

This presentation premiered at WaterSmart Innovations

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Water Efficient Landscaping: How Smart Are California's Urban Landscapes?

**Presented by Chris Brown,
Executive Director, CUWCC
Water Smart Innovations Conference
Las Vegas, Nevada, 10/10/2008**



CUWCC.org

PARTNERS FOR A WATER-EFFICIENT CALIFORNIA



Current Landscape Activities in California

Many efforts are underway to achieve water efficient landscape design and maintenance:

- **Proposed revisions to the State Model Water Efficient Landscape Ordinance**
- **California Friendly Landscapes, Bay Friendly Landscapes, etc.**
- **LEED and green building programs**
- **Revision of the Council's Landscape Best Management Practices**



Smart Urban Landscapes: Project Components

**Landscape Design Guidelines
incorporating the best ideas from
existing standards for new residential
construction**

**Six residential landscape design
templates that incorporate Landscape
Design Guidelines**



Project Funding & Project Contractor

**Funded by the US Bureau of
Reclamation, Lower Colorado Region,
Southern California Area Office**

**Design, Community & Environment, a
Bay Area landscape architect firm, is
the primary project contractor**



Public Advisory Committee

Sierra Nevada Alliance

San Diego County Water Authority

City of Santa Rosa

Sonoma County Water Agency

California Urban Water Conservation Council

StopWaste.com

East Bay Municipal Utility District

Metropolitan Water District of Southern California

U.S. Bureau of Reclamation

P.O.W.E.R.



Products Available to Date

Smart Urban Landscapes Design Guidelines (Checklist), featuring “Smart” and Genius” scoring levels

Six residential landscape and irrigation design templates incorporating the Landscape Design Guidelines



Checklist Elements

- Irrigation systems
- Site planning and design
- Drainage & stormwater management
- Grading & soil health
- Maintenance



