$ 2,904.15	\$ 3,293.62		\$ 3,275.57		\$ 3,827.15		\$ 950.00
<b>California Friendly Rebate \$0.80 per sf</b>			\$ 4,267.20	\$ 4,235.20		\$ 3,968.80		\$ 3,951.20		\$ 1,464.00
<b>Net Financial Incentive</b>			\$ 1,363.05	\$ 941.58		\$ 693.23		\$ 124.05		\$ 514.00
<b>Estimated Water Use (gal per yr)</b>										
w/ Standard Controller	387,578	188,030	359,536	166,423	325,362	146,666	289,320	118,213	131,968	63,773
w/ Weather Sensitive Controller*		143,788		127,265		112,157		90,398		48,768
<b>Potential Water Savings - Current Type vs Cal Friendly w/ weather sensitive controller (gal per yr)</b>		243,790		232,271		213,205		198,922		83,200

\* Weather-Based Irrigation Controller cost not included. Separate rebate for these units is available from Southern California water Agencies.

\*\* Calculations are based on sample model home landscape designs produced by Metropolitan.

\*\*\* Production Yard Costs are based on estimates per landscape contractors rather than per-sf-costs used for models

**Appendix B:**  
**California Friendly Marketing Materials**

**(printed samples included)**



## Sustainable Landscapes

Up to 70 percent of the water used in our homes goes outdoors. This presents a great opportunity for water savings. The California Friendly landscape is designed to be perfectly suited to the Southern California climate and limited rainfall. These landscapes are low maintenance, need significantly less watering, reduce the need for pesticides and fertilizer, and even attract native wildlife like birds and butterflies.



## Smart Irrigation

Advanced technology has come to sprinklers in the latest weather-sensitive controllers. This means when it rains, your sprinklers will remember to turn themselves off even if you don't. It also means that your watering schedule will automatically adjust to the season and weather to meet the needs of your plants. This super-efficient technology, coupled with precision sprinkler head hardware and a water budget, provides a big edge in water savings.

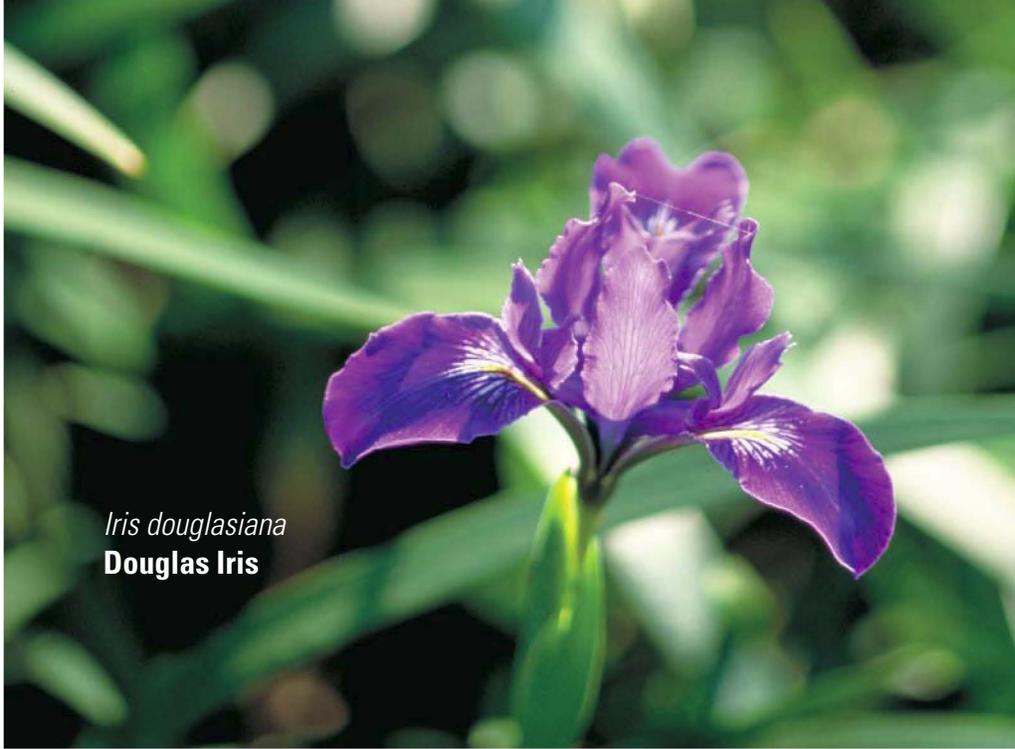
## Indoors

Low-flow toilets and showerheads are nothing new—Southern Californians have installed two million of them in a decade. Look for the next generation of water-saving devices such as high-efficiency clothes washers, dual-flush and one gallon toilets to provide substantial water and cost savings.



## Partial list of plants used by participating builders in recent projects

These climate-appropriate plants only need minimal amounts of water to help them establish a strong root system. Once established, water is only needed to sustain them through the dry summer months. Shrub areas have been equipped with drip irrigation and bubblers to provide sufficient amounts of water needed by each plant without wasted overflow and run-off, found in most residential neighborhoods.



*Iris douglasiana*  
**Douglas Iris**



*Echium candicans*  
**Pride of Madeira**



*Anigozanthos 'Bush Ranger'*  
**Dwarf Kangaroo Paw**



*Heuchera sanguinea*  
**Coral Bells**



*Mimulus 'Pumpkin'*  
**Orange Monkey Flower**



*Penstemon 'Garnet'*  
**Beard Tongue**



*Ceanothus 'Julia Phelps'*  
**Small Leaf Mountain Lilac**



*Lavandula stoechas 'Otto Quast'*  
**Spanish Lavender**

*Grevillea 'Canberra Gem'*  
**Flowering Pine**

*Platanus racemosa*  
**California Sycamore**

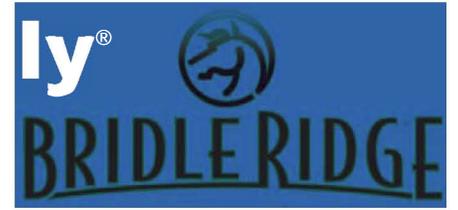
*Arctostaphylos densiflora*  
*'Howard McMinn'*  
**Manzanita**

*Quercus agrifolia*  
**Coast Live Oak**

*Olea europea*  
**Olive Tree**

**Metropolitan Water District of Southern California  
Eastern Municipal Water District  
Bureau of Reclamation**





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## Indoors

Low-flow toilets and showerheads are nothing new—Southern Californians have installed two million of them in a decade. Look for the next generation of water-saving devices such as high-efficiency clothes washers, dual-flush and one gallon toilets to provide substantial water and cost savings.



## Partial listing of plants at the Bridle Ridge Model Complex

These climate-appropriate plants only need minimal amounts of water to help them establish a strong root system. Once established, water is only needed to sustain them through the dry summer months. Shrub areas have been equipped with drip irrigation and bubblers to provide sufficient amounts of water needed by each plant without wasted overthrew and run-off, found in most residential neighborhoods.



*Aloe striata*  
**Coral Aloe**



*Rosmarinus officinalis 'Prostratus'*  
**Rosemary**



*Aloe arborescens*  
**Candelabra Aloe**



*Anigozanthos*  
**Kangaroo Paw**



*Sedum*  
**Stonecrop**



*Westringia fruticosa*  
**Coast Rosemary**



*Pittosporum t. 'Turner's Dwarf'*  
**Dwarf Mock Orange**



*Laurus 'Saratoga'*  
**Saratoga Bay Laurel**



*Agave americana*  
**Century Plant**

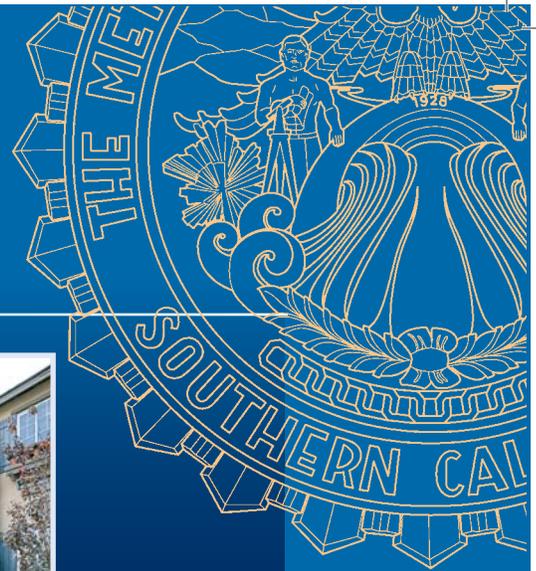


**Metropolitan Water District of Southern California  
San Diego County Water Authority  
Bureau of Reclamation**



# California Friendly<sup>®</sup> Homes

A Picture Book



[bewaterwise.com](http://bewaterwise.com)



[bewaterwise.com](http://bewaterwise.com)

Since 2002, the Metropolitan Water District of Southern California has introduced an array of water conservation programs for homebuilders, and has spent more than \$6 million spreading the word about California Friendly® programs and incentives. Advertising, educational materials, **bewaterwise.com**, training and partnerships have brought a measurable increase in awareness of the need for water conservation. Partners include homebuilders such as KB Home and Shea Homes, home and garden retailers like Home Depot and Armstrong Garden Centers, and wholesale plant growers like Native Sons and Monrovia Growers.

The introduction of the California Friendly program represents the next evolution in water conservation. It brings together the best products, services, practices and organizations. California Friendly offers a lifestyle choice relevant to landscapes and appliances, to gardens and gardeners, to neighborhoods and large-scale developments.

In October 2005, the California Green Builder program (sponsored by the California Building Industry Association) incorporated water use efficiency measures based on Metropolitan's California Friendly Home standards. The Metropolitan standards originally were developed in partnership with the federal Bureau of Reclamation, Southern California water utilities and several

building industry organizations. It is estimated that homes built to this new standard will use 30 percent less water than the typical new home built today.

In December 2006, the County of Riverside Board of Supervisors adopted the Water Efficient Landscape Requirements Ordinance, mandating the California Friendly landscape specifications illustrated in this book.

Thanks to a new partnership with the California Department of Water Resources, the California Friendly Model Home Program has secured funding through 2009 to showcase over 100 single- and multi-family projects. This program is currently available throughout Metropolitan's six county service area.

Two facets of the program link California Friendly concepts with new home developments – landscapes and model homes. This booklet highlights these programs.

The initial set of photographs showcase the first generation of California Friendly **landscaped communities** developed in Riverside County. Metropolitan's pilot program, a unique public-

private partnership co-sponsored by the federal Bureau of Reclamation and Eastern Municipal Water District, is delivering about 400 new homes that feature California Friendly landscapes. Eastern received the Association of California Water Agencies 2006 Theodore Roosevelt Award of Excellence in Conservation & Natural Resource Management for this program.

The next group of photographs highlight California Friendly **model homes** in the Lewis Group's "The Preserve at Chino." This master-planned community, located in the service area of the Inland Empire Utilities Agency in San Bernardino County, features seven participating builders. Financial incentives for builders are funded in part by the federal Bureau of Reclamation.

A variety of financial incentives also are available for water-efficient devices, fixtures and appliances installed in production homes. For more information about the technical, financial and marketing resources available through our California Friendly Home Program, please contact:

**Carlos Michelin, [cmichelon@mwdh2o.com](mailto:cmichelon@mwdh2o.com), (213) 217-6645**

or

**Charles Gale, Jr., [cgalejr@mwdh2o.com](mailto:cgalejr@mwdh2o.com), (213) 217-5538**

### **Technology in the California Friendly Home**

A distinctive landscape design with a native palette of flowers and plants is a scene-stealer. In the spotlight's shadow are high-tech gadgets and new-age wizardry that transform commonplace things like toilets and sprinklers into super-efficient appliances that define the California Friendly Home as clearly as its outdoor trimmings.



*Landscaping*



*High-Efficiency  
Toilets*



*Precision Sprinkler  
Heads*



*Smart Irrigation  
Controllers*



*High-Efficiency  
Clothes Washers*

## **California Friendly Programs for Homebuilders**

### **Brought to you by:**

Metropolitan Water District of Southern California  
Bureau of Reclamation  
California Department of Water Resources  
Family of Southern California Water Agencies

### **In collaboration with:**

Building Industry Association of Southern California  
Building Industry Association of San Diego County  
County of Riverside  
Western Riverside Council of Governments

### **Participating builders:**

Barratt American (coming soon)  
Centex Homes  
John Laing Homes  
KB Home  
K. Hovnanian  
Lennar  
Lewis Planned Communities  
Pardee Homes  
Shea Homes  
Standard Pacific Homes  
(coming soon)

**KB HOME** "VALDEMOSA," TEMECULA

<http://www.kbhome.com>





**SHEA HOMES:** "WATERMILL AT ADELINE'S FARM," FRENCH VALLEY

<http://www.sheahomes.com>





## JOHN LAING HOMES: "HOLIDAY," SUN CITY

<http://www.johnlainghomes.com/inlandempire/holiday/>





**CENTEX HOMES:** "CANTERBURY GROVE AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/canterbury.php>



THE PRESERVE AT CHINO  
LEWIS PLANNED COMMUNITIES, A MEMBER OF THE LEWIS GROUP OF COMPANIES



**K. HOVNANIAN:** "TEN BLOOM ROAD AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/bloom.php>



THE PRESERVE AT CHINO  
LEWIS PLANNED COMMUNITIES, A MEMBER OF THE LEWIS GROUP OF COMPANIES



## JOHN LAING HOMES: "SECRET GARDEN AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/secret.php>



THE PRESERVE AT CHINO  
LEWIS PLANNED COMMUNITIES, A MEMBER OF THE LEWIS GROUP OF COMPANIES



**KB HOME:** "OLIVE GROVE," PERRIS

<http://www.kbhome.com>





**LENNAR:** "GARDEN GLEN AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/glen.php>



THE PRESERVE AT CHINO  
LEWIS PLANNED COMMUNITIES, A MEMBER OF THE LEWIS GROUP OF COMPANIES



**PARDEE HOMES:** "CANDLEWOOD AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/candlewood.php>



THE PRESERVE AT CHINO  
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**SHEA HOMES:** "IRIS AT THE PRESERVE," CHINO

<http://www.thepreserveatchino.com/neighborhoods/iris.php>



THE PRESERVE AT CHINO  
LEWIS PLANNED COMMUNITIES, A MEMBER OF THE LEWIS GROUP OF COMPANIES



Please visit

**[bewaterwise.com](http://bewaterwise.com)**

for additional program information.



**METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA**

**Appendix C:**  
**California Friendly Marketing Analysis**

# CALIFORNIA FRIENDLY NEW RESIDENTIAL CONSTRUCTION PROGRAM MARKETING ANALYSIS

## FINAL REPORT

Submitted By:



Irvine, CA

August 2007



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## EXECUTIVE SUMMARY

Redhill Group conducted a focus group with retail water agencies, executive interviews with homebuilders and green program managers, and telephone surveys with recent homebuyers who purchased new construction homes. This multi-faceted marketing study was designed to assess the perspectives of all key players involved in the implementation of water saving equipment and landscaping in new construction homes in Southern California.

Individual reports have been provided for each of these studies, and the key findings and recommendations from all reports combined are presented below.

- Improve the chances of participation program success by making programs simpler for builders. Provide a manual and checklist saying what the options are, exactly what they need to do, and when and how to do it. Retail water agencies also feel it is important to have a standardized agreement form that can be modified as needed, and to maintain an up to date list of qualified equipment.
- Green is growing. Homebuilders say it is more important now than in the past, and will be more important in the future than it is today. Builders say they are proactively looking for green programs, and new homeowners say they are motivated to buy green homes. Now is the time to act.
- New homebuyers rate the importance of water savings almost as highly as energy savings. Since water savings doesn't have as strong a financial story to tell as energy, and since green energy programs appear interested in operating joint programs, and homebuilders say this would be a good idea, it is clear that this is a concept that should be pursued.
- At the moment, builders are focused on low cost because of the economic environment. Green options will pick up in importance as home buyers again have more financial flexibility in selecting options.
- Homebuilders are motivated to participate in water-saving programs by the ability to differentiate themselves from competitive builders, for positive press coverage, for quicker plan-checks and reduced local government fees, and also because it is the right thing to do. The key is to make it easy enough for them to do it without significant cost or disruption to the way they are used to operating.
- There is no single optimal point of contact for homebuilders. It should be approached through a combination of bottom up through purchasing, top down through top executives, and directly through Project Managers. Ultimately it is the Project Manager that makes it happen although that may not be where the effort starts.

- One cost-effective way to reach the right people is to speak at trade conferences and Home Builder Association meetings. Sponsored breakfast meetings also have been successfully employed to communicate the benefit of green programs to builders.
- It may be beneficial to team with independent third-party green program consultants to assist the builders with their expert knowledge at a reasonable price.
- MWD should also partner with government agencies which have significant incentives to offer builders in the form of quicker plan-checks and reduced or eliminated fees for achieving green objectives.
- Builders strongly support combining energy and water-saving initiatives into a combined green program. At least one energy utility has also expressed an interest in this.
- Most green programs eliminate the need of builders providing invoices by replacing them with inspections of installed equipment.
- Price is still a significant issue for HETs, HE clothes washers, smart sprinkler controllers and reduced water consumption sprinkler heads. Presumably prices will come down as production volume increases, but incentive programs most likely will need to be in place for some time for these green products to achieve critical mass (similar to hybrid automobiles).
- MWD needs to expand efforts from just homebuilders to equipment vendors, architects, landscapers and government agencies. A broader selection of HETs and HE washers are required to compete effectively with their low-efficiency counterparts. Similarly more landscape architects need to know how to design good looking landscaping with low water consumption plants, and landscape companies need to know how to properly install sprinkler systems to achieve their objectives without killing the plants. Without adequate support infrastructure, programs for water-saving will not be successful.
- In addition, either better education of homeowners is required for smart controllers, or they need to be designed to be more easily understood and operated so that they are set properly to both save water and keep plants alive.

- It is likely that weather-base sprinkler controllers and low water usage plants will continue to struggle until consumer friendly products and signage are available at Lowes, Home Depot and other key nursery and equipment stores where homeowners buy the vast majority of their garden needs for both new and existing homes.
- WaterSense appears to be gaining momentum, and it may be worthwhile to consider this brand as an alternative to California friendly, as it is likely to ultimately have national level support from the EPA as well as spillover benefits from programs in other regions and national product labeling.

In summary, the good news is that there are many organizations all working towards the goal of high-efficiency green homes: energy utilities, multiple green organizations at the local, state and national level, as well as local, regional, state and national government. Unfortunately, this is also the bad news. Builders are being pursued by all of these organizations, each with somewhat different programs with different performance criteria and requirements for participation.

The demand for green homes exists and is growing. Homebuyers want to save money and do the right thing, and builders want be competitive by meeting this demand. However, right now builders don't see a clear and easy way to achieve this objective. Accordingly Redhill Group recommends the following strategic approach:

1. Work with other utilities, green organizations, and government entities to establish a common set of performance criteria (which can include multiple levels with higher incentives for higher levels of performance). Don't be the next Blue-Ray/HD-DVD competition resulting in market paralysis.
2. Team with energy partners, incorporating water savings programs into a comprehensive regional green program. This will improve participation in voluntary water saving programs in three ways.
  - Retail water agencies have limited resources to reach homebuilders and may not be able to work effectively with regional decision-makers that influence program participation. Energy providers have the human resources to reach builders at the regional and local level significantly expanding the potential for builder participation.
  - Green energy programs have a higher return on investment which will make water savings programs more attractive as part of a combined program.
  - It will reduce duplication for the builder, replacing two contacts and two programs with a unified program that reduces builders' staff requirements for participation. Having one clear program instead of several increases builders' benefit to cost ratio, and ultimately increases participation in the program.

3. Work with not just builders, but also with equipment manufacturers, landscape architects, and landscaping firms to ensure that the products and services needed for effective water-saving programs to be successful are in place. Nothing kills a program's momentum more than the first attempt being unsuccessful because providers are not capable of providing the products and services needed to make the program work properly.
4. Consider using the WaterSense brand for water-saving programs as this is likely to receive significant investment in promotion beyond the MWD.

# NEW CONSTRUCTION HOME BUYERS TELEPHONE SURVEY

## PROJECT OVERVIEW

### Background

Metropolitan Water District of Southern California (MWD) and the United States Bureau of Reclamation (USBR) have teamed with Redhill Group to conduct a thorough analysis of the California Friendly Homes program. MWD is a group of 26 cities and water districts in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. Working together they deliver an average of 1.7 billion gallons of water per day to a 5,200 square-mile service area and provide drinking water to nearly 18 million people. MWD's mission is to provide "adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way". As part of an effort to meet the goal of being environmentally conscious, they have developed the California Friendly program. This refers to efforts to conserve water, through various means such as water efficient appliances and fixtures, low-water consuming landscape and efficient irrigation. Homes that meet these requirements are deemed "California Friendly Homes".

### Purpose of Study

MWD's main goal in the study is to improve marketing, participation and effectiveness of the current California Friendly Homes program. To meet that end, Redhill Group's analysis of the program included interviews, focus groups and surveys with water agencies, homebuilder executives, green program managers and the home-buying public.

### Homeowners Telephone Survey

In order to assess the awareness, opinions and attitudes of new construction home buyers Redhill Group conducted a telephone survey of 100 new homeowners (new construction only).

### Selection of New Homeowner Respondents

Potential respondents for the survey were contacted using a purchased calling list of new home buyers in the Metropolitan Operating Area who had purchased a new construction home within the last 12 months.

### Conduct of New Homeowner Telephone Survey

All surveys were conducted in-house between July 9<sup>th</sup> and 12<sup>th</sup>, 2007 at Redhill Group's call center utilizing our proprietary CATI (Computer Telephone Interviewing) system. Potential respondents were screened to ensure that they purchased a new construction home, and that it was no longer than a year prior to the survey.

A total of 106 surveys were completed, exceeding the original target of 100. A sample size of 106 surveys provides accuracy of + 9.5% at a 95% confidence level, the industry standard for consumer research.

## NEW HOMEOWNER KEY FINDINGS

- **Awareness and use of energy/water efficiency information:** A majority of new homeowners do in fact see information about water and energy efficiency and use this information as part of their home-buying decision-making process. Specific results include:
  - 70% recall seeing information about energy and water savings when buying their new home.
  - At 73%, almost three-quarters of respondents who saw information, saw it at the model homes, with the remaining 27% seeing it in the media.
  - 61% of those who saw information indicated they considered it when buying their home.
  
- **Importance of water and energy savings:** Almost all new homebuyers say energy and water savings are at least somewhat important when buying a new home.
  - A total of 94% say that energy savings are very (62%) or somewhat (32%) important when buying a new home.
  - At almost the same level 91% say that water savings are very (59%) or somewhat (32%) important when buying a home.
  
- **Green homes and California Friendly:** The concept of green homes is very appealing to new home buyers, but California Friendly does not have wide awareness with new homeowners.
  - 91% of new homeowners say they are very (57%) or somewhat (34%) interested in buying a green home. Only 1% say they are not at all interested.
  - Only 20% of new homebuyers indicated that they had heard of the term “California Friendly” prior to this survey.
  - After having the goals of the California Friendly program read to them, 93% of new homeowners indicated that they are very (63%) or somewhat (30%) supportive of the program goals.
  - 15% say that saving water and helping the environment is what is most appealing about the California Friendly program, and 10% indicate lowering water bills and saving money, but 72% say both are important. No other factors were cited.

- **High efficiency appliances:** Homeowners were asked about the decision-making process and importance of selection for high efficiency appliances including toilets and clothes washers.
  - Homeowners are the predominant factor in the decision about clothes washers at 81% compared to only 12% saying builders have the biggest influence.
  - Conversely, builders are the predominant decision-makers for toilets at 94% compared to only 6% for homeowners (according to the homeowners).
  - High-efficiency clothes-washers had somewhat higher appeal to homeowners with 93% saying that having a high-efficiency washer when they bought their new home was either very (69%) or somewhat (24%) important. High-efficiency toilets were slightly less important with 83% saying that having them is either very (58%) or somewhat (25%) important.
  - Design centers do play some role in high-efficiency toilets with 20% of new homeowners indicating that a design center did have some input on the decision about toilets.
  
- **High efficiency landscaping and watering equipment:** Landscaping and landscaping equipment is influenced by both builders and homeowners. In addition landscape architects and gardeners also play a role in the decision-making process.
  - Over half of new construction homes (56%) come with front yard landscaping and an additional 21% come with both front and backyard landscaping. 11% each either come with no landscaping or have no yard.
  - Although a majority of homes come with front-yard landscaping, 51% of new homeowners say they are the primary influence in the type of landscaping plants selected for their home. This is followed by landscape architects at 20%, builders at 18%, and gardeners at 5%.
  - Watering equipment follows a similar distribution at 45% homeowners, 23% builders, 20% architects, and 7% gardeners.
  - Low water consumption landscaping plants and high-efficiency watering equipment are both strongly supported with 93% saying that selecting low water consumption landscaping is either very (75%) or somewhat (19%) important. Similarly using low water consumption controllers and sprinklers is also very (75%) or somewhat (21%) important to new homeowners.

- **Opinions about water saving:** Homeowners indicate that conserving water is important to them, and that builders should do more to support water savings; specifically:
  - 95% think that homebuilders should include low water consumption landscaping and watering equipment.
  - 87% say that builders should do more to include water saving toilets and washers.
  - 90% say builders should provide new homeowners with more information about how to save water.
  - 91% of new homeowners say that conserving water in their daily life is either very (70%) or somewhat (21%) important

# HOMEBUILDERS EXECUTIVE INTERVIEWS

## PROJECT OVERVIEW

### Background

Metropolitan Water District of Southern California (MWD) has teamed with Redhill Group to conduct a thorough analysis of the California Friendly Homes program. MWD is a group of 26 cities and water districts in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. Working together they deliver an average of 1.7 billion gallons of water per day to a 5,200 square-mile service area and provide drinking water to nearly 18 million people. MWD's mission is to provide "adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way". As part of an effort to meet the goal of being environmentally conscious, they have developed the California Friendly program. This refers to efforts to conserve water, through various means such as water efficient appliances and fixtures, low-water consuming landscape and efficient irrigation. Homes that meet these requirements are deemed "California Friendly Homes".

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MWD's main goal in the study is to improve marketing, participation and effectiveness of the current California Friendly Homes program. To meet that end, Redhill Group's analysis of the program included interviews, focus groups and surveys with water agencies, homebuilder executives, green program managers and the home-buying public.

### Builders Executive Interviews

In order to assess the awareness, opinions and attitudes of new construction home builders Redhill Group conducted executive interviews with five major homebuilder executives.

### Selection of Builders

Homebuilders were selected using a list of homebuilders provided by MWD. The final selection of participating homebuilders included a variety of different management positions including purchasing, marketing and development project managers.

### Conduct of Builder Executive Interviews

All interviews were conducted by Redhill Group management between July 11<sup>th</sup> and 20<sup>th</sup>, 2007. Five interviews were conducted.

## BUILDER EXECUTIVE INTERVIEWS KEY FINDINGS

- **Importance of Green as a Marketing tool:** Green is growing. Homebuilders say it is more important now than two years ago, and it will be more important in the future than it is today. However, this is clearly tempered in the current environment by affordability and the builder's ability to move existing inventory.
  - *“Yes, it is more important than it was before, but it is just becoming more important now. It probably will be more important in the future too.”*
  - *“Right now most important thing is monthly payment, if all things were equal and the other home didn't have it, it might make a difference. From our perspective we can promote it. But affordability is key.”*
  
- **Current Programs:** Builders are participating in programs from MWD (California Friendly) and through EMWD. Also to a lesser extent through Green Builder. Different builders are participating with different parts of the program with some doing model homes with high-efficiency appliances and others installing smart controllers and low water-consumption landscaping in production homes. Interestingly, many builders are taking a proactive approach to green building, trying to find out what is out there and how they can make it work for them.
  - *“We currently are participating in the California Friendly programs besides the standard environmental stuff that all builders have to deal with.”*
  - *“No - not contacted by them we usually contact them – that would be nice change. We contact MWD, cities, states anybody who offers green programs.”*
  - *“We are doing a lot of research to see what 's out there, to see what the future is going to bring.”*
  - *“I have actually assigned someone in my department to be in charge of collecting information. If there was more stuff force-fed to us that would certainly help as long as it was clear and concise and we could understand it. We would look at who would install it, how we would incorporate it, how much it would cost, etc.”*
  
- **Benefits and challenges:** Homebuilders do not see water-efficient home options as a money savings program. Rebates are only big enough to 'mostly' offset the higher cost of the high water-efficiency options. They see green building as a potential way to set themselves apart from the competition by providing a home that is different and better than the competition. In addition to proactively promoting the concept they are also being responsive to potential

homebuyers who are more and more interested in green homes because of both the financial and ecological implications.

- ***“The biggest benefit to us as a builder is the marketing and visibility that we get by having the project because they are advertised by the water district on their website and we occasionally get good press from it, and people are always looking for something that is cheaper on their wallet and better on the environment.”***
- ***“The water conservation aspect is a huge issue. If we can save water in any way that’s fantastic, especially if we can move into the homeowners with that. Teaching the homeowners the proper way to irrigate is critical. It also reduces runoff as well, and by conserving water you are aiding that effort as well.”***

The biggest challenges are the current financial market for homebuilders and educating the public about the value of high-water efficiency options for new homes.

- ***“The challenges are expense. It is more expensive to build a California friendly landscape than it is to build a regular landscape. Part of that will be solved as more people build them the cheaper it will get. The contractors don’t know how to build this and the designers don’t know how to design them because they are new to it. The first couple of times the programs were done the implementation was poor because they didn’t know what it was going to look like. There need to be contractors that can do it effectively.”***
  - ***“One of the challenges is educating the landscape contractors how to install the irrigation properly and availability of materials such as irrigation heads, etc.”***
  - ***“Challenges: Education of homebuyers about what they are getting themselves into. People want more grass, and you can only have so much to qualify to CA friendly so people don’t get as much grass as they would like. They are not educated on how the program works.”***
- **Model home program:** Builders were asked if they participate in the MWD model home program to provide positive examples of use of high-efficiency toilets, clothes-washers, and low water consumption landscaping. All five builders said that they do participate in at least part of the program. They were also asked if they had recommendations to improve the program. A key recommended improvement was making the program simpler, quicker and easier to do with less paperwork. Other recommendations included having more trained contractors, more grant money, and allowing a la carte selection of incentives rather than having to do it ‘all or nothing.’

- ***“One of the challenges for the controllers, is having the time to get it done. So if there is something that could be done to streamline the process. It seemed like there was a lot of paperwork we had to fill out, and then we had to go out and spot check 20% in each phase. There was a lot to do to save a \$65 rebate. There are other things that save more money for the time. If they could help more so it wasn’t so much work for us. The info flow is good though. If we could meet more with the water district representative, and if they could maybe do some of the paperwork.”***
  - ***“I think just steps of what to expect. What you have to do, who you have to send it to. “***
  - ***“Try to help educate the contractors about what it is all about. That goes down to everyone working on this including the homeowners. The people who are installing it need to know how to do it properly. We need some type of education for the laborers who install the equipment. I think there is some type of effort to do this through MWD and the County.”***
  - ***“I would get more grant money for production, and make it a la cart rather than all or nothing.”***
- ***Organization structure for organization:*** There is a great deal of variety in the ideal point of contact for green water programs. Because it is relatively new to the building industry, there is not a standardized location for it to be managed by builders. Champions of the cause occur from the CEO down to a purchasing agent, and wherever that person is, it is often the best point of contact. Ultimately the Project Manager is the one responsible for final implementation and also plays a key role in the planning process, but both top-down and bottom-up efforts can be rewarding as well.
- ***“Handled by multiple people; Director of purchasing, Dir of ops, PM, and ultimately division president. They should communicate to one person - the Project Manager should be the primary contact.”***
  - ***“I would say multiple levels, purchasing and planning. Mailers on new standards and eblasts (for people who participate in water symposiums) for news would be effective ways to communicate. I would say communicate to everyone.”***
  - ***“Purchasing and project management. Anything that purchasing decides project management would have to approve as well. Project Management is the one who has to implement it in the plans unless the division president says this is what he wants to do.”***

- **Bundling of conservation programs:** Builders universally lauded the idea of green/conservation programs being addressed in a bundled fashion so that they received information from both energy and water companies at once in a coordinated package.
  - *“Yes, that would be more beneficial.”*
  - *“That would be great!”*
  - *“I would think so. It would make things easier from a planning perspective, absolutely.”*
  - *“Yeah that would help if everything was consolidated. We are actually going out and looking for information. I know there is something coming up in SF, the West Coast Green Residential Building Conference and Expo. I don’t have the time to send someone right now, but I have been looking at the web page.”*
  
- **High efficiency toilets; awareness, understanding, the decision-making process, and program recommendations:** Builders were generally aware of a HET program through MWD’s California Friendly program. However, most did not know what a HET really was with only one of the five builders correctly defining them as using less than 1.3 gallons of water.

The decision-making process is mostly done by the builder who specs standard toilets for all homes. Buyers can have them changed and design centers also play a role, but HETs are generally more expensive, so homebuyers are less likely to choose them, and in some cases they may have to pay the full price of the HET.

- *“The homebuilder decides.”*
- *“Combination thereof we provide a list of options and the homeowners select from them. The high efficiency toilets are more expensive and so they generally not chosen by the homeowner.”*
- *“They would go through all their selections at the design center.”*
- *“The design center is involved. You set up the HET as an option and the homeowner selects the standard or the HET option. People are looking at it from a cost saving standpoint and the HET costs roughly \$400 more and the Washer/dryer combo is \$1000 more if you are combining them.”*
- *“The builder; we spec it when we bid the project and that’s what the plumber installs”*

The primary barrier for HETs is higher cost. However, a limited selection of different styles is also an issue as homebuyers can't get the design they want in an HET.

- ***“Combination of cost and available models are relatively limited from primary manufacturers. All the high efficiency toilets are plain or standard models. You can't get any choice in looks of toilets that are high –efficiency. They all look the same.”***
- ***“Cost to homeowner because its \$400 more per toilet and 3 toilets per house – that's the biggest issue.”***

Recommendations to improve the HET program include working with manufacturers to increase the number of available models and also to lower costs since the payback doesn't seem to be there.

- ***“Work with manufacturers to bring cost down and provide more variation in models. Builders will use them as long as I have a market for them and if they are cheap.”***
  - ***“If there is a way to bring cost down. People look at what they are paying up front. If there is some kind of savings program, you have to be able to prove that they are going to make their money back in their monthly bills. It is also part supply and demand; as more people select them the cost will come down.”***
  - ***“We determine what toilets go into the production homes. We have programs with national manufacturers and we only use those brands, and then we encourage those manufacturers to come out with water-friendly toilets that are certified and then go on your website so that we can use them. That helps us a lot.”***
  - ***“More education to sales staff that are the front line when people come in to buy homes. Perhaps a seminar and literature that our sales staff could utilize to the information.”***
- **High efficiency clothes washers; awareness, understanding, the decision-making process, and program recommendations:** HE clothes washers follow a similar pattern to HETs; builders are generally familiar with the California Friendly program, but have difficulty defining what qualifies a clothes washer as “high efficiency.” Given the current economics in home building, most builders provide standard washers (even this is an option since many homebuyers bring existing equipment from a previous home), and then offering the HE equipment as a higher cost option.
- ***“We determine what the standard is going to be if they want one and then there's four or five upgrade options. The buyer makes the decision.”***

- ***“We offer packages that suit the various projects’ price point and the homeowners have an option if they want to take that package or not.”***

Also similar to HETs the biggest barrier is cost, followed by lack of selection making it more difficult to find HE washers that fit the requirements of builders’ house designs. One builder noted that it may just be a supply and demand situation, that as more people buy HE washers, the prices will go down and the selection will improve.

- ***“Cost.”***
- ***“Model selection. All HE Washers are front loaders. Whirlpool really only makes two different models, Duet and Compact. The Duet doesn’t fit in all laundry rooms because they are too wide. And the Compact is too small for most homes. Basically I only have two choices from primary supplier and one doesn’t fit and one is too small for standard homes, that kind of puts me in a bad spot.”***
- ***“Any way to show people their savings or provide promotional offers, but the hard thing is driving down the cost on the high-efficiency clothes washers. Again it is supply and demand, as more people buy them the cost will come down.”***

With regard to providing rebate information, the general response is that it is not a question of being unwilling to provide the information; it is just not clear enough what specifically is needed. This argues for a step by step manual of program implementation to make it easier for builders to participate.

- ***“We haven’t done rebates yet. The rebate issue is because nothing is written on how to do it. When you say an invoice, granted you want a model number and how much it cost us, but none of that is spelled out; it doesn’t say it has to come from a subcontractor, it has to have model numbers, it has to have the amounts, it has to have a signature. Just things like that. I can tell you how much it cost, but I don’t think that was good enough when we started collecting invoices. It is not an issue of hiding pricing. A lot of time wasted because we didn’t know exactly what we had to do. If you want a signature on an invoice, you have to say you need it.”***

- **Weather-based sprinkler controllers; awareness, decision-making process, barriers, and program recommendations:** Builders are familiar with the California Friendly program for weather-based sprinkler controllers and several are participating in the program. In most circumstances builders provide front-yard landscaping and accordingly builders rather than homebuyers should be the focal point for implementing this new technology. They note that in most developments the controller provided for the front yard is sufficient to control the valves for the entire yard. Cost is an issue; particularly where ongoing subscription fees are required, and for larger homes where the additional cost for smart controllers is significantly higher than the available rebate.

- ***“Cost – they are expensive and that cost is born by the developer. And two, many require subscription fees and that is obviously a problem for home buyers; we don’t like to put them in than position.”***

- ***“We are doing it for the most part. The one project we are not is 12-24 stations and it’s too expensive for that project. For a typical house it costs an extra \$80 and we get \$65 or \$70 back on the rebate, it’s pretty much a wash, and then for the sales agent it’s a good selling point. The bigger the lots get, the more expensive it is and starts to become a bigger cost factor. It was going to cost \$300-\$400 per house for that size.”***

- ***“Pricing from the people who install them because they are more expensive than standard controllers.”***

Another key issue is the education of homebuyers so that the system continues to be operated properly after the home is sold.

- ***“We have occasional warranty issues because the homebuyer doesn’t know how to use them effectively and then they have problems. Really the problem is the homebuyer not knowing what to do with them because they are different.”***

- ***“Only way it will happen is if it mandated. They cost more and the homeowners don’t know how to use them, so it’s a bit of a hassle to teach them how to use it. There is no incentive for builder to go to a weather-based controller.”***

- ***“What helps us is having the rebate program that they offer. We don’t get an entire return because we buy the best controller money can buy. We are trying to educate the contractors and the homeowners so that they don’t try to override the programming.”***

Finally, the paperwork required to secure the rebates is mentioned as a barrier. If this could be simplified it would help increase participation.

- ***“Provide more information and streamline things. Streamline it so there is less paperwork on our part and cost is a huge thing. Is there a way if we can do it quicker and easier. Have to put the square footage for the home and lot size for 120 to 150 homes; it’s a fair amount of work and then we have to go out to the job site and inspect 20% of them, and sometimes the homeowners are already there and we have to knock on doors to get them to open the garage and it becomes a hassle.”***
  
- **Low water consumption landscaping; awareness, decision-making process, barriers, and program recommendations:** Low water consumption landscaping is similar to weather-based sprinkler controllers in that builders are aware of the MWD California Friendly program, and some are participating in the model home part of the program. There are increased barriers, however, to its implementation in production homes because of the higher marginal cost, the need for homebuyer education, and the lack of trained landscapers who can install appealing low water-consumption landscaping. In addition homebuyers don’t know which plants are low water consumption, and the big box stores (Lowe’s/Home Depot) aren’t doing enough to make it easy for them to pick the right plants for their back yard.
  - ***“Cost because mature plants are required as opposed to turf.”***
  - ***“Would have to mandate it. Because it costs more and they are unwilling to spend the extra \$500-\$600 to do a California Friendly landscape versus a traditional one.”***
  - ***“If there is more that could go to the buyer, maybe like a pamphlet to distribute information on the value of saving water. When we started doing the controllers, the company that was installing the controllers worked with us to develop our own pamphlet. Buyers are much more savvy today and there is information in there that has numbers, you only need a couple of electric water and electric bills in July and August to see how much it adds up.”***
  - ***“Individual homeowners are reluctant to scale down their landscaping. They want more landscaping in their front yard that will require more water. It is not what they are used to, so it is a continuing educational barrier. They would rather have a front yard full of grass rather than shrubs and hardscape. They take it upon themselves to add more turf which deviates from the California Friendly Plan.”***

- ***“Educating homeowners about it when they move in so that they don’t change things, and also the availability of drought tolerant plants. People need to understand with signs saying these are drought tolerant plants. They need to be educated about which plants save water.”***
- ***“The biggest issue is making the plant materials and irrigation supplies available to the average homeowner so that when they do their back yards they can mimic what’s in the front yard they can use them. Need Home Depot and Lowes to make it available to them right then and there.”***

As with other parts of water-savings programs the builders also expressed the desire for clear, straight forward program so they know what to do, as well as when and how.

- ***“I just want the process improved. There’s nothing written. We wasted months on figuring out what the city wanted. After invoicing I wanted to know what was next, who was supposed to contact you and how long does the application review process take, how long does an inspection take, and who do you contact for an inspection, and when the inspector comes out there, who do they need to see, that kind of stuff.”***

# **GREEN PROGRAM MANAGER EXECUTIVE INTERVIEWS**

## **PROJECT OVERVIEW**

### **Background**

Metropolitan Water District of Southern California (MWD) has teamed with Redhill Group to conduct a thorough analysis of the California Friendly Homes program. MWD is a group of 26 cities and water districts in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. Working together they deliver an average of 1.7 billion gallons of water per day to a 5,200 square-mile service area and provide drinking water to nearly 18 million people. MWD's mission is to provide "adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way". As part of an effort to meet the goal of being environmentally conscious, they have developed the California Friendly program. This refers to efforts to conserve water, through various means such as water efficient appliances and fixtures, low-water consuming landscape and efficient irrigation. Homes that meet these requirements are deemed "California Friendly Homes".

### **Purpose of Study**

MWD's main goal in the study is to improve marketing, participation and effectiveness of the current California Friendly Homes program. To meet that end, Redhill Group's analysis of the program included interviews, focus groups and surveys with water agencies, homebuilder executives, green program managers and the home-buying public.

### **Green Program Manager Executive Interviews**

To provide the input of other green program managers, Redhill Group interviewed top executives, managers and consultants involved with the development and management of green programs for residential home builders.

### **Selection of Green Program Manager Participants**

Metropolitan Water District provided Redhill Group with a list of potential utility based green program managers, independent green program executives, and green building consultants.

### **Conduct of Green Program Manager Executive Interviews**

Interviews were conducted by Redhill Group management with all eight potential participants between July 20<sup>th</sup> and August 8<sup>th</sup>, 2007.

## GREEN PROGRAM MANAGER EXECUTIVE INTERVIEW KEY FINDINGS

- **Overview of Homebuilder Programs:** Programs vary significantly based on the type of organization (utility vs. green program) and even within organization type. The **Southern Nevada Water Authority's** WaterSmart program is as follows:

WaterSmart home started development three years ago with Nevada homebuilders so that SNWA would have someone who would partner with us. It has been in production for two years. There are four partner homebuilders and they have put up more than 5,000 WaterSmart homes.

The incentive is similar to energy star and other programs. Through the SNWA WaterSmart program we have trained people that they need to be more responsible in water use. It is a builder funded program and they pay for the inspections. All they get is the WaterSmart label. One builder did some research and found next to energy star, WaterSmart had the highest awareness.

**San Diego Gas and Electric** has a portfolio of new programs:

Prescriptive: verified insulation, they sign up their product, after verification of the element they would receive incentive payment for each dwelling unit. Website has handbook.

Performance: A certain threshold of 15% they need to reach to achieve a second incentive level. They are built and then verified by an outside party.

Tier three is to achieve the energy star for homes requirements, where they would have to do several bypass checklists and as sizing and testing of the HVAC system.

The next tier addresses sustainability and green building practices. Here there are no prerequisites for the builder. Each program is evaluated individually. We look at three areas; energy, environment and resources.

It starts in the design stage with engineers and architects, uses some of the elements of LEED and Build It Green to explore options. Look to increase energy efficiency, address green building practices, types of materials uses, indoor air quality, and reducing the carbon footprint of construction.

The incentives area calculated on the individual basis.

**Build it Green** launched September of last year as a trustworthy and recognized label of Green building in California and is backed up with third party verification. There are applications coming in every day, 1,500 units have been rated and several thousand are in the pipeline to be rated. There are probably 8-10 builders involved in the program.

Build it Green works with over 100 local governments throughout the state who provide incentives based on the green rating that they receive through our program. Some even require that they achieve a score of 50 points or higher. The overall goal is to have trustworthy third party to rate green performance that they can use in their marketing materials.

**California Green Builder** has been operating for two years, with 1,400 homes built to requirements. It is based on five resources; energy, air quality, wood, water, and waste. Requirements are being 15% over Title 24 on energy, saving 20,000 gallons of water per year per home, using engineered wood products from sustainable resources, diverting 50% of waste from landfills, and having an engineered HVAC system with a MIRV 6 filter which saves on energy costs by making sure the temperature is uniform throughout. It also filters out dust particles and allergens for a healthier house.

Incentives: City of Riverside has an ordinance that provides faster inspections and quicker release of electrical meters faster. Out in the desert Imperial Irrigation has tied energy incentives to Green Builder providing up to \$1,200 for 15% above Title 24, and up to \$1,700 for 20% above Title 24.

The **EPA WaterSense** program doesn't yet exist. EPA is putting together draft specifications for WaterSense new homes, so it is still in the development stage. WaterSense is a voluntary public-private partnership voluntary program to identify and promote and encourage the development of water efficient products; so it is a product labeling program for water efficient products. So far they have labeled HET's (35 models currently meet requirements).

The **LEED** program has been in development for 3-5 years and it is still in pilot. It has not gone national yet. In the pilot about 230 homes have been certified and completed, and 6,000-7,000 have been committed. I don't know how many builders. It is a voluntary program. We don't offer any incentives, but states do.

It provides a competitive advantage relative to other builders - cachet. It is also driven by homeowners directly, with about 10% of the homeowners doing it and hiring a contractor to build the home rather than buying in a development.

- **Time to get Program up and Running:** The amount of time needed to get a program up and running varies significantly. Some indicated that six months or a year is adequate while others who have programs in place say it has taken 3-5 years or longer to get everything in place for the program to be effective. It varies based on whether it is a simple promotional program requiring only promotional materials and "how-to" documentation, or is more comprehensive, ensuring that appropriate products and trained contractors are in place prior to kicking off the program.

- ***“It took about a year from original planning to start up, with a lot of give and take.”***
  - ***“If we were starting today you need to give yourself a good three months. Assuming no one has to buy off, and that’s a full-time three months and does include time for printing etc. If you were starting today I would say six months.”***
  - ***“It shouldn’t take any more than a year.”***
  - ***“We had the vision to create the program all the way back in 2000. We waited until we had the right infrastructure and the right level of education in the marketplace before we launched it and also have the training in place. Until there were 100’s of builders who had been trained on the guidelines and all the best practices, technologies and materials, and until there were product suppliers available, it didn’t make sense to launch a third party rating program. We launched this part of the program in September of 2006.”***
  - ***“2001 was genesis of program and in 2005 it started being actively marketed, so about a three year gestation period.”***
  - ***“We’ve been working on the new home program for a year now. Looking at it from a national level it is a little more complex and it will probably take another six months.”***
  - ***“3-5 years.”***
- **Program Documentation:** Most of the programs have complete documentation to make it easier for builders to understand what the options are, what they have to do to achieve the desired goals, how to calculate the savings, and how to confirm that targets have been achieved. It generally includes a manual and task checklists. Others say they take a more interactive approach, but even here there is generally some supporting documentation.
- ***“It needs a step by step cookbook because builders are not interactive, they are “give me the manual and tell me what to do” because that’s the way they do business.”***
  - ***“There are prescriptions for what needs to be done. There are two phases. There are some that describe how to do calculations, and a handbook which is a rating system and a checklist. Then there is interaction between the builder and what we call the provider. The providers are the liaisons in the field who bring in the projects, and take the builder through the rating system. We don’t directly work with the builders; others get paid to do that for them.”***

- ***“We have an extremely detailed manual that the raters utilize, that goes measure by measure with a lot of backup on whether they get the points or not. The way our program works is that the builder hires a third-party rater to work with to go through all the verification. The rater’s job is to help lead that process with the builder, determining what points are achievable for that particular project, and then acting as a partner with that builder to achieve that, and then doing verification as well.”***
  - ***“I’d say more interactive. We have the agreement and some documents, but we go meet with them directly. We do mock inspections to show them what passes what fails. We talk with their sales staff and also have a 15 minute video that can be used by staff or used by sales staff with a homeowner. It can be used for multiple audiences. There are also printed brochures.”***
  - ***“Much more on an interactive basis, there is an agreement and the handbook shows them they need to supply us for documentation. We do a field delivery mechanism with account executives. They have their own style and do their own presentation based on information I give them. We do plan review and confirmation here. [www.socalgas.com](http://www.socalgas.com), builder services, advanced home program, hand book and agreement.”***
  - ***“We don’t have a lot of color brochures because they are delivered by account execs.”***
  - ***“Our website has scopes of work and worksheets ([www.ca.greenbuilder.org](http://www.ca.greenbuilder.org)) but it is fairly interactive. We work closely with the builders. They need to know they have to be 15% above title 24 and then we review and verify that they are meeting these requirements.”***
  - ***“We anticipate that there will be a checklist and guidelines. We expect it to be a labeling program so that homes will be WaterSense homes, builders will become partners. We will build a toolkit for the builders that will have information on the label as well as criteria for the new homes.”***
- **Biggest Challenges in Program Implementation:** Challenges to effective voluntary water savings programs include cost, getting the infrastructure in place to implement the programs (products, services and trained inspectors), and diversity of projects making it challenging to develop standards that work well across a wide variety of building developments. The cost issue is currently exacerbated by the downturn in home sales. As economic conditions ease, this should become less of an impediment.
- ***“The biggest challenge is always money because builders are reluctant to do anything new if it is going to cost them more or affect the marketing of their product. It is all about marketing to the builders, convincing the builder that what you have is a good deal for them.”***

- ***“The biggest challenge is the cost of the items we want to put into the home and that has become more of a problem as the housing market has slumped. We have required what we wanted two years ago that goes into effect in 2009, but we had relaxed our goals to deal with the current housing market for the short term. A lot of the technology you would like to have is expensive.”***
  - ***“One of the immediate challenges we are facing is the slowing building industry. It has taken a bit of a hit, particularly in San Diego because builders are preoccupied with other areas trying not to get stuck with product. There is an interest in sustainability and green, energy by itself is not enough and we need to adapt our programs. The idea is not just give them an incentive and go, we want it to become the standard process. Energy Star is a good program, but is difficult to sustain after the money goes, that is the big challenge – sustaining.”***
  - ***“A big challenge is getting the infrastructure of third-party raters throughout the state. Also, attracting the right people, developing the curriculum, training and testing them all take time.”***
  - ***“The biggest challenge is reaching consumers, which is expensive. Our focus is working directly through builders to reach consumers by giving builders the templates and collateral materials so that they can educate their potential buyers on the value proposition of buying a green-point rated home. We also partner with local governments to educate their constituents about green-point rated homes as well as working with the real-estate community. The big challenge is how to cost effectively reach consumers and we leverage these channels to avoid the high cost of direct consumer advertising.”***
  - ***“The biggest challenge is convincing the builders that it is not as hard as they think it is. Also it is a challenge getting the jurisdictions to partner with the builder in implementing the program. Need to get the jurisdictions to get on board and provide some type of incentives either monetary or faster inspections.”***
  - ***“The biggest challenge is doing the research required to see if there is a need for a national water efficient program to convince EPA to do it.”***
  - ***“Diversity of the homebuilding market is one of the biggest challenges with both single and multi-family, low-rise/high rise, environment, hard to create a rating system that has the same value across all situations.”***
- **Builder Contacts:** Similar to the builders themselves, green program managers say there is no single solution to the question of who is the best contact point for builders. It definitely includes Purchasing Agents, and goes up including Project Managers and Division VPs, sometimes even the company President.
- ***“Account executives seem to have the most effect with the purchasing agents and then the next level would be the VP of construction or the Project Manager. We don’t get enough into the marketing area and I think that would be beneficial.”***

- ***“It ranges, it could be a Division Manager or a Project Manager. Usually there is a champion in the company. Sometimes that is the decision-maker, sometimes its not, but they get you to the decision-maker.”***
  - ***“We work at multiple levels. We work mainly with larger builders and work with everyone from Purchasing Agents up to the Division VP or President of the company.”***
  - ***“I work for them as a consultant. Usually work pretty high up; upper management like VP’s and then work specifically with the Project Manager for the specific development.”***
- **Motivational Factors for Builders:** Green program managers believe the key motivators for builders are the ability to differentiate themselves from the competition, and do a better job of meeting customer needs. Other factors that are important are actual savings to the homebuilders, and the ability to speed up plan-checks and/or secure reduced or waived fees from local governments.
- ***“I think that they like the marketing aspect of it to be able to differentiate themselves from other builders. The awareness of green has grown so much over the last year, that they can get a marketing edge by showing buyers what they are doing in this area.”***
  - ***“One builder did market research and found that the WaterSmart brand has high brand recognition. It helps sell homes.”***
  - ***“It varies with each builder, but the ability to distinguish themselves from the builder across the street is a key motivator. The money is a motivator too. One area for builders, is that they would just like assistance to get their product through the approval process, so if you can help them get their plans approved quicker that would be good too.”***
  - ***“First would be reduction maintenance and operation cost over the lifetime of the project they can bond for less because there is less maintenance for the HOA. Second would be Life-cycle savings, third would be market differentiation, another one would be entitlement advantages such as expedited plan check, building permit fee waivers or reductions.”***
  - ***“We are developing a marketing program right now for the program. The things we keep hearing is that it is the right thing to do, and we see as our main selling point is that many builders are already participating in a green building program. We think that the WaterSense new homes component can be integrated into existing programs. We are trying to help them so that the water efficiency criteria, that they normally don’t do, is worth doing. We found in our research that water efficiency is currently undervalued; it is not being picked up by the builders. They are focused more on energy.”***

In addition to differentiation and cost, green program managers emphasize making it easier for the builder so that the program makes their job easier rather than more complex and difficult.

- ***“Differentiation from other competitive homebuilders. Try to make the program user friendly and cost effective. It is also verifiable. If the home is built this way, they know that it will achieve the savings.”***
  - ***“Whatever procedures need to be done, need to be consistent. Keep it simple.”***
  - ***“Regulations needs to be less city-centric, they need to be consistent. This is causing barriers for all construction because it’s so hard to know what to do, and it varies from city to city.”***
  - ***“I think the biggest thing that green-point rating provides is a cost-effective alternative to some of the other programs out there. It doesn’t have a huge price tag associated with doing third-party verification or implementing the measures so it’s a credible and acceptable entry-point for builders to get engaged and work for higher levels of performance over time. The builders see this as a reasonable and rational program without stretching themselves so thin that they are not able to do it.”***
- **Communication Recommendations:** Recommendations about communication to builders included the messages to emphasize and the best channels to reach them. With regards to content, green program managers say to emphasize building efficient homes and to keep communications consistent for maximum impact. They also say to communicate ease of participating and reducing their concerns about potential negatives of the program.
- ***“It is important to the builders to convey that they build highly efficient houses. And this is a selling point for them. We work for the builders rather than the other way around.”***
  - ***“It depends on the details of the MWD program. Help the builders on how to reach their consumers, and how to market the green advantage to homebuyers. Keep the program simple and clear with a consistent message. Homebuilders want something that is easy to use. They often are more concerned with the negatives of a program than the positives; so if it doesn’t disrupt their business then they will go along with it so focus on making it simple.”***
  - ***“Focus on ease of participation, not a ton of paperwork or documentation. The third party vendor handles most of the paper work freeing up the builder to do their job which is to free homes. It is easy to implement without a lot of money or time once they have the base level of knowledge and understanding.”***

Others focused on the channels of communication that are effective in reaching builders.

- ***“One is the big venue with a builder breakfast to get the big overview. It helps to recognize their time is valuable. And then individual meetings. The biggest challenge is to have a clear picture of what the building industry is doing right now, what projects are out there, where are they in development, and where can we have an influence. And what is planned because we want to get them at an early stage.”***
  - ***“As many different avenues and venues as possible, but with a consistent message about why we are doing it and how to do it.”***
  - ***“Through the sales and marketing teams through the model homes and through brochures when they do mass mailings announcing a new community. The sales and marketing teams need to be educated to communicate it to potential homebuyers.”***
- 
- **Potential Internal Barriers to Success:** When asked what the biggest internal barriers are to program success four items were mentioned: credibility with builders is critical – be sure you have the resources and follow through to do what you say you are going to do, having an adequate database to track all the required information to support taking the right action at the right time, having the right people at the organization engaged in the program, and securing a sustainable budget so that the program doesn't stop in the middle of implementation.
    - ***“Credibility is critical too. Do what you say you are going to do. If you let someone slide when they buy the wrong type, then you have blown your credibility.”***
    - ***“The greatest challenge is data and information management program design is very important. Need a database that provides the information we need in a timely basis so that inspections get done while the builder owns it and not the homeowner. Make sure you have adequate database management resources.”***
    - ***“The right people need to be engaged in what we are doing. Who should be informed and what do you do to keep them notified. Need to know who the right players.”***
    - ***“The biggest thing for this type of program is that we are not going to release anything until the program is sustainable, so we need to have an ongoing budget.”***

- **Rebates:** When asked how to address the challenge of getting invoices to substantiate purchases of low water consumption appliances, most green program managers recommended using alternative ways of securing proof of implementation.
  - ***“It doesn’t have to be an invoice per say, the third party inspector could determine that they are in fact there, because they are there in the field. There are ways of using third party rating elements so you don’t have to see the receipt.”***
  - ***“We don’t ask for invoice information. There you would need to evaluate what do you need to implement a program, and would this be something they would be willing to reveal. Do you really need the invoice, or is their some other alternative, for example using an industry average price.”***
  - ***“We don’t do rebates so it’s not a problem for us. Two years after we ask you to do everyone is going to be doing it anyhow, so you might as well go ahead and get some credit for it.”***
  
- **Successful Alternatives to Direct Contact Marketing Efforts:** The most common recommendation to leverage limited resources is to speak at group gatherings of builders either at conferences or local HBA meetings.
  - ***“One thing I do is look for every opportunity to be in everyone’s face at conferences, etc by being a speaker or a panelist to tell people about programs. Show solidarity of programs.”***
  - ***“We are just developing a builders’ brochure right now. We speak at a lot of conferences. We are always on the speakers’ circuit anywhere that builders are and that has been very effective. We also have a builders’ council that meets quarterly which addresses current issues as well as a training component.”***
  - ***“The homebuilders can help you by providing contact info. When dealing with the press we always say a partnership between the Nevada homebuilders association and Southern Nevada Water Authority.”***
  - ***“We have had a couple of seminars speaking at HBA dinners/meetings and also at conferences.”***
  - ***“Most builders that have shown an interest in green building, we help them make it a positive for the customers. One key marketing tool is to make sure the builders in the program do well; it raises the bar for other builders, and they want to do the same thing. Some provider organizations also help support the program.”***

- **Overall Recommendations:** There were several recommendations offered by green program managers in closing. The most frequently cited one is to partner with other organization to provide a unified and simple program, eliminating conflicting requirements and making it easier for the builders to participate.
  - ***“Get your program to nest inside of other programs wherever possible. There can be conflicting requirements and this is confusing to builders. Need to make it simple. Find out what is going on with all the other programs and coordinate for a standard set of standards.”***
  - ***“WaterSmart home requirements have been integrated into our green building program. Wherever possible make it one unified program to make it easy for builders to follow rather than having conflicting requirements.”***
  - ***“MWD is already a WaterSense partner which is good. Working with national programs is helpful. Hopefully they will endorse and adopt our new homes component as well and integrate it into the MWD program.”***
  - ***“We’ve worked closely with MWD on our water program. CA Friendly is an alternative method of compliance for our program. It’s hard to know where to draw the line between builder flexibility vs. a hard line of saying what you have to have. We are thinking maybe it should be a percentage savings which would be easier to attain than a fixed 20,000 gallons per year per house so that smaller yards could still qualify.”***
  - ***“It is worth considering the scope of the program in terms of identifying steps and stages about which submarkets they want to focus on. Start with certain submarkets to keep it simple. Understand who your potential partners should be, because there are always other organizations that are interested in cross-promoting (utilities). Leverage your resources this way.”***

Others focused on ways of working with builders to maximize the impact of the program.

- ***“The HBA’s approach was to meet with the builders and got the top four builders to essentially set up the program with SNWA providing the training and requirements. A key element is that they work with all contractors and equipment vendors as well, not just the homebuilders. In this way they ensure that the tools are there to make the program a success.”***
- ***“One thing that the builders need a lot of help with is consistent training of their sales people so that they can clearly articulate the benefits of water and energy efficiency. The utilities may do a great job of conveying this information to building management, but the sales people may not get this. It is expensive because there is a lot of turnover. But more educational material for the sales people to use.”***

- ***“More advertisements at building industry events - get the word out to the builders. Here are the benefits to you as well as the environmental and social benefits. Also work with the cities a part of the entitlement process, get them to expedite plan checks and reduce fees.”***

## **AGENCY FOCUS GROUP**

### **PROJECT OVERVIEW**

#### Background

Metropolitan Water District of Southern California (MWD) has teamed with Redhill Group to conduct a thorough analysis of the California Friendly Homes program. MWD is a group of 26 cities and water districts in parts of Los Angeles, Orange, San Diego, Riverside, San Bernardino and Ventura counties. Working together they deliver an average of 1.7 billion gallons of water per day to a 5,200 square-mile service area and provide drinking water to nearly 18 million people. MWD's mission is to provide "adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way". As part of an effort to meet the goal of being environmentally conscious, they have developed the California Friendly program. This refers to efforts to conserve water, through various means such as water efficient appliances and fixtures, low-water consuming landscape and efficient irrigation. Homes that meet these requirements are deemed "California Friendly Homes".

#### Purpose of Study

MWD's main goal in the study is to improve marketing, participation and effectiveness of the current California Friendly Homes program. To meet that end, Redhill Group's analysis of the program included interviews, focus groups and surveys with water agencies, homebuilder executives, green program managers and the home-buying public.

#### Water Agencies Focus Group

In order to evaluate the current California Friendly Homes program, a focus group with water agencies currently participating in the program was held on June 13, 2007 at 11:30 am at the Metropolitan Water District's Los Angeles headquarters. Topics of discussion included, among others, identifying key decision makers, barriers to success and suggestions for improvement.

#### Selection of Water Agencies for Focus Group

Metropolitan Water District provided Redhill Group with a list of water agencies that are current program participants. Their level of experience with the program varies from start-ups to experienced. Redhill Group used this list to select a balance of start-up, intermediate and experienced agencies to recruit for participation in the focus group. Phone invitations were extended to six selected agencies and all six representatives were in attendance at the focus group. The focus group participants are included as Appendix 4.

#### Conduct of Water Agencies Focus Groups

The focus group was moderated by Mark McCourt with Redhill Group. Mr. McCourt began the focus group with a brief program overview and distributed copies of the

agenda. A copy of the agenda can be found in Appendix B. The event was audio-taped, but not video-recorded.

## WATER AGENCIES FOCUS GROUP KEY FINDINGS

- **California Friendly Homebuilder Program Goals:** The current goals are good overall. There were, however, several suggestions for potential improvements. Key recommendations include:
  - Adding ‘homeowner education’ to the goals so that homeowners are taught how to use water efficient controllers and sprinklers properly so that they are used correctly, leading to good results, so that they will continue to use them.
  - Planning for future technologies such as gray-water. Although the technologies may not currently be ready for implementation, it may be possible to design homes at negligible additional cost so that future implementation of these technologies is not precluded.

Additional recommendations for consideration include:

- Including faucets with aerators if you are looking for specific equipment.
  - More clearly delineate watering hardware from California Friendly plants since the plants by themselves will not save water.
- **Existing Programs:** Three of the six participating agencies have programs, and all agencies feel that it is very time consuming to get a program up and running because it is challenging to get the builders to participate, and they do not have a turnkey system that they can ‘plug in.’ Although the goal of this section was to secure program descriptions, discussion focused on challenges of program implementation. Participants indicated that program implementation is very time-consuming and there are several opportunities to make the program more effective by introducing time-saving shortcuts. Specific items include:
    - A program implementation checklist with what needs to be done when, and how to do it.
    - A master builder agreement that can be easily modified to meet local requirements.
    - Clear and up-to-date lists of qualified appliances with model numbers to facilitate selection.
    - Longer lead times on qualified appliances, as they are sometimes bought six months or more in advance and then warehoused until installed.

- **Key Points of Influence:** It is clear that the key point or points of influence vary from one project to the next. This is a combination of the building environment (availability of land), and the size of the builder. Key points of influence include:
  - Project Manager
  - Site Manager
  - Purchasing Agent
  - City Planning Department
  - Architects

Agency managers indicated that it is effective to talk to architects before the design stage, as they carry a lot of influence with builders, and tend to be receptive to the concept of green building.

- **Influencing the Influencer:** When asked what is most effective in motivating builders to participate in the program, responses included both the financial bottom line, but also non-financial factors.
  - Incentives to make it a financially attractive decision.
  - Public recognition of the builders and architects that support green building.
  - Standardized training for landscape architects to make it easier for them to include water-saving hardware.

- **Barriers to Successful Program Implementation:** Agency managers indicate that time, money and staff are all barriers to successful program implementation. Accordingly, anything that will reduce the effort required to get a program in place would help overcome these issues.
  - Simplify the inspection process with a one-stop shop like the commercial business.
  - Builders don't communicate the California Friendly program internally, so they may implement it at one project and not at nine others. If there was a program checklist that can be provided to builders then this could be shared or communicated more easily to spread the program to all projects.
  - Educating suppliers to tell builders about the rebates available with their products so that they can join in promoting water-saving appliances to the builders.
  - Perhaps consider having a supplier rebate.
  - Conduct a regional promotional campaign with MWD promoting the program at the regional level and the retail agencies providing support at the project level (similar to commercial program).
  - Speed up turnaround of rebates, to provide better motivation.
  
- **Internal Challenges:** When asked specifically about internal challenges, retail agency managers focused on securing more support from MWD indicating that the program becomes a full-time job, and that they don't have the staff for it. They also indicate that the builders are regional, so it fits better with MWD's scope of operations.
  
- **New Strategies:** Participants were also asked if there are other, new approaches or strategies that could improve program performance. Suggestions included:
  - Provide specifics about how much will be saved, perhaps adding a section to the marketing on how to better sell California Friendly.
  - Consider combining promotion of water saving with energy saving into holistic green builder program.
  - Expand promotion of "water sense" so that it has the same consumer awareness as 'energy star.'
  - Consider retail promotions on 'water sense' products similar to 5% off promotions for energy star products.
  - Include success stories of successful developments on [bewaterwise.com](http://bewaterwise.com) and/or in pamphlet form.

## FOCUS GROUP DETAILED FINDINGS

### Objectives of the California Friendly Program

Participants were asked whether they agree with the current objectives statement (below), or if they have any recommendations for changes.

***“For the California Friendly program, the goals are to secure a large number of new construction homes that will start with high-efficiency toilets, clothes washers, smart sprinkler controllers and high-efficiency rotating sprinkler heads, and water efficient landscaping.”***

Initial responses included:

***“Yes this is a comprehensive list. I think there are other non-mainstream technologies out there [gray water and cistern for rainwater]. . . but not necessarily something that would be included at this point.”***

***“List is very good, it’s a good start.”***

***“Okay as is.”***

However, as the discussion progressed, several recommendations for changes to the statement were made.

***“To better define landscaping, maybe say water efficient irrigation and plants, breaking them out, because you can put in all the California native plants you want but unless you’re irrigating them properly then you’re going to be wasting water.”***

***“One of the number one complaints I get is circulating hot water and I think if you’re starting with new construction that should be an automatic thing you’re putting in because the number one complaint I get from homeowners is they can’t tell how many gallons it is.”***

***“Maybe if homes were planned for gray water but don’t have the technology installed.”***

***“If you’re looking at actual equipment then look at faucets with aerators that save water.”***

***“Big component I see is educational component. They have all this high-tech stuff but what should they do with it. They don’t understand the control, they don’t understand the MP rotator, they don’t understand they’re supposed to water twice as long. They’re just ‘here’s your water efficient house’, now what does that mean, what do I do with it? So education. When you get a washer you get a manual. The customer needs to learn what they’re getting and what to do with it, because if they override the controller what good is it? If they don’t water the MP rotators twice as long and their grass burns, what are they***

***going to do? They're going to rip it out so what good is it. So it's a huge education component."***

## **Existing Programs and Description**

Participants were then asked:

***"Do you have a promotional program for water conservation specifically addressing residential new construction? Do you have a program for all residential households?" For those who had a program, it was also asked "Please describe the promotional program you currently have in place, if any, identifying any rebates. How long has the program been in place? How successful has it been? What about the program works best (any success stories)?"***

Three of the six agencies (Eastern Municipal Water District, San Diego County Water Authority and Metropolitan Water District of Orange County - MWDOC) said they currently have a program for residential new construction. All three issue their own rebates to supplement the rebates that MWD offers. The agencies also utilize the marketing materials provided by MWD.

Of the three agencies, Eastern Municipal Water District has the more advanced program. They began theirs two years ago and the program includes California Friendly homes (with rebates offered on landscaping and smart controllers; participation by three builders), California Model Homes (with rebates offered on toilets, washers, smart controllers, MP rotators, and landscaping; participation by three builders), and Production Homes (with rebates offered on toilets, washers, smart controllers and MP rotators; participation by two builders on four tracts). Additionally, they are working on a multi-family program which will offer rebates similar to the California Model Homes project.

MWDOC has been working on their program since MET introduced it, however it is not in full operation. They are working with one builder on one model home and will be offering rebates on toilets, washers, smart timers, MP rotators, and landscaping. They currently do not have any production units.

When discussing their agency's program, each mentioned that it was a huge time-commitment. They all agreed that it is very labor-intensive and they would like to see it become more of a turn-key system with MWD taking a greater lead.

Specific comments included:

***"It's taken me over a year to get a signed agreement back . . . it's been like pulling hairs to get this thing moving. The builder is not very responsive and there's not a lot of support from MET on it either. I think there needs to be a better plan or guidelines from MET. I mean, there was not even a master agreement to send over to builders. I had to borrow from other people. I'd like***

***some kind of checklist or package for the agency that's implementing the program, more of a turn-key system definitely."***

***"It's a lot of legwork and handholding . . . I'd come up with my own agreement, get them to sign it, then I'd go out to do inspections and they didn't read the list and toilets don't qualify or washers don't qualify, then you're handholding them again to get them to change it out."***

***"It requires purchase receipts and we can't get it. It was a real big issue."***

***"Another issue is not all model numbers are on toilets . . . you can't get a model number, so how can you say this is what you've got, some do but a lot of times they don't."***

***" I can't devote 50% of my time to this program, I just don't have the time. It needs to be more of a cookie-cutter, with a list of what you do and how you do it."***

***"MET doesn't do inside [inspections]. To me, you're hiring someone to do the inspection and it wouldn't take them much longer to do the inside and that's one less person who has to go out and inspect."***

***"Universal Studios is going to build 2,500 multi-family town homes and they're not starting construction until 2008. They're already specifying washers and going to purchase them and warehouse them for 6 months before building. Determine qualifying list at time of purchase. Be prepared for long lead-time."***

***"The key for us is to provide incentives that are financially attractive at a time when the housing market isn't necessarily the best for them."***

***"Although if you do a cost-benefit analysis based on the toilets you're putting 1.3 vs. 1.6, it doesn't pan out but the long-term goal is worth it."***

## **Key Points of Influence**

It was also asked who the key decision-makers are for new residential construction and how they impact the decision-making process. Responses to the first question included project managers, site managers, local architect groups, purchasing agents, architects, city planning departments and landscape architects.

Below are some of the responses:

***"Project manager, site manager. But it all come back to bottom line and dollar amount they're offering in terms of how we influence them. Make it more enticing."***

***"Getting in touch with local architect groups who would potentially be doing the development and getting word out."***

***“Purchasing agents and project manager is who I deal with.”***

***“We’ve gone through the city, that route, their planning department . . . it’s just a matter of timing, getting in at the right time, staff responding to each other. Also helps if the city is interested in green building.”***

***“I think architects are getting on board more. The last three inspections we met the landscape architect out there.”***

## **Influencing the Influencer**

After discussing the influencers, the driving forces were discussed. Specifically it was asked:

***“What are the key motivational factors in deciding whether or not to support water conservation programs?”***

Responses included:

***“Financing helps, but also acknowledge them in more public way. I don’t know if we do anything, maybe locally but not region-wide.”***

***“Landscape architects and designers are not trained in irrigation because it’s art for them. They look at plants and colors. They don’t have irrigation experience. So really, we need standardized training for them.”***

***“A couple of builders would do California Friendly in the backyard and attach it to the home loan, and that was an option.”***

## **Barriers to Successful Program Implementation**

When asked about the biggest barriers to the implementation of an effective water conservation program, several people quickly mentioned time, money and staff.

Aside from the aforementioned list toppers, additional comments included:

***“Seems like builders not passing on info within their own staff. If they have one project manager who’s already done a California Friendly home and have ten other projects going on, they’re not sharing the information. Need checklist, model, pass it around. There’s a communication gap.”***

***“Barrier could be suppliers if they’re not explaining it. They need to explain you can get high efficiency toilets and there’s a rebate. Maybe even a rebate to supplier if it’s a big development. Supplier can be a really big help.”***

***“Builders have to talk to too many different agencies. Need one stop shop, like we do for the commercial program. There’s one number, one inspector will handle all the development issues.”***

***“Why not go to the builder for the region, instead of having to find out who’s doing the homes in this city and that city. So you’re marketing it to different people at the same builder, and I think MET should be the one to head that up because they have the resources for that. We should just administer it on our end, more like the commercial program.”***

***“How long before they get the money . . . sometimes I hear it takes too long and there is no reason for that if you have the receipt and you’ve handed in the completed paperwork.”***

## **Internal Challenges**

Barriers to the program were addressed again, but this time from an internal perspective. Participants were asked:

***“From an internal operations standpoint, what are the biggest challenges to implementing an effective water conservation program?”***

As with the barriers to a successful conservation program, staff and resources were also named as barriers from an internal operations standpoint. It was also mentioned again that they would like to see MWD have more involvement than they currently have. This comment was seconded and thirded by members of the group.

Comments included:

***“Staff, resources . . . there aren’t any.”***

***“California Friendly program for us is basically a full-time position.”***

***“I think this program should be administered by Metropolitan because it is a regional program. Builders, folks, like to go to one place. It will be more successful.”***

## **New Strategies**

Participants were asked:

***“Are there any new or different strategies that we have not discussed that you think would be effective in accomplishing our goals?”***

***“Quantify to customer where possible they can expect to save. Maybe add to the marketing a section on how to better sell California Friendly.”***

***“We had a focus group for landscapers in our area, and they kept saying you have to let us know how much it will save.”***

***“Also look at the movement with energy, the total package.”***

***“Everyone knows what energy star is, we want everyone to know what water sense is.”***

***“Include examples of successful developments, either on [bewaterwise.com](http://bewaterwise.com) or in pamphlet form.”***

***“When you go to the store and buy energy star, sometimes get 5% off at Home Depot. Could we do something similar for water, discount them for homeowners, weekly specials, maybe that’s something we can think about.”***

## **Focus Group Participants Recommendations**

- Revise program goals to include: ‘education of proper use of water efficient equipment,’ and ‘planning for potential future water-saving technologies.’
- Provide an agency program implementation checklist including what needs to be done, when, and how, to reduce the labor required for program implementation.
- Develop and provide agencies with a standardized agreement for use with builders which can be modified as needed to meet local requirements.
- Develop a builder California Friendly implementation checklist to make it easier to communicate the program initially, communicate the program internally to other developments for the same builder more effectively, and facilitate ease of program implementation so builders will be more willing to participate.
- Make every effort to provide up-to-date lists of approved products by category with model numbers to facilitate selection and implementation.
- Develop and implement programs for architects and landscape architects as they are often not familiar with water-saving equipment and have a strong influence in the selection process.
- Include public recognition of participating builders and architects as part of the promotional effort as this provides value to participants at a relatively low cost, and provides positive media coverage for all involved.
- Consider an educational program for suppliers to make them part of the green team, possibly even including supplier incentives.
- If possible, implement a one-stop shop inspection process to make it easier for builders to participate, and reduce manpower requirements for agencies.
- Do everything possible to facilitate and speed up rebate payments.
- Establish an MWD ‘national accounts’ program to approach larger builders at the regional level with support from the retail agencies at the individual project level.
- If feasible, combine the California Friendly water saving program with energy saving programs to secure synergy in promoting both programs at the same time.



\*\*\*\*\*

4. WHEN YOU PURCHASED YOUR HOME, DO YOU RECALL SEEING ANYTHING ABOUT ENERGY/WATER SAVINGS RELATING TO YOUR NEW HOME?

- 1. YES ..... 69.8%
- 2. NO ..... 30.2%

\*\*\*\*\*

5. WHERE DID YOU SEE IT?

- 1. AT MODEL HOMES ..... 73.0%
- 2. IN THE MEDIA ..... 27.0%
- 3. OTHER ..... 0.0%

\*\*\*\*\*

6. DID YOU CONSIDER THIS INFORMATION WHEN BUYING YOUR HOME?

- 1. YES ..... 60.8%
- 2. NO ..... 39.2%

\*\*\*\*\*

7. HOW WOULD YOU RATE THE IMPORTANCE OF ENERGY SAVINGS WHEN YOU BOUGHT YOUR NEW HOME, WOULD YOU SAY IT WAS . . . ?

- 1. VERY IMPORTANT ..... 62.3%
- 2. SOMEWHAT IMPORTANT ..... 32.1%
- 3. NOT VERY IMPORTANT ..... 2.8%
- 4. NOT AT ALL IMPORTANT ..... 2.8%

\*\*\*\*\*

8. HOW WOULD YOU RATE THE IMPORTANCE OF WATER SAVINGS WHEN YOU BOUGHT YOUR NEW HOME, WOULD YOU SAY IT WAS . . . ?

- 1. VERY IMPORTANT ..... 59.4%
- 2. SOMEWHAT IMPORTANT ..... 32.1%
- 3. NOT VERY IMPORTANT ..... 3.8%
- 4. NOT AT ALL IMPORTANT ..... 4.7%

\*\*\*\*\*

9. IF YOU WERE BUYING YOUR HOME TODAY, HOW INTERESTED WOULD YOU BE IN A "GREEN HOME" ?

- 1. VERY INTERESTED ..... 56.6%
- 2. SOMEWHAT INTERESTED ..... 34.0%
- 3. NOT VERY INTERESTED ..... 8.5%
- 4. NOT AT ALL INTERESTED ..... 0.9%

\*\*\*\*\*

10. PRIOR TO THIS SURVEY, HAD YOU HEARD THE TERM "CALIFORNIA FRIENDLY HOMES"?

- 1. YES ..... 19.8%
- 2. NO ..... 80.2%

\*\*\*\*\*

11. HOW WOULD YOU RATE YOUR LEVEL OF SUPPORT FOR THE GOALS OF THE CALIFORNIA FRIENDLY HOMES PROGRAM?

- 1. VERY SUPPORTIVE ..... 63.2%
- 2. SOMEWHAT SUPPORTIVE ..... 30.2%
- 3. NOT VERY SUPPORTIVE ..... 4.7%
- 4. NOT AT ALL SUPPORTIVE ..... 1.9%

\*\*\*\*\*

12. WHAT ABOUT CALIFORNIA FRIENDLY HOMES IS THE MOST APPEALING TO YOU . . . ?

- 1. SAVING WATER/HLP ENVRNMNT ..... 15.2%
- 2. LWRNG WTR BLS/SVNG MNY ..... 10.1%
- 3. BOTH ..... 71.7%
- 4. DON'T KNOW ..... 3.0%
- 5. OTHER ..... 0.0%

\*\*\*\*\*

13. WHO MADE THE DECISION ABOUT THE TYPE OF WASHER THAT IS IN YOUR NEW HOME?

- 1. YOU(HOMEOWNER) ..... 81.1%
- 2. THE BUILDER ..... 12.3%
- 3. OTHER ..... 0.0%
- 4. GIFT ..... 6.6%

\*\*\*\*\*

14. HOW WOULD YOU RATE THE IMPORTANCE OF HAVING A HIGH-EFFICIENCY WASHER WHEN YOU BOUGHT YOUR NEW HOME?

- 1. VERY IMPORTANT ..... 68.9%
- 2. SOMEWHAT IMPORTANT ..... 23.6%
- 3. NOT VERY IMPORTANT ..... 4.7%
- 4. NOT AT ALL IMPORTANT ..... 2.8%

\*\*\*\*\*

15. WHO MADE THE DECISION ABOUT THE TYPE OF TOILETS THAT ARE IN YOU NEW HOME?

- 1. YOU(HOMEOWNER) ..... 5.7%
- 2. THE BUILDER ..... 94.3%
- 3. OTHER ..... 0.0%

\*\*\*\*\*

16. WAS THERE A "DESIGN CENTER" THAT HAD ANY INPUT IN THIS DECISION . . . ?

- 1. DESIGN CENTER ..... 19.8%
- 2. SOMEONE ELSE ..... 0.0%
- 3. NO ..... 80.2%

\*\*\*\*\*

17. HOW WOULD YOU RATE THE IMPRTNCE OF HAVING HIGH-EFFICIENCY TOILETS THAT USE LESS THAN CURRENT 1.6 GALLONS ?

- 1. VERY IMPORTANT ..... 57.5%
- 2. SOMEWHAT IMPORTANT ..... 25.5%
- 3. NOT VERY IMPORTANT ..... 11.3%
- 4. NOT AT ALL IMPORTANT ..... 5.7%

\*\*\*\*\*  
18. DID YOUR NEW HOME COME WITH FRONT YARD LANDSCAPING, BACKYARD LANDSCAPING, BOTH, OR NEITHER?

- 1. NEITHER ..... 11.3%
- 2. FRONT YARD ONLY ..... 55.7%
- 3. BACK YARD ONLY ..... 0.9%
- 4. BOTH ..... 20.8%
- 5. NO BACK/FRONT YARD ..... 11.3%

\*\*\*\*\*  
19. FOR THE LANDSCAPING THAT YOU CONTROL, WHO IS THE PRIMARY INFLUENCE IN THE TYPE OF LANDSCAPING PLANTS SELECTED?

- 1. YOU(HOMEOWNER) ..... 51.1%
- 2. LNDSCP E ARCHITECT ..... 20.2%
- 3. A GARDENER ..... 5.3%
- 4. OTHER ..... 5.3%
- 5. THE BUILDER ..... 18.1%

\*\*\*\*\*  
20. AND FOR WATERING EQUIPMENT . . . ?

- 1. YOU(HOMEOWNER) ..... 44.7%
- 2. LNDSCP E ARCHITECT ..... 20.2%
- 3. A GARDENER ..... 7.4%
- 4. OTHER ..... 4.3%
- 5. THE BUILDER ..... 23.4%

\*\*\*\*\*  
21. HOW WOULD YOU RATE THE IMPRTNCE OF SELECTING LANDSCAPING THAT IS LOWER WATER CONSUMPTION, WOULD YOU SAY IT IS?

- 1. VERY IMPORTANT ..... 74.5%
- 2. SOMEWHAT IMPORTANT ..... 18.9%
- 3. NOT VERY IMPORTANT ..... 5.7%
- 4. NOT AT ALL IMPORTANT ..... 0.9%

\*\*\*\*\*  
22. HOW WOULD YOU RATE THE IMPORTANCE OF USING LOW WATER CONSUMPTION SPRINKLER CONTROLLERS AND SPRINKLERS?

- 1. VERY IMPORTANT ..... 74.5%
- 2. SOMEWHAT IMPORTANT ..... 20.8%
- 3. NOT VERY IMPORTANT ..... 1.9%
- 4. NOT AT ALL IMPORTANT ..... 2.8%

\*\*\*\*\*  
23. DO YOU THINK THAT HOME BUILDERS SHOULD INCLUDE LOW WATER CONSUMPTION LANDSCAPING AND WATERING EQUIPMENT?

- 1. YES ..... 95.3%
- 2. NO ..... 4.7%

\*\*\*\*\*

24. DO YOU THINK THAT HOME BUILDERS SHOULD DO MORE TO INCLUDE WATER SAVING TOILETS AND WASHERS?

- 1. YES ..... 86.8%
- 2. NO ..... 13.2%

\*\*\*\*\*

25. DO YOU THINK THAT HOME BUILDERS SHOULD PROVIDE NEW HOMEOWNERS WITH MORE INFORMATION ABOUT HOW TO SAVE WATER?

- 1. YES ..... 89.6%
- 2. NO ..... 10.4%

\*\*\*\*\*

26. IN YOUR DAILY LIFE, HOW IMPORTANT IS CONSERVING WATER TO YOU, WOULD YOU SAY IT IS . . . ?

- 1. VERY IMPORTANT ..... 69.8%
- 2. SOMEWHAT IMPORTANT ..... 20.8%
- 3. NOT VERY IMPORTANT ..... 7.5%
- 4. NOT AT ALL IMPORTANT ..... 1.9%

\*\*\*\*\*

27. OK, WE JUST HAVE A FEW QUICK DEMOGRAPHIC QUESTIONS. ARE YOU . . . ?

- 1. IN YOUR 20'S ..... 14.2%
- 2. 30'S ..... 32.1%
- 3. 40'S ..... 28.3%
- 4. 50'S, OR ..... 15.1%
- 5. 60 OR OLDER ..... 9.4%
- 6. REFUSED ..... 0.9%

\*\*\*\*\*

28. WHICH OF THE FOLLOWING BEST DESCRIBES YOUR ETHNICITY?

- 1. WHITE ..... 52.8%
- 2. BLACK ..... 9.4%
- 3. HISPANIC ..... 19.8%
- 4. ASIAN ..... 15.1%
- 5. NATIVE AMERICAN ..... 0.0%
- 6. OTHER ..... 0.0%
- 7. REFUSED ..... 2.8%

\*\*\*\*\*

29. AND IS YOUR TOTAL HOUSEHOLD INCOME . . . ?

- 1. < \$50,000 ..... 7.5%
- 2. \$50,000-\$74,999 ..... 19.8%
- 3. \$75,000-\$99,999 ..... 26.4%
- 4. \$100,000-\$149,999 ..... 19.8%
- 5. \$150,000 + ..... 21.7%
- 6. REFUSED ..... 4.7%

\*\*\*\*\*

30. GENDER:

- 1. MALE ..... 63.2%
- 2. FEMALE ..... 36.8%

\*\*\*\*\*

31. FOR VERIFICATION PURPOSES ONLY, CAN I PLEASE GET THE CORRECT SPELLING OF YOUR FIRST AND LAST NAME?

\*\*\*\*\*

THANK YOU FOR PARTICIPATING - HAVE A NICE DAY!

## APPENDIX 2: Homebuilder Discussion Guide

### I INTRODUCTION (2 minutes)

Hi, I'm calling on behalf of the MWD of SC. I'm hoping to conduct a short interview about MWD's voluntary water saving programs with builders to help determine how MWD can work effectively with you to achieve water saving goals.

### II IMPORTANCE OF GREEN AS A MARKETING TOOL (3 minutes)

First of all, do you think that having high-efficiency homes is a more important factor in home-buyers' decision-making process than it was 2-5 years ago? And do you think this will be more or less important two years from now than it is today?

### III CURRENT PROGRAMS (5 minutes)

Have you ever been contacted by power or water agency staff about conservation programs (specifically which organizations)? (if yes) What conservation programs do you currently have in place?

### IV BENEFITS AND CHALLENGES (5 minutes)

What do you see as the key benefits of this program? What do you see as the biggest downside or challenges?

### IX MODEL HOME PROGRAM (5 minutes)

Are you familiar with the MWD Model Home Program to provide positive examples of use of high-efficiency toilets, clothes-washers, and low water consumption landscaping?

Do you participate? Why/Why not?

Do you have any recommendations to improve this program?

### X ORGANIZATIONAL STRUCTURE FOR CONSERVATION (5 minutes)

In your organization, is there one decision-maker with regard to the implementation of energy and water conservation programs or is it handled at multiple levels by multiple individuals? What is the most effective way to communicate with you/builders to identify and work with the right individual(s) making it more efficient for both MWD and you?

XI BUNDLING OF CONSERVATION PROGRAMS (2 minutes)  
Would it be beneficial if green/conservation programs are addressed in a bundled fashion so that you receive information from both energy and water companies at once in a coordinated package?

V TOILETS (10 minutes)  
We have talked about toilets, clothes washers, weather-based sprinkler controllers and landscaping. The decisions for each of these may be made or influenced by different people, so I would like to ask you about each one individually to be sure we correctly understand the decision-making process.

For toilets, who determines which type of toilet is included in completed homes (builder/design center/homeowner/other)? (if multiple influences) What role does each of these influences play in the decision-making process?

How would you define a 'high-efficiency' toilet (probe for specific water consumption if not supplied)?

(if not described in III – Current Programs) Are you familiar with any programs to promote high-efficiency toilets to homebuilders?

What do you see as the biggest barriers to getting high-efficiency toilets in all of your new homes?

Do you have any recommendations for MWD to implement an effective program to motivate the use of high-efficiency toilets?

VI CLOTHES-WASHERS (10 minutes)  
For clothes-washers, who determines which type of clothes-washer is used in completed homes (builder/design center/homeowner /other)? (if multiple influences) What role does each of these influences play in the decision-making process?

How would you define a 'high-efficiency' clothes-washer (probe for specific water consumption if not supplied)?

(if not described in III – Current Programs) Are you familiar with any programs to promote high-efficiency clothes-washers to homebuilders?

What do you see as the biggest barriers to getting high-efficiency clothes-washers in all of your new homes?

Do you have any recommendations for MWD to implement an effective program to motivate the use of high-efficiency clothes-washers?

VII WEATHER-BASED SPRINKLER CONTROLLERS (10 minutes)

For weather-based sprinkler controllers, who determines which type of sprinkler controllers are used in completed homes (builder/landscaper/homeowner/other)? (if multiple influences) What role does each of these influences play in the decision-making process?

(if not described in III – Current Programs) Are you familiar with any programs to promote weather-based sprinkler controllers to homebuilders?

What do you see as the biggest barriers to getting weather-based sprinkler controllers in all of your new homes?

Do you have any recommendations for MWD to implement an effective program to motivate the use of weather-based sprinkler controllers?

VIII LOW WATER CONSUMPTION LANDSCAPING (10 minutes)

Do you provide front yard landscaping for you homes?

Who determines which type of front yard landscaping is included in completed homes (builder/landscaper/homeowner/other)? (if multiple influences) What role does each of these influences play in the decision-making process?

(if not described in III – Current Programs) Are you familiar with any programs to promote low water consumption landscaping to homebuilders?

What do you see as the biggest barriers to getting low water consumption landscaping in all of your new homes?

What steps should MWD take to implement an effective program to motivate the use of low water consumption landscaping?

## **APPENDIX 3: Green Program Manager Discussion Guide**

Hi, this is Mark McCourt with Redhill Group, calling on behalf of the Metropolitan Water District of Southern California. MWD is working to improve its homebuilder 'green program' called the California Friendly program.

We're trying to get the benefit of other organization's expertise and experience in this area to make sure our program is as effective as possible. The interview takes about 15 minutes, could you help us out, either now, or at a time more convenient to you if now is not a good time.

### **Taping**

OK, great; would it be OK if I tape the interview. This is just to help me in writing my report and will not be passed on to anyone.

1. First of all, can you give me a quick overview of your new homebuilder program; how long the program has been in existence, how many builders and projects you are working with, and what incentives and other motivational programs you are using to encourage participation?
2. How long did it take to get your program up and running?
3. What kind of documentation do you have for the program to provide to builders, like a step by step cookbook of the process, or is this done more on an interactive basis? How does that work?
4. What were the biggest challenges you faced in implementing your program, and how have you been able to address these challenges? Any other key issues ?
5. Who did you work with at the homebuilders to implement the program (what level(s) of manager)?
6. What did you see as the key motivational factors that secured positive homebuilder participation in the program?
7. Do you have any recommendations on how these motivational factors should be communicated for maximum effect?

8. What are the biggest internal barriers to program success, and how do you address these issues?
  
9. One issue I know that MWD is facing is the difficulty in getting hard invoices from builders to support rebate payments since some builders feel the amount they pay suppliers is highly confidential? Have you had an issue with this in your program, and what recommendations do you have about how this can be effectively resolved?
  
10. Have you employed any forms of marketing your program to builders other than direct phone calls and meetings that you found to be successful?
  
11. Do you have any other recommendations based on your experience that you would make to help MWD make its program as successful as possible?

## **APPENDIX 4: Water Agency Focus Group Participants**

West Basin Municipal Water District – Elise Goldman

Eastern Municipal Water District – Stacy Rodriguez

City of Santa Monica – Kim O’Cain

Metropolitan Water District of Orange County – Beth Fahl

San Diego County Water Authority – Mayda Portillo

Los Angeles Department of Water and Power – Mark Gentilli

## **APPENDIX 5: Water Agency Focus Group Discussion Guide**

### **OBJECTIVES (15 minutes)**

For the California Friendly program, the goals are to secure a large number of new construction homes that will start with high-efficiency toilets, clothes washers, smart sprinkler controllers and high-efficiency rotating sprinkler heads, and water efficient landscaping.

For the new construction, residential market, do you agree with these objectives or do you have recommendations to add or delete items?

### **II EXISTING PROGRAMS (5 minutes)**

Do you have a promotional program for water conservation specifically addressing residential new construction? Do you have a program for all residential households?

### **III EXISTING PROGRAM DESCRIPTION (15 minutes)**

Please describe the promotional program you currently have in place, if any, identifying any rebates. How long has the program been in place? How successful has it been? What about the program works best (any success stories)?

### **IV KEY POINTS OF INFLUENCE (10 minutes)**

When trying to impact new residential construction, who are the key decision-makers, and how do they impact the decision-making process?

### **V INFLUENCING THE INFLUENCERS (10 minutes)**

For each of these key target 'influencers,' what are the key motivational factors in deciding whether or not to support water conservation programs?

### **VI BARRIERS TO SUCCESSFUL PROGRAM IMPLEMENTATION (10 minutes)**

What are the most significant barriers to the implementation of an effective water conservation program, and what suggestions do you have to mitigate them?

### **VII INTERNAL CHALLENGES (5 minutes)**

From an internal operations standpoint, what are the biggest challenges to implementing an effective water conservation program?

### **VIII NEW STRATEGIES (5 minutes)**

Are there any new or different strategies that we have not discussed that you think would be effective in accomplishing our goals?

### **X WRAP UP (5 minutes)**

Wrap up, any other comments or recommendations to help develop an effective program to increase the use of water consuming appliances, water efficient landscaping, sprinkler controllers and spray nozzle

**Appendix D:**  
**California Friendly Project Photos**

**John Laing Homes: Holiday, Sun City (2005)**



**Shea Homes: Adeline's Farm - Watermill, Winchester (2006)**



**KB Home: Olive Grove, Perris (2007)**



**HG Fenton: Aquatera, San Diego (2009)**



**Pardee Homes: Manzanita Trail, San Diego (2010)**



**Brookfield Homes: Rockrose, Carlsbad (2010)**



**Appendix E:**

**Inland Empire Utilities Agency  
Porous Concrete Pilot Rebate Program**

## Final Project Progress Report

**Contract Number:** ICP 039-2007

**Agency Name(s):** Inland Empire Utilities Agency

**Contact Person:** Martha Davis (primary contact); Elizabeth Hurst (secondary contact)

**Contact Phone No.:** (909)993-1742; (909)993-1634

**Contact Email:** mdavis@ieua.org; ehurst@ieua.org

**Reporting Period:** Inception through 6/01/10

**Report Due Date:** 6/28/10

### Narrative

#### **Activities Performed:**

The Pilot Pervious Concrete Rebate Program has come to a close. Marketing for the program began with a tour of the city of Chino's Best Management Practices in May of 2009, highlighting the pervious concrete installation at IEUA's headquarters, and continuing with a workshop in June 2009 kicking off the rebate program. As part of the June workshop, educational information on stormwater infiltration and the design and use of pervious concrete were made available on IEUA's website and in the Chino Creek Wetland and Educational Park visitor center.

The workshop was successful, with 45 people in attendance from 19 agencies. The rebate program initially received a total of 5 applications (see attached flier/application form); however, because of the economic situation municipalities and local agencies found themselves in due to the recession, several of the interested parties were forced to withdraw their applications and/or reduce the size of pervious test sites. The administrative process for the program is as follows:

1. Applicant submitted completed, signed application forms to IEUA, including site maps.
2. Program staff reviewed the application for completion. Applications were then forwarded to program partners Wildermuth Environmental/Chino Basin Watermaster (to ensure that the project is beneficial to groundwater recharge in the Chino Basin) and the Southern California Concrete Producers (to assist municipalities with design and installation).
3. Applicant installed the pervious concrete. Invoicing, photographs, and quotes for traditional concrete installation (to calculate the price differential) were submitted to administrative staff along with a signed statement asserting the truthfulness of their claims.
4. Program administrators and/or representatives from the Southern California Concrete Producers verified the installation and conducted site visits. IEUA then administered the rebate check.
5. IEUA submitted completed invoice packages to MWD for reimbursement of rebate funds.
6. MWD delivered reimbursement funds to IEUA as per the grant agreement.

A total of three projects, totaling 6063 square feet of pervious concrete, have completed the installation and invoicing process in accordance with program requirements. The average price for the material and installation was \$17.10/square foot with a \$13.40/square foot cost increase over the installation of traditional, impervious concrete. All sites participating in the program received the full rebate value of \$2/square foot for a total of \$12,126.00 rebate funds expended.

The first site, installed by the Cucamonga Valley Water District at their Frontier Project facility, consisted of a 2437 square foot entryway walking path. The installation cost a total of \$50,424 and CVWD received a rebate of \$4,874 (see attachment).

The city of Ontario installed 1100 square feet of pervious concrete curb and gutter in 9 locations along residential streets in the northwest section of the city which were prone to drainage issues, such as

ponding and standing water. The installation cost a total of \$26,629 and received a rebate of \$2,200 (see attachment).

The city of Upland installed 2526 square feet of curb and gutter in a residential area. The installation was planned in an area which also experienced some nuisance flow/runoff as en route to catch basins and the municipal stormwater system on adjacent streets. Upland expended a total of \$26,946 and received a \$5,052 rebate (see attachment).

In order to further understand the implications of pervious concrete on groundwater recharge and as a result of the lower than anticipated participation, IEUA and partners have begun a survey and evaluation of existing pervious concrete treatments throughout the Chino Basin in order to evaluate groundwater infiltration and replenishment. It is anticipated that this paper will be completed in August, 2010.

IEUA was also the recipient of the Southern California Concrete Producer's 2009 Cornerstone Concrete Excellence Award for the colored, pervious concrete demonstration installation in the Chino Creek Wetlands and Educational Park, which was installed as part of the kick-off for the pilot rebate program (see attached press release).

#### **Key Findings & Recommendations:**

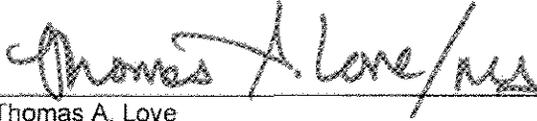
- Installation costs were higher than initially anticipated, due, in part, to the increased cost of building materials, such as concrete. Based on program participants' installation costs, it is approximately \$13/sq ft more to install pervious concrete instead of impervious surfaces. The depth of the gravel base, which maximizes storage/infiltration capacity, was also found to increase the cost differential. The initial rebate, at \$2 per square foot appears low: if a higher rebate was offered in future programs more entities might be willing to install pervious concrete.
- Curb and gutter applications, especially in areas prone to runoff, appears to be an especially promising usage of pervious concrete for both re-infiltrating water and avoiding nuisance flows
- Municipalities are interested in installing pervious concrete and those who have are extremely satisfied with the end result.
- Although many of the local contractors and municipalities have participated in pervious concrete installation training workshops, designs in installations across the Chino Basin varied—please note that a review of approximately 30 sites installed throughout the IEUA's service area were reviewed as part of an ongoing analysis. This statement is not limited to program participants. It is recommended that an additional design workshop be developed.

#### **Water Savings:**

Due to the lack of rainfall since the installation of the pervious concrete sites, water savings are currently incalculable. However, the installations have been approved by the Chino Basin Watermaster consultant Wildermuth Environmental as being located in areas where groundwater basin recharge will be maximized. Monitoring is ongoing in collaboration with San Bernardino County stormwater management division. San Bernardino County Stormwater Management Department has agreed to monitor the sites and do the infiltration calculations when rainfall occurs. IEUA will share the information with MWD when it is available.

**Other Comments:**

None at this time.



Thomas A. Love

Thomas A. Love  
Chief Executive Officer/  
General Manager



June 25, 2010

Date

I hereby certify that the information below is accurate and true. The images and maps represent the pervious concrete installation, as in accordance with the pilot Pervious Rebate Program requirements.

Todd M. Corbin

Program manager (printed)

Billm

Signature

3/26/10

Date

APPLICANT: Cucamonga Valley Water District					
Sq Ft Instalation	Cost of Pervious Concrete Installation	Estimated Cost of Alternative Paving	Cost Differential	Rebate Value (50% of differential up to \$2/sq ft max)	Total Rebate Amount
2437 sq ft	\$50,424.00	\$14,622*	\$35,802.00	\$2/sq ft	\$4,874.00
Notes: * price of alternative paving based on \$18,000/3000 sq ft or \$6 per square foot as per Jan 12th email from Turner Construction Co.					



CONTINUATION SHEET

AIA DOCUMENT G703

AIA Document G702, APPLICATION AND CERTIFICATE FOR PAYMENT, containing Contractor's signed Certification, is attached. APPLICATION NO: 6  
 In tabulations below, amounts are stated to the nearest dollar. APPLICATION DATE: 12/15/2009  
 Use Column 1 on Contracts where variable retainage for line items may apply. PERIOD TO: 12/31/2009  
 TCC's PROJECT NO: B2-1475500  
 INVOICE #: 9531

A	B	C	D		F	G	H	I	
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
LINE	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (NOT IN D OR E)	COMPLETED AND STORED TO DATE (D + E + F)	% (G/C)	BALANCE TO FINISH (C - G)	RETAINAGE
	<b>Phase 1</b>								
1.	6" Curb & Gutter per RCSD 104,	\$ 4,320.00	\$ 4,320.00			\$ 4,320.00	100.000%	\$ -	\$ -
2.	6" Curb per RCSD 104, A1-6	\$ 4,128.00	\$ 4,128.00			\$ 4,128.00	100.000%	\$ -	\$ -
3.	3' Wide, 9" Swale per RCSD 106	\$ 1,800.00	\$ 1,800.00			\$ 1,800.00	100.000%	\$ -	\$ -
4	9" Crossgutter per RCSD 106-A	\$ 825.00	\$ 825.00			\$ 825.00	100.000%	\$ -	\$ -
	4" MBF Natural Pedestrian Pave	\$ 3,246.75	\$ 3,246.75			\$ 3,246.75	100.000%	\$ -	\$ -
→	4" Colored Pervious w/ Running	\$ 50,424.00	\$ 50,424.00		→	\$ 50,424.00	100.000%	\$ -	\$ -
	Pedestrian Ramps, Finish Only,	\$ 1,230.00	\$ 1,230.00			\$ 1,230.00	100.000%	\$ -	\$ -
6.	Steps on Grade per DII 4/ S0.1	\$ 17,497.20	\$ 17,497.20			\$ 17,497.20	100.000%	\$ -	\$ -
9.	Hand-Seeded Walk Bridges per G	\$ 2,200.00	\$ 2,200.00			\$ 2,200.00	100.000%	\$ -	\$ -
10.	Flush Curb per DII A1/ A10.9.1	\$ 15,531.25	\$ 15,531.25			\$ 15,531.25	100.000%	\$ -	\$ -
11.	Curb/ Footing @ Boardwa	\$ 900.00	\$ 900.00			\$ 900.00	100.000%	\$ -	\$ -
12.	18" Wide, 20" High Seatwall, C	\$ 8,400.00	\$ 8,400.00			\$ 8,400.00	100.000%	\$ -	\$ -
13.	Pipe Bollard Footings	\$ 1,000.00	\$ 1,000.00			\$ 1,000.00	100.000%	\$ -	\$ -
14	2" Topping Slab on Steps - Tre	\$ 13,440.00	\$ 13,440.00			\$ 13,440.00	100.000%	\$ -	\$ -
	2' wide, 6" Band @ Carport	\$ 690.00	\$ 690.00	\$		\$ 690.00	100.000%	\$ -	\$ -
	Footing @ Green Screen - 3' wi	\$ 4,342.50	\$ 4,342.50			\$ 4,342.50	100.000%	\$ -	\$ -
1.	Foofings @ Vine Anchor Chains	\$ 1,400.00	\$ 1,400.00			\$ 1,400.00	100.000%	\$ -	\$ -
16.	Foofings @ S.S. Gazing Balls p	\$ 750.00	\$ 750.00			\$ 750.00	100.000%	\$ -	\$ -
19.	Concrete Pads @ Planter Pots	\$ 600.00	\$ 600.00			\$ 600.00	100.000%	\$ -	\$ -
20.	Concrete Pads @ Planter Pots	\$ 920.00	\$ 920.00			\$ 920.00	100.000%	\$ -	\$ -
21.	Sealer @ Pervious Pavement	\$ 1,363.30	\$ 1,363.30			\$ 1,363.30	100.000%	\$ -	\$ -
22.	4' x 4' Flatwork Mockups	\$ 4,500.00	\$ 4,500.00			\$ 4,500.00	100.000%	\$ -	\$ -
23.	Concrete Washout	\$ 850.00	\$ 850.00			\$ 850.00	100.000%	\$ -	\$ -
24.	(CCIP below)	\$ 0.00	\$ -			\$ -	0.000%	\$ 0.00	\$ -
25.	Original Contract Total	\$ 140,458.00	\$ 140,458.00	\$ -	\$ -	\$ 140,458.00	100.000%	\$ 0.00	\$ -

I hereby certify that the information below is accurate and true. The images on the CD labeled "Ontario Pervious Concrete" and maps represent the pervious concrete installation, as in accordance with the pilot Pervious Rebate Program requirements.

Grony Horms

Program Manager (printed)

[Signature]

Signature

5/26/10

Date

APPLICANT: City of Ontario					
Sq Ft Installation	Cost of Pervious Concrete Installation*	Estimated Cost of Alternative Paving	Cost Differential**	Rebate Value (50% of differential up to \$2/sq ft max)	Total Rebate Amount
1,100	\$26,629.50	\$27,500	\$12.50	\$2.00	\$2,200.00
<p>Notes:</p> <p>*\$25.98/square foot for reservoir base and concrete gutter. Please note, both are part of pervious concrete installation process. Whether combined or itemized varies by contractor.</p> <p>**price of alternative paving based on \$25/Linear Feet (\$12.50/sq ft) as per Nov 30, 2009 Hardy and Harper Invoice</p>					

CITY OF ONTARIO

PARTIAL PAYMENT PURCHASE ORDER

Vendor

**T. B. PENICK & SONS, INC.**

**9747 OLSON DR.**

**SAN DIEGO, CA 92121**

Purchase Order No. **28513**

Payment No. **1**

DESCRIPTION OF GOODS OR SERVICES RECEIVED	AMOUNT
PERVIOUS CONCRETE DRAINAGE IMPROVEMENTS—VARIOUS LOCATIONS; (CONTRACT NO. D0901).	<b>\$46,780.65</b>
<b>TOTAL: \$67,109.00 PLUS CONT. \$6,711.00= \$73,820.00</b>	

<b>INVOICE NO. 17495</b>	
<b>BREAKDOWN (ACCT. NO.)</b>	<b>52210 077 183</b>
<b>Original Amount</b>	<b>\$ 67,109.00</b>
<b>Increase</b>	<b>\$</b>
<b>Work Completed</b>	<b>\$ 51,978.50</b>
<b>Less 10% Withheld</b>	<b>\$ 5,197.85</b>
<b>Previously Paid</b>	<b>\$ 0.00</b>
<b>Due this Payment</b>	<b>\$ 46,780.65</b>

*SEE LAST PAGE*

<b>Balance Remaining on PO Less Contingency</b>	<b>\$ 15,130.50</b>
-------------------------------------------------	---------------------

ACCOUNT #	AMOUNT	FIN.
52210 077 183		
Line 1	\$51,978.50	
21103 077	(5,197.85)	
<b>TOTAL</b>	<b>\$46,780.65</b>	

DATE:

May 6, 2010

DEPARTMENT:

ENGINEERING

RECOMMENDED BY:

RECOMMENDED BY:

APPROVED BY:

*[Signature]*

CONTRACTOR'S LICENSE NO. 185381

T.B. PENICK & SONS, INC.

BUILDING · ENGINEERING · CONCRETE · SINCE 1905

To City of Ontario  
303 E. B St., Civic Center  
Ontario, Ca 91764-4105

Date 04/30/09

INVOICE  
Invoice no. 17495

City of Ontario Pervious Concrete

3006-5

Job \_\_\_\_\_ job no. \_\_\_\_\_

Item	Description	Unit	Unit Price	Quantity	Amount																					
	Total amount earned to date				\$51,978.50																					
	Less retention				5,197.85																					
	Net due this request				\$46,780.65																					
<p>55120-077-183</p> <p>OK TO PAY (ITEM BREAKDOWN ON SHEET 3 OF THIS INVOICE)</p> <p>5/5/10</p>																										
<p>PO # 28513 PO Fully Complete _____</p> <table border="1"> <thead> <tr> <th>Line No</th> <th>Acct</th> <th>Fund</th> <th>Dept</th> <th>Prj/Gmt</th> <th>Amnt/Qty</th> <th>PK</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>52210</td> <td>077</td> <td>183</td> <td></td> <td>51,978.50</td> <td>P</td> </tr> <tr> <td></td> <td>21103</td> <td>077</td> <td></td> <td></td> <td>(5,197.85)</td> <td></td> </tr> </tbody> </table> <p>Approval: <i>[Signature]</i> Date: 5/6/10</p>						Line No	Acct	Fund	Dept	Prj/Gmt	Amnt/Qty	PK	1	52210	077	183		51,978.50	P		21103	077			(5,197.85)	
Line No	Acct	Fund	Dept	Prj/Gmt	Amnt/Qty	PK																				
1	52210	077	183		51,978.50	P																				
	21103	077			(5,197.85)																					

NOTICE: "Under the Mechanics" Lien Law (California Code of Civil Procedure, Section 1181 et seq.), Any contractor, subcontractor, laborer, supplier or other person who helps to improve your property but is not paid for his work or supplies, has a right to enforce a claim against your property. This means that, after a court hearing, your property could be sold by a court officer and the proceeds of the sale used to satisfy the indebtedness. This can happen even if you have paid your own contractor in full, if the subcontractor, laborer or supplier remains unpaid.

Please pay from this invoice

1% interest charged monthly after 10th of month following purchase

Bills must be paid by 10th of month

RELEASE FORM 1

CONDITIONAL WAIVER AND RELEASE 3006-5  
UPON PROGRESS PAYMENT  
(Civil Code §3262(d)(1))

Upon receipt of the undersigned of a check from

City of Ontario  
(Maker of check)  
in the sum of \$46,780.65  
(Amount of Check)  
payable to T.B. Penick & Sons, Inc.  
(Payee or Payees of Check)

and when the check has been properly endorsed and has been paid by the bank upon which it is drawn, this document shall become effective to release any mechanic's lien, stop notice, or bond right the undersigned has on the job of City of Ontario  
(Owner)

located at Pervious Concrete Drainage Improvements-Variou Locations  
(Job Description)  
to the following extent.

This release covers a progress payment for labor, services, equipment or material furnished to

City of Ontario  
(Your Customer)  
through 4/30/10  
(Date)

only, and does not cover any retentions retained before or after the release date; extras furnished before the release date for which payment has not been received; extras or items furnished after the release date. Rights based upon work performed or items furnished under a written change order which has been fully executed by the parties prior to the release date are covered by this release unless specifically reserved by the claimant in this release. This release of any mechanic's lien, stop notice, or bond right shall not otherwise affect the contract rights, including rights between parties to the contract based upon a rescission, abandonment, or breach of the contract, or the right of the undersigned to recover compensation for furnished labor, services, equipment, or material covered by this release if that furnished labor, services, equipment, or material was not compensated by the progress payment. Before any recipient of this document relies on it, said party should verify evidence of payment to the undersigned.

Dated: 5/5/10  
Mary Anne Wilson, Controller  
Title  
T.B. Penick and Sons, Inc.  
(Company Name)

NOTE: This form complies with the requirements of Civil Code Section 3262(d)(1). It is to be used by a party who applies for a progress payment when the progress payment check has not yet cleared the bank.

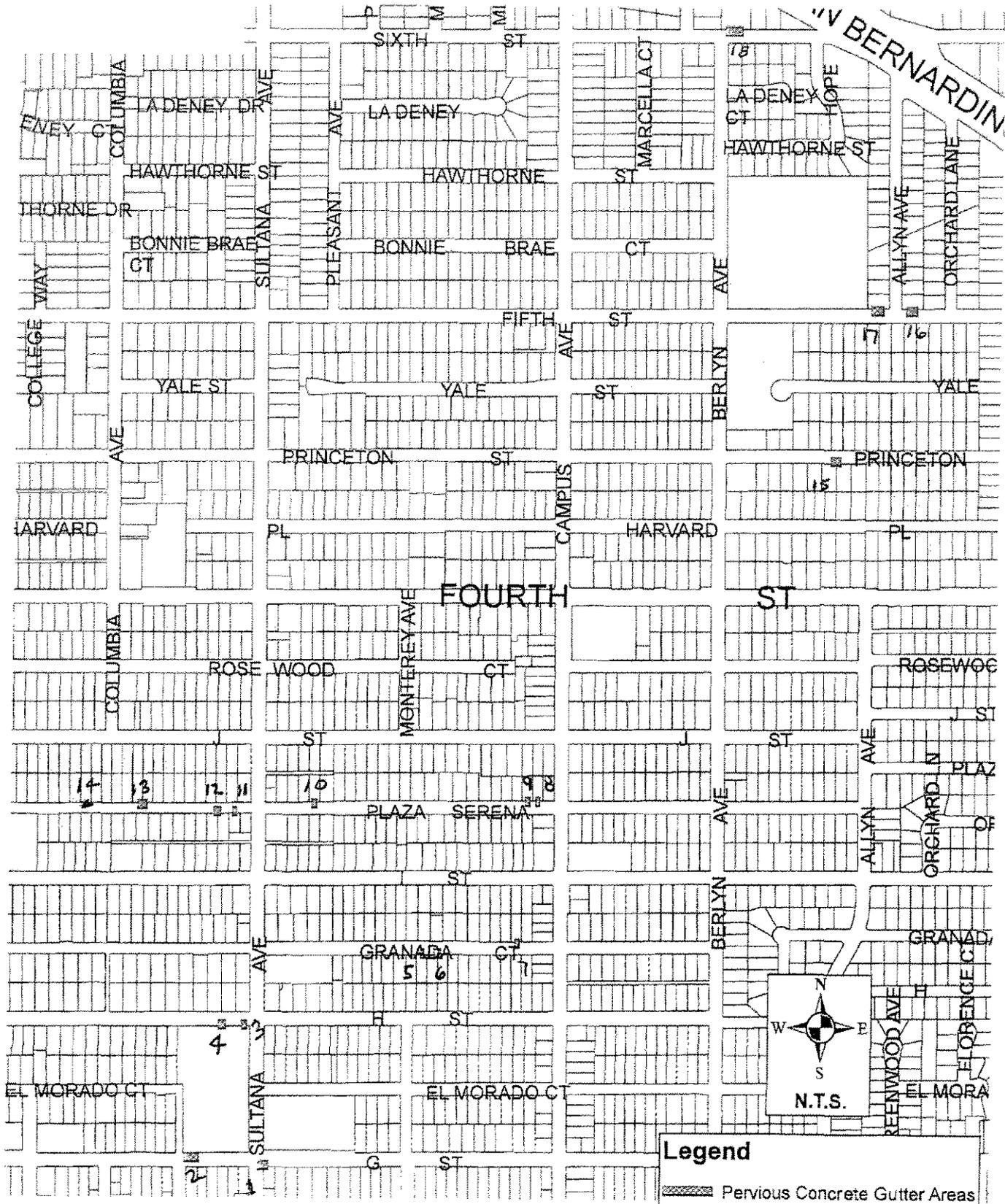
T.B. PENICK & SONS, INC.  
 Project: City of Ontario Various Concrete  
 SCHEDULE OF VALUES  
 DATE: April 30th 2010

City of Ontario  
 Job No. 3056-5

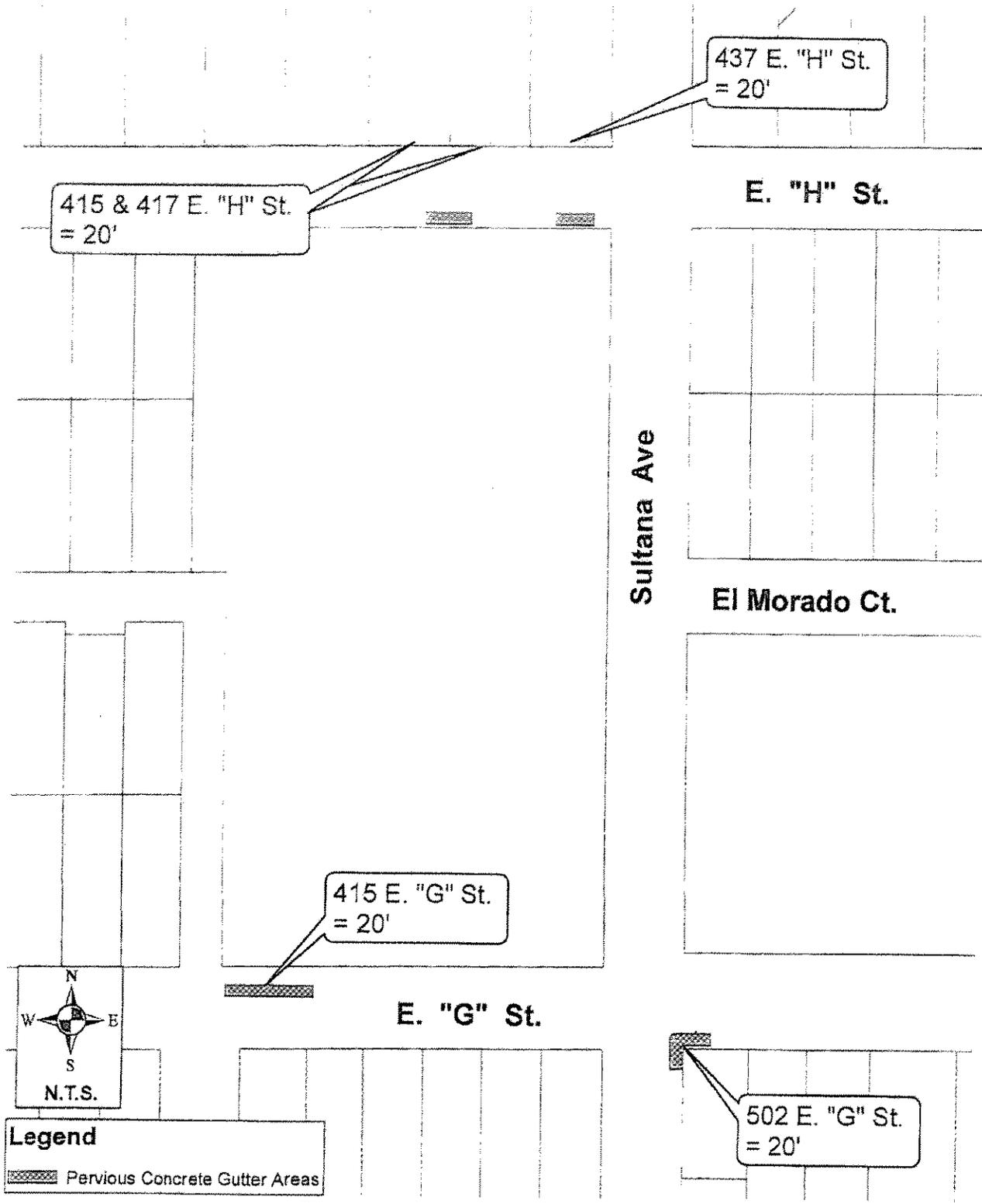
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1	Traffic Control	1	10,380.00	1		10,380.00	1,038.00
2	Clearing, Grubbing, Removals, replacements, earthwork, repairs, and restorations	1	12,140.00	1		12,140.00	1,214.00
3	Removing Existing Asphalt Concrete Pavement	1,650	1.84	1,536		2,829.00	282.90
4	Construct Asphalt Concrete Pavement	550	23.59				
5	Construct 18" Thick Reservoir Base	1,100	6.84	1,025		7,011.00	701.10
6	Construct 18" Thick Concrete Gravel	1,100	15.14	1,025		15,653.50	1,565.35
7							
<b>Change Orders</b>							
1	Additional Locations	9	693.33				
<b>Totals</b>						\$ 51,978.50	\$ 5,197.85
<b>Original Contract Value</b>		\$ 67,109					

NUMBERS  
HEREON  
CORRESPOND  
TO IMAGES  
# 5

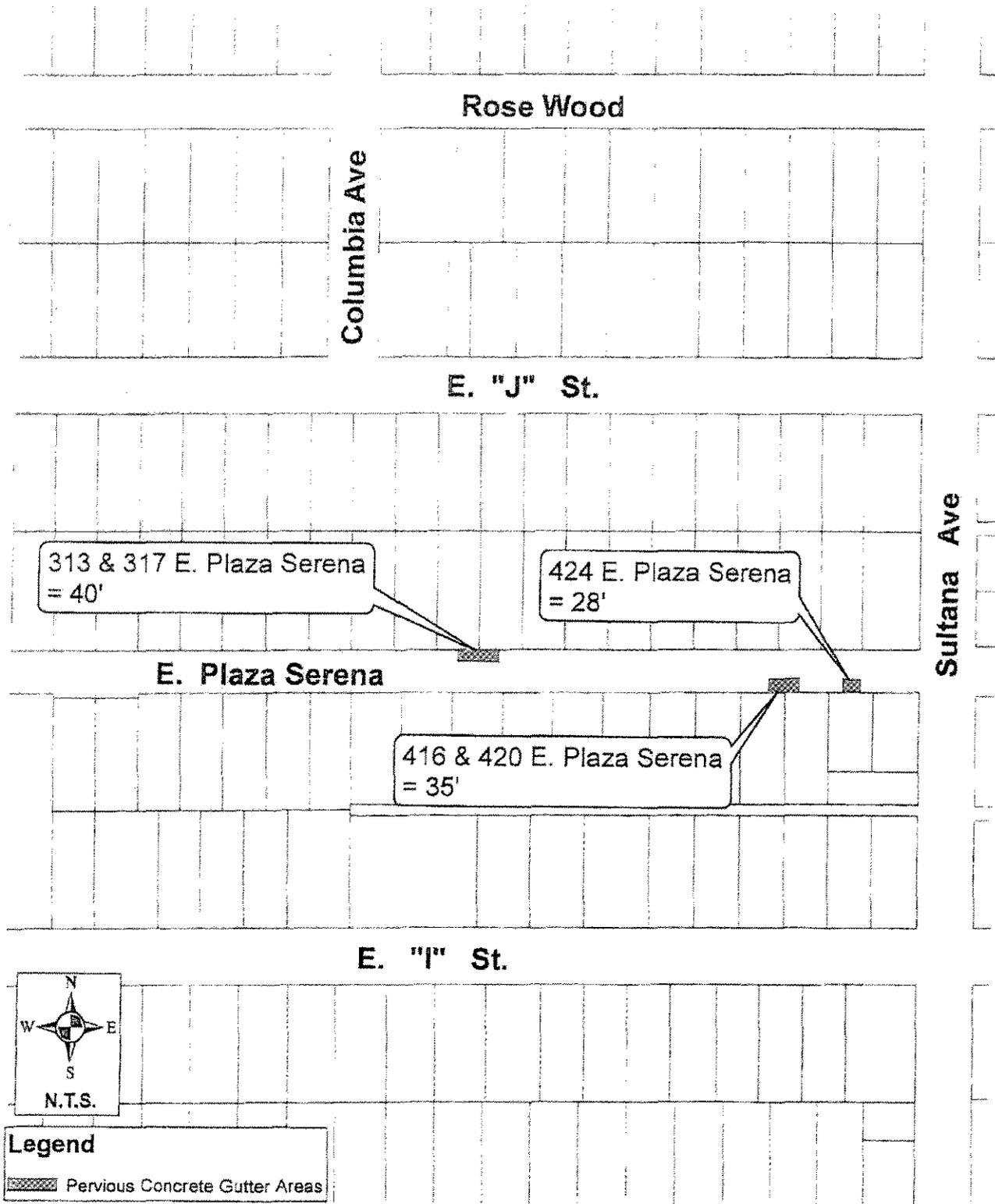
# City of Ontario Pervious Concrete Gutter Areas



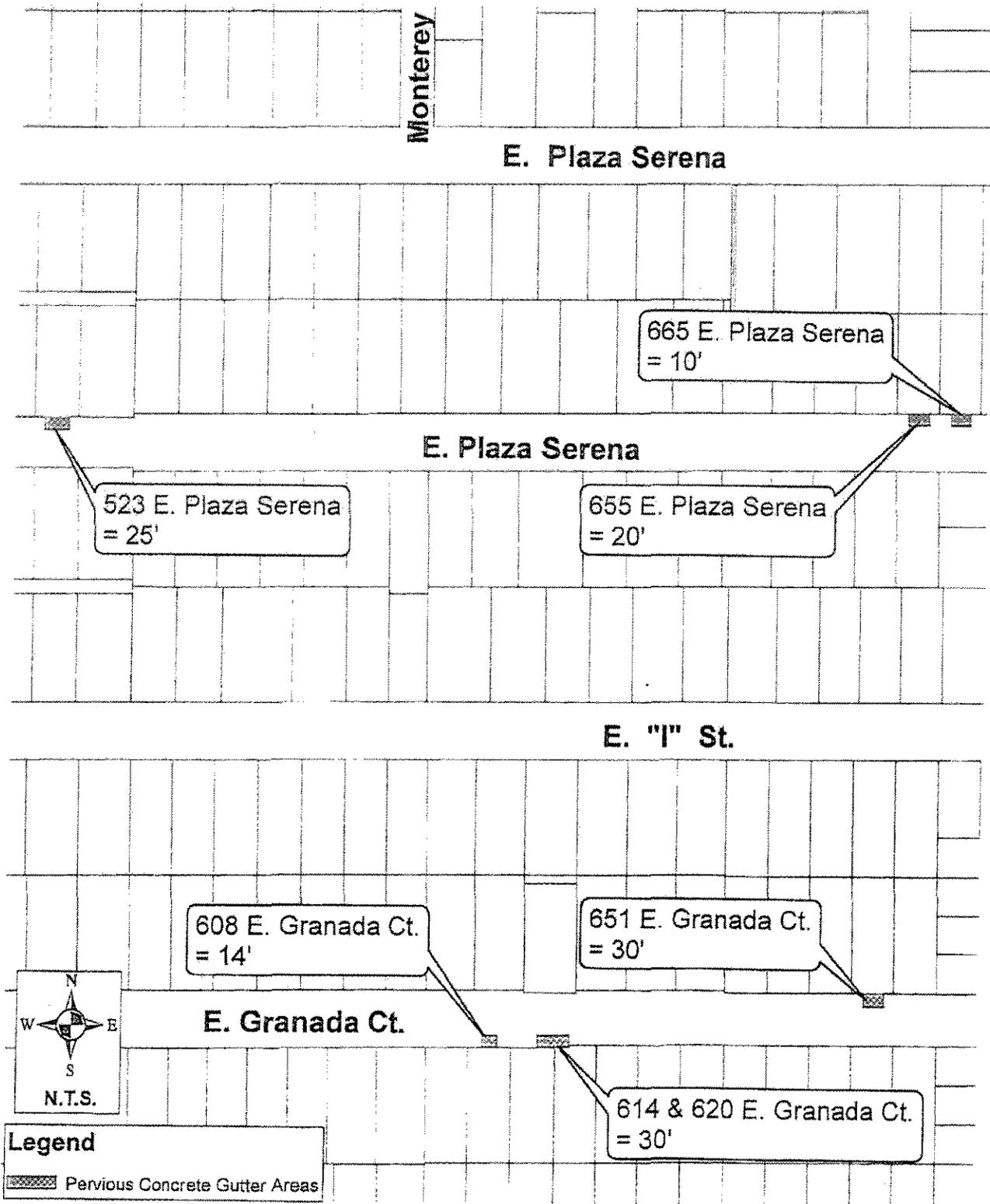
# City of Ontario Pervious Concrete Gutter Areas



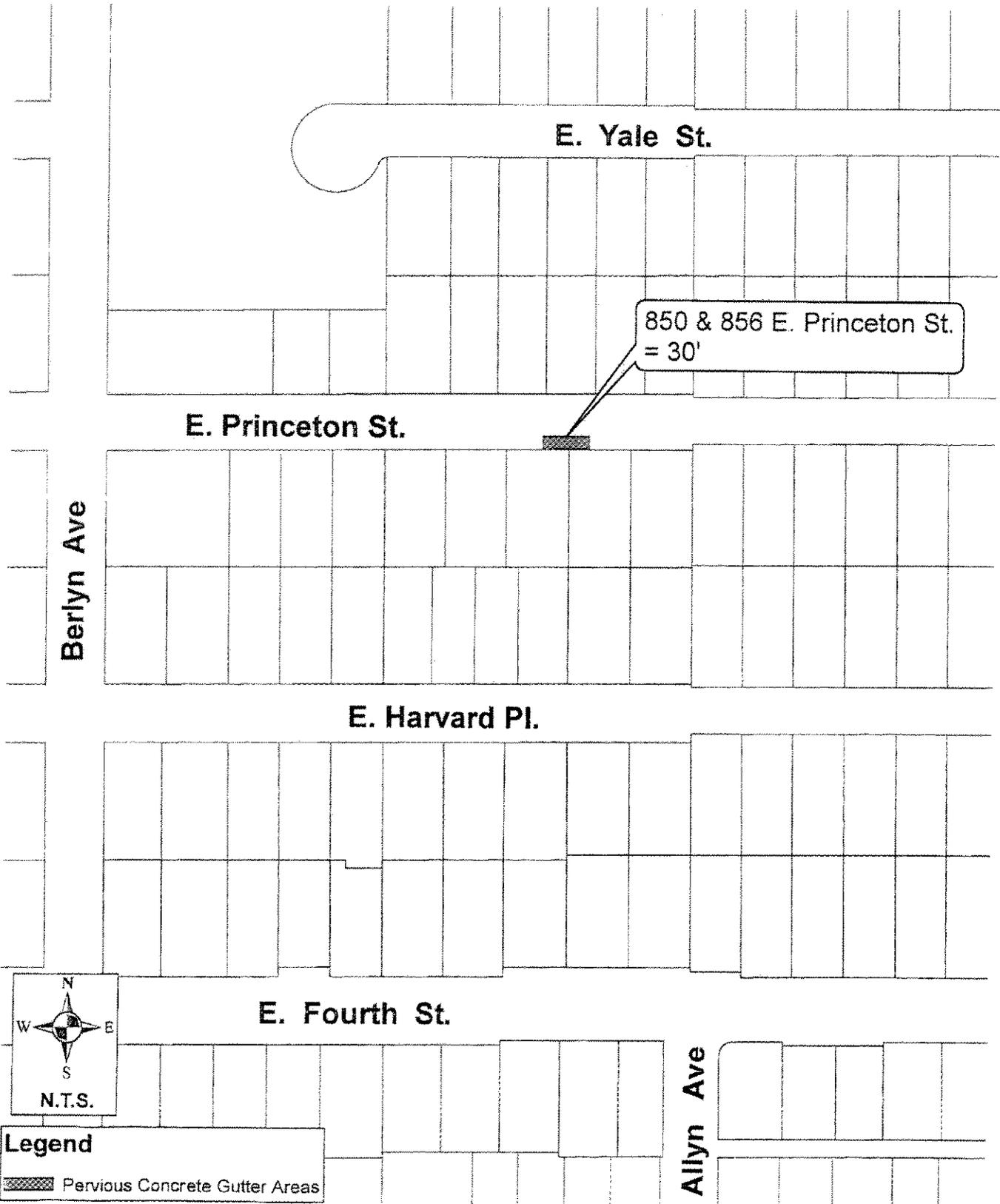
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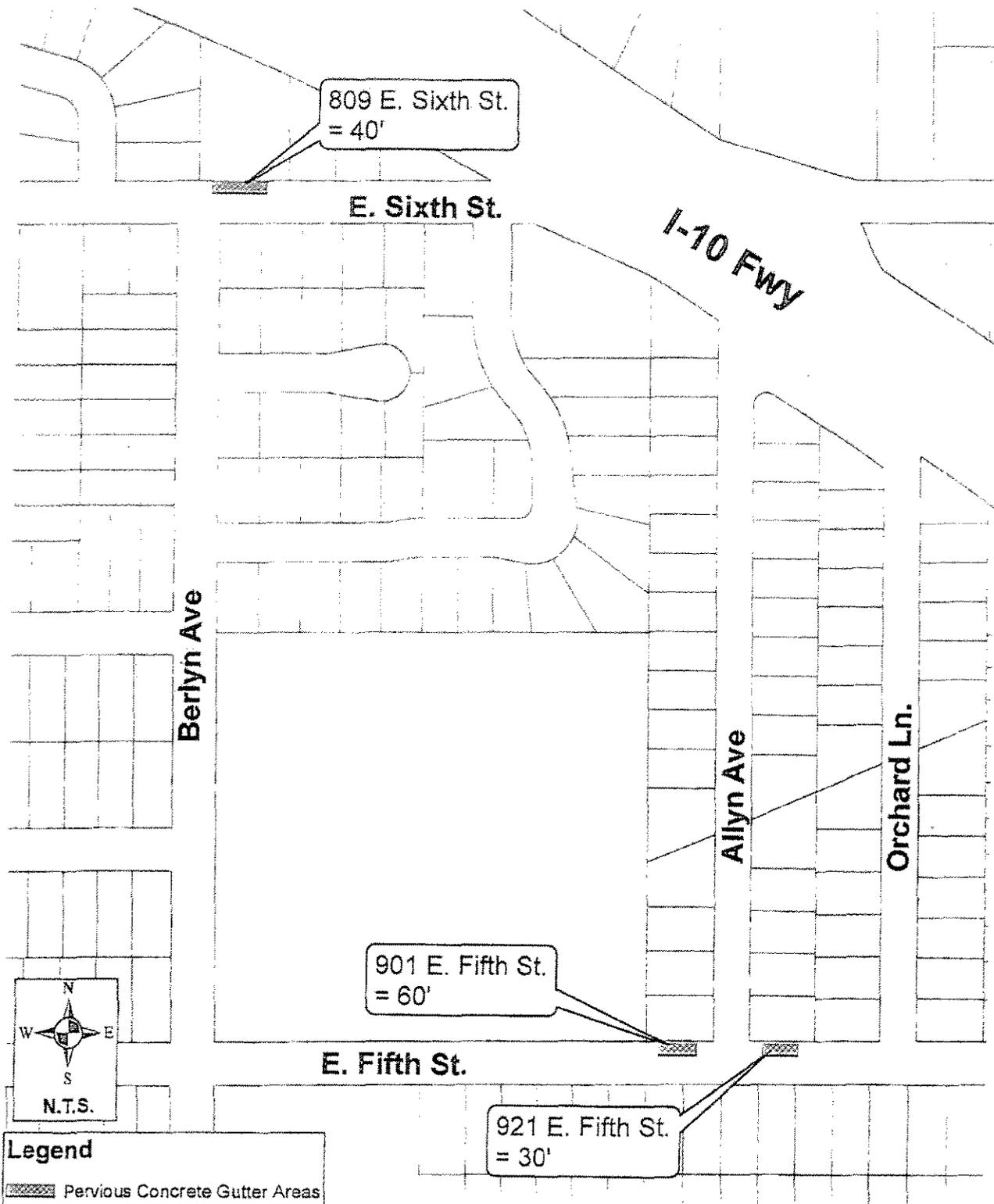
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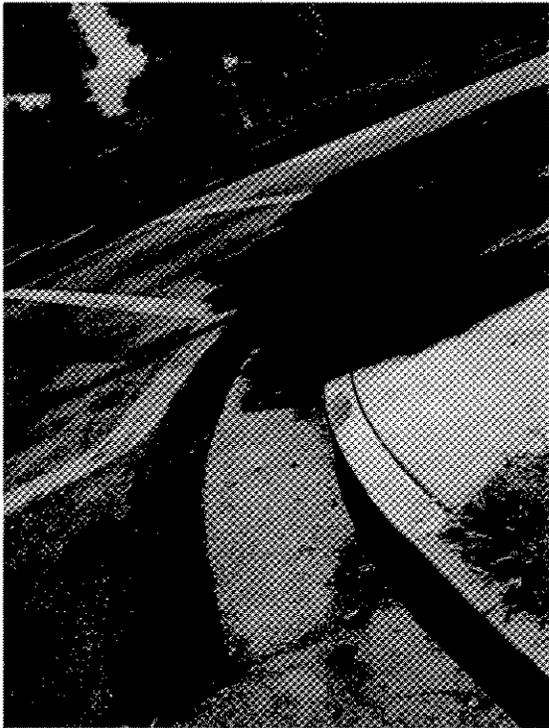


City of Ontario  
Pervious Concrete Gutter Areas

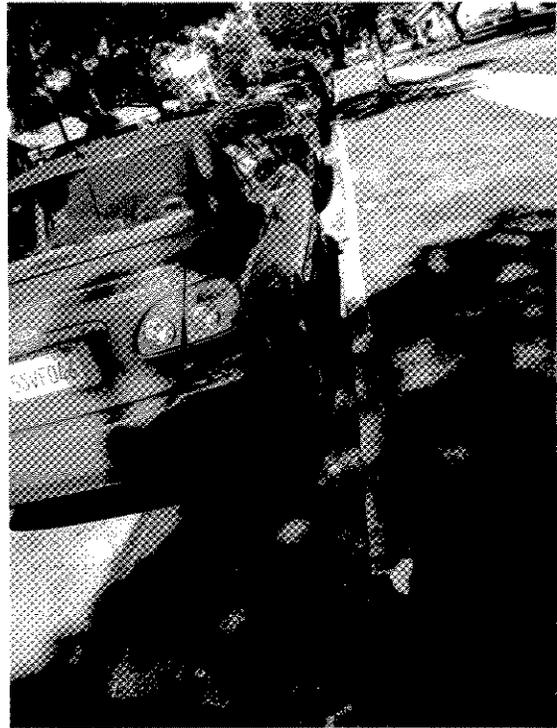


**City of Ontario  
Pervious Concrete Gutter Areas**

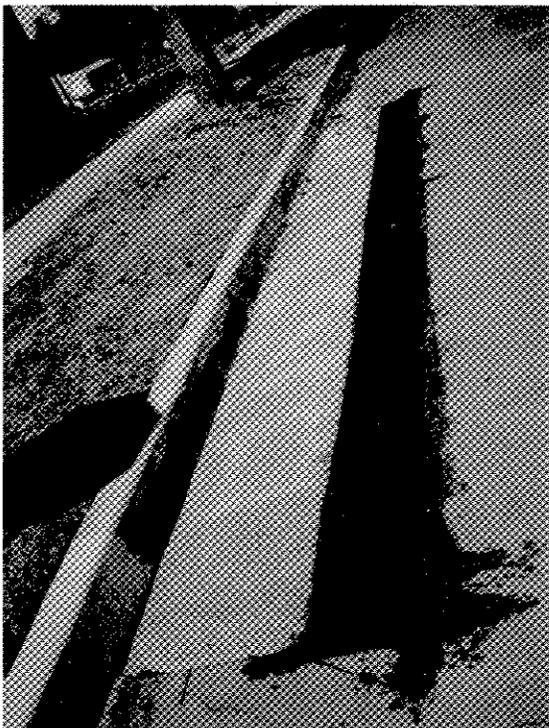




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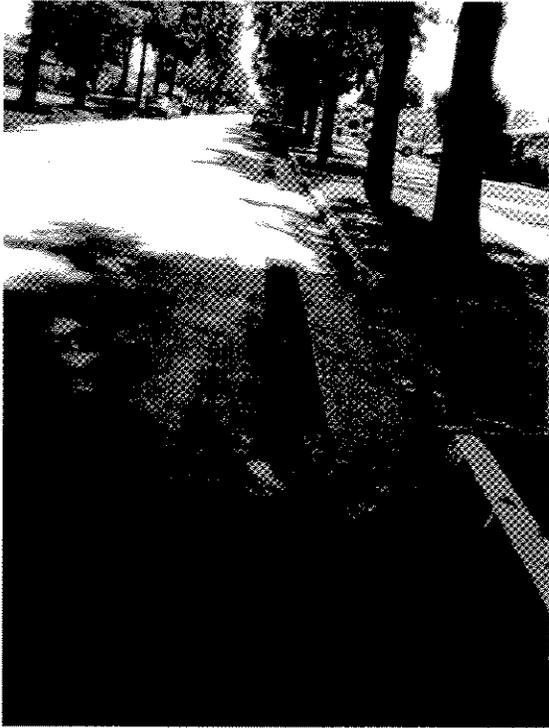
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Site 3



Site 4



Site 5



Site 6



Site 7



Site 8



Site 9



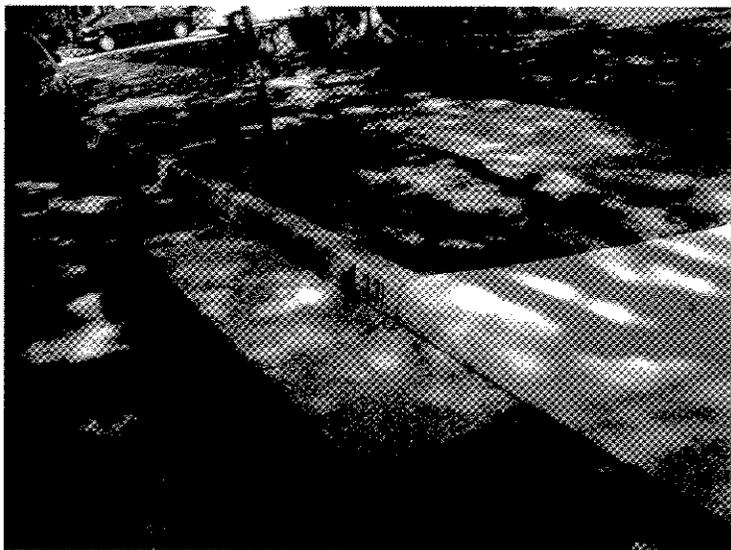
Site 10



Site 11



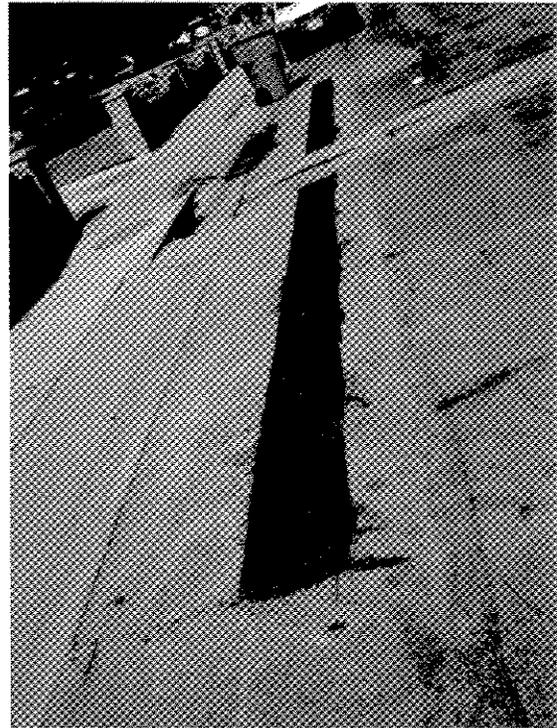
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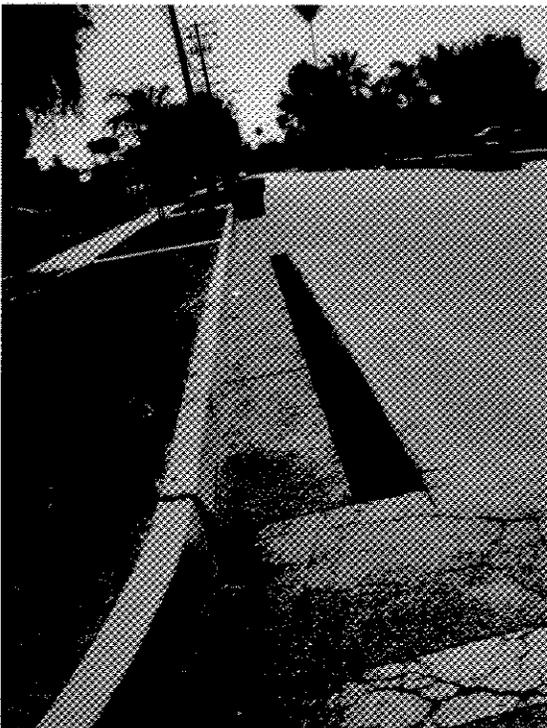
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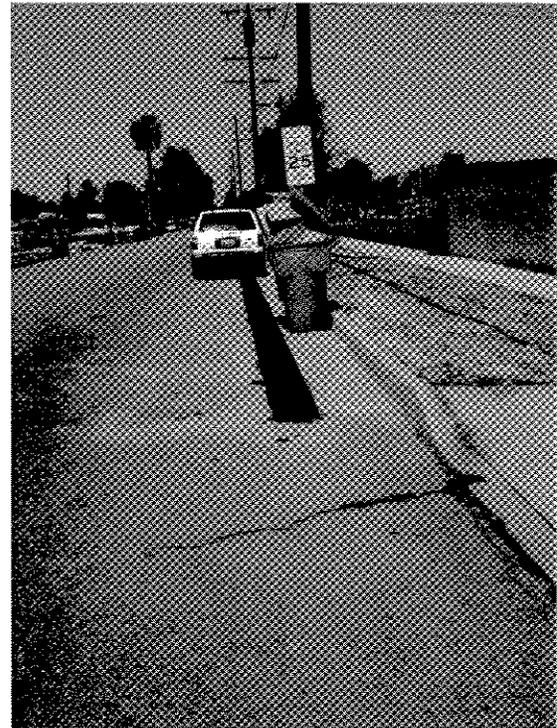
Site 14



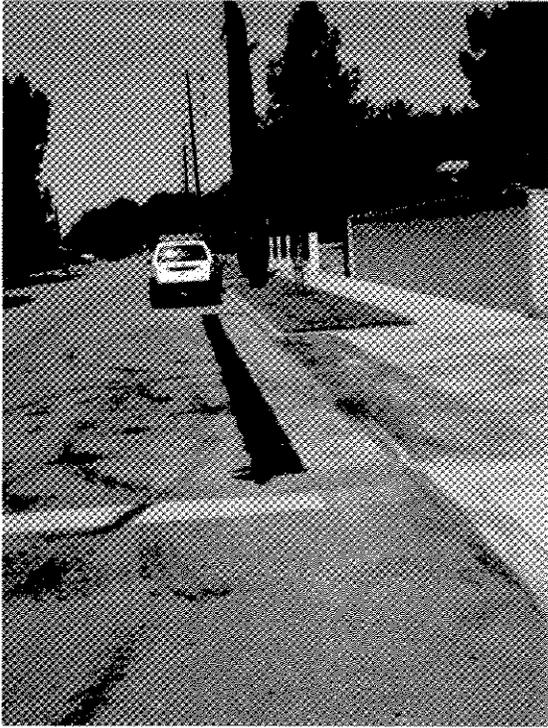
Site 15



Site 16



Site 17



Site 18

# Solicitation for Participants in Pilot Pervious Concrete Rebate Program

**Purpose:** To demonstrate feasibility of Pervious Concrete Rebate Program for projects that enhance groundwater infiltration

**Opportunity:** Seeking 3-4 projects, (*total square footage of 36,000 square feet for all 3 or 4 projects*). ) to participate in a demonstration program this fall.

**Selected participants will receive:** The rebate will pay up to 50% of the additional expense of installing pervious concrete or equivalent porous surface up to \$2/square foot (*up to 36,000 square feet for all 3 or 4 projects*). Technical assistance with the design of the project from the California Nevada Concrete Association. Monitoring will be conducted by San Bernardino County.

## Selection Criteria:

- Diversity of Projects (parking lot, curb and gutter, must include a residential treatment although can be a multi-family site)
- Design to maximize infiltration/ability to monitor infiltration
- Willingness to participate in follow up monitoring program (provided through San Bernardino County)
- Percentage funding match share
- Ability to complete project by November 2009
- Provide cost information so that can compare cost of pervious concrete project with alternative treatment (including costs of conventional storm water management)
- Project must be located within IEUA's service area (City of Chino, Chino Hills, Ontario, Upland, Montclair, Rancho Cucamonga, Fontana)

Application Deadline: July 24<sup>th</sup> – Projection Selection by August 3<sup>rd</sup>

For additional information or to submit a project for consideration, contact Elizabeth Hurst at (909) 993-1634 or ehurst@ieua.org



*The rebate is partially funded by a grant received from the Metropolitan Water District.*

**APPLICANT:**

**PHONE:**

**E-MAIL:**

**SITE NAME:**

**SITE ADDRESS:**

**SITE DESCRIPTION:**

Provide a description of the property, including existing site uses:

Describe stormwater/runoff conditions present at the proposed site:

Describe the proposed pervious concrete installation site (size, location on property, uses, estimated cost/square foot):

Provide a map identifying the property and the location of the proposed site on the property. You may identify more than one site on the property.

Will you be adding additional funding/square footage to the project? If so, please describe:

**PROJECTED TIMELINE:**

*\*Projects must be completed with all invoices submitted by November 16, 2009.*

**IDENTIFY KEY CONTACTS/DEPARTMENTS WHO WOULD BE INVOLVED IN THE PROJECT:**

Contact:

Phone:

Title/role in project:

Email:

Contact:

Phone:

Title/role in project:

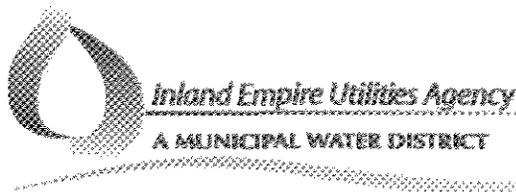
Email:

**AUTHORIZATION:**

Name:

Title:

\_\_\_\_\_  
*Signature*



**For Immediate Release:  
April 29, 2010**

### **Inland Empire Utilities Agency Receives the Southern California Concrete Producers' 2009 Cornerstone Concrete Excellence Award**

**Inland Empire** – The Inland Empire Utilities Agency (IEUA) has been awarded the 2009 Cornerstone Concrete Excellence Award by the Southern California Concrete Producers (SCCP) for the colored, pervious concrete demonstration installation in the Chino Creek Wetlands and Educational Park.

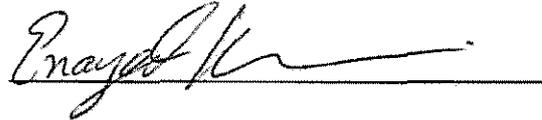
The 2009 Cornerstone Concrete Excellence Award recognizes outstanding and creative concrete installations. The project consisted of 918 square feet of pervious concrete installed in the parking lot of the Chino Creek Park to serve as a demonstration for onsite water infiltration and to show how storm water runoff is prevented. In addition, the installation acted as a workshop to provide training on how to install pervious concrete. The installation was donated by the Partnership of Southern California Concrete Producers including Beeson Masonry and Concrete, CSM Ready Mix, Spragues' Ready Mix, and Pacific Aggregates. This site is located in a highly visible location near the Park Interpretive Center which is frequented often by park visitors.

The SCCP is the second largest ready mixed concrete organization in the United States, serving the counties of Los Angeles, Orange, Riverside, San Bernardino, San Diego, Ventura, Santa Barbara, San Luis Obispo and the Imperial Valley. The organization provides programs, information, and technology about concrete products and processes to design and construction for professionals throughout Southern California; in addition to organizing and participating in educational seminars and workshops, training programs and demonstration projects.

The Inland Empire Utilities Agency, which covers 242-square miles, distributes imported water, provides industrial/municipal wastewater collection and treatment services, and other related utility services to more than 850,000 people. Shaping the Agency are the cities of Chino, Chino Hills, Fontana, Ontario and Upland, as well as the Cucamonga Valley and Monte Vista Water Districts.

For more information, contact Sondra Elrod at 909.993.1747.

I hereby certify that the information below is accurate and true. The cost quote, images and maps attached to this package represent the pervious concrete installation, as in accordance with the pilot Pervious Rebate Program requirements.



Program Manager (printed)

Enayat Khogyani 4/3/10

Signature

Date

APPLICANT: City of Upland						
	Sq Ft Installation	Cost of Pervious Concrete Installation	Estimated Cost of Alternative Paving	Cost Differential per Sq Ft	Rebate Value (50% of differential up to \$2/sq ft max)	Rebate Amount
curb & gutter	2246*	\$24,706.00	\$3,003	\$9.00	\$2.00	\$4,492.00
sidewalk	280**	\$2,240.00	\$1,200	\$4.00	\$2.00	\$560.00
<b>TOTAL</b>						<b>\$5,052.00</b>

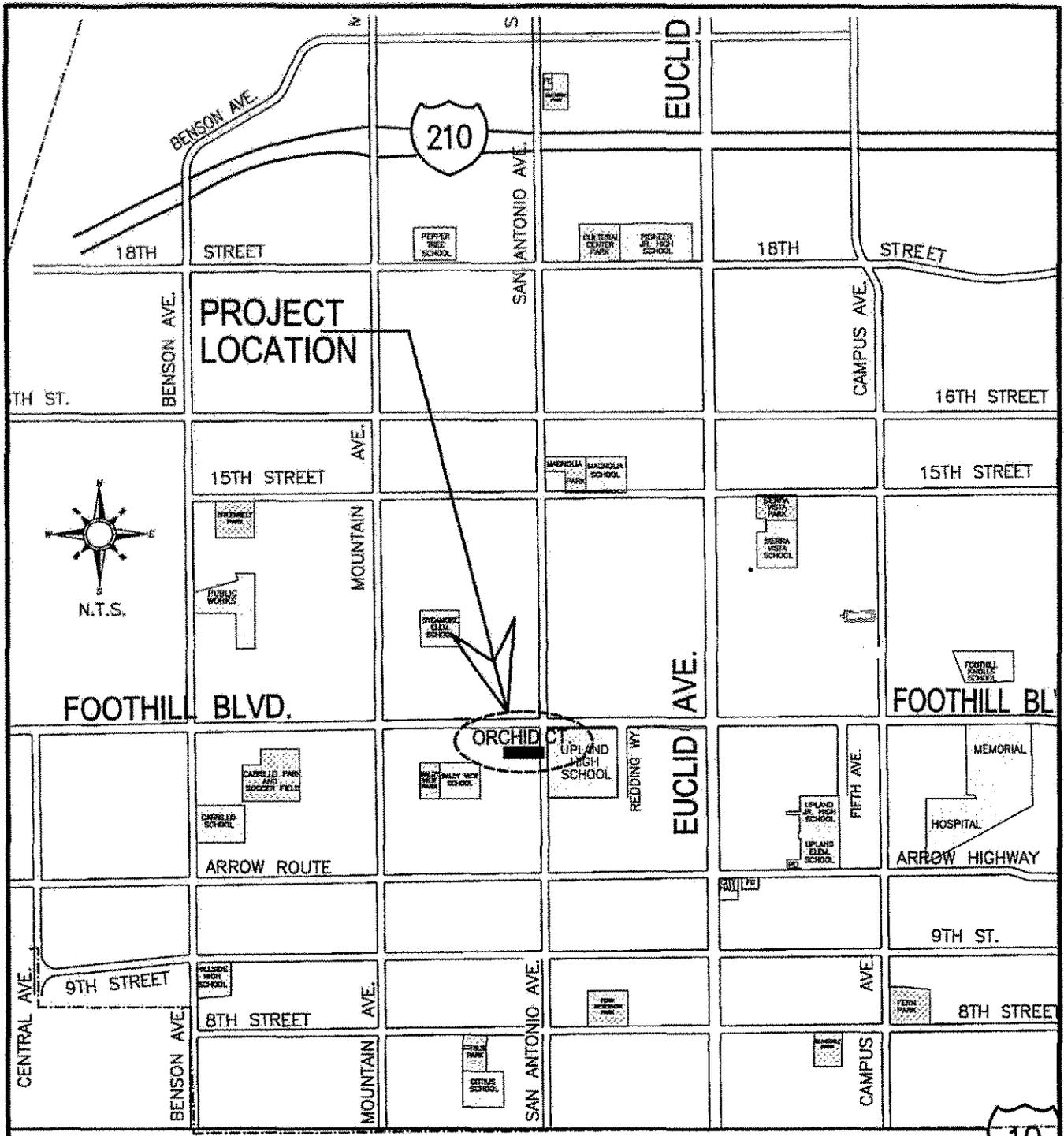
Notes: \* gutter is 2' wide, therefore 1LF- 2 Sg Ft

\*\* pervious sidewalk is 6" rather than 4" due to gravel subgrade requirement as per pervious paving installation specifications

CITY OF UPLAND PUBLIC WORKS DEPARTMENT, ENGINEERING DIVISION

PROJECT NO. 783A STREET RECONSTRUCTION (SHELLEY AVENUE, THIRD AVENUE, AND ORCHID COURT)

S.D. NO.	Contract District	Contractor	Quantity	Unit Price	Amount	Description	Original Contract		Change Orders		Award Contract		Quantity	Amount	Payment No. 1 (This Period)	Date	To Date	Percentage Completed
							Quantity	Amount	Quantity	Amount	Quantity	Amount						
10280	11/26/22, 26/18	Greay Builders, Inc. 341 E Elm Oak Ave Folsom, CA 95788 (424) 377-9411	30.00	\$1,500.00	\$45,000.00	Communication Survey	1	\$1,500.00	0	\$0.00	1	\$1,500.00	1	\$1,500.00	45/18/22	11/26/22	100.00%	
1			30.00	\$1,500.00	\$45,000.00	Traffic Control, Public Convenience & Safety	1	\$1,500.00	0	\$0.00	1	\$1,500.00	1	\$1,500.00	45/18/22	11/26/22	100.00%	
2			30.00	\$1,500.00	\$45,000.00	Stormwater Pollution Prevention / Erosion Control	1	\$1,500.00	0	\$0.00	1	\$1,500.00	1	\$1,500.00	45/18/22	11/26/22	100.00%	
3			30.00	\$1,500.00	\$45,000.00	Excavate, Place & Remove Asphalt Paving Material	7	\$7,000.00	-2	-\$3,000.00	5	\$3,500.00	7	\$7,000.00	45/18/22	11/26/22	100.00%	
4			30.00	\$1,500.00	\$45,000.00	Unexcavated Excavation and Subgrade Preparation	990	\$18,000.00	0	\$0.00	990	\$18,000.00	990	\$18,000.00	45/18/22	11/26/22	100.00%	
5			1,000	\$75.00	\$75,000.00	Concrete 7" AC Base Course	891.21	\$66,840.78	-108.79	-\$8,159.22	782.42	\$58,681.56	891.21	\$66,840.78	45/18/22	11/26/22	100.00%	
6			942	\$11,000.00	\$10,358,000.00	Adjust Existing Water Valve Covers to Grade	942.14	\$10,361,814.00	-17.86	-\$178,814.00	924.28	\$10,183,000.00	942.14	\$10,358,000.00	45/18/22	11/26/22	100.00%	
7			10	\$1,000.00	\$10,000.00	Remove Existing PCC Curb & Gutter	10	\$10,000.00	0	\$0.00	10	\$10,000.00	10	\$10,000.00	45/18/22	11/26/22	100.00%	
8			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
9			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
10			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
11			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
12			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
13			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
14			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
15			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
16			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
17			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
18			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
19			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
20			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
21			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
22			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
23			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
24			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
25			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
26			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
27			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
28			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
29			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
30			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
31			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
32			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
33			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
34			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
35			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
36			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
37			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
38			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
39			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
40			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
41			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
42			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
43			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
44			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
45			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
46			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
47			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
48			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
49			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
50			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
51			1,210	\$1,500.00	\$1,815,000.00	Remove Existing PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	45/18/22	11/26/22	100.00%	
52			1,210	\$1,500.00	\$1,815,000.00	Install PCC Curb & Gutter	1,210	\$1,815,000.00	0	\$0.00	1,210	\$1,815,000.00	1,210	\$1,815,000.00	4			



**CITY OF UPLAND**

DEPARTMENT OF PUBLIC WORKS ENGINEERING DIVISION

LOCATION MAP

PROJECT: ST-7034 - ORCHID COURT: STREET RECONSTRUCTION  
 LIMITS: FROM SAN ANTONIO AVENUE TO WEST CUL DE SAC

ORCHID COURT PRE-CONSTRUCTION AND POST CONSTRUCTION PHOTOS

PRE CONSTRUCTION



POST CONSTRUCTION



PRE CONSTRUCTION

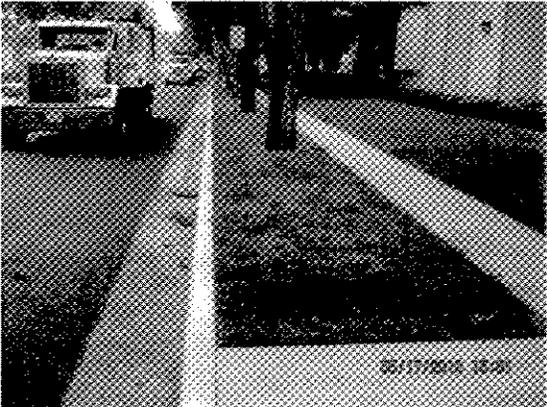
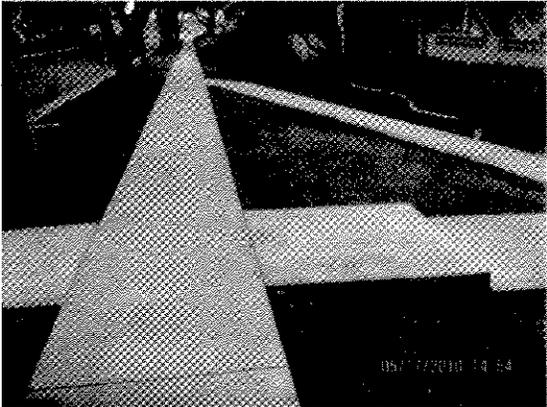


POST CONSTRUCTION



PRE CONSTRUCTION

POST CONSTRUCTION



PRE CONSTRUCTION

POST CONSTRUCTION

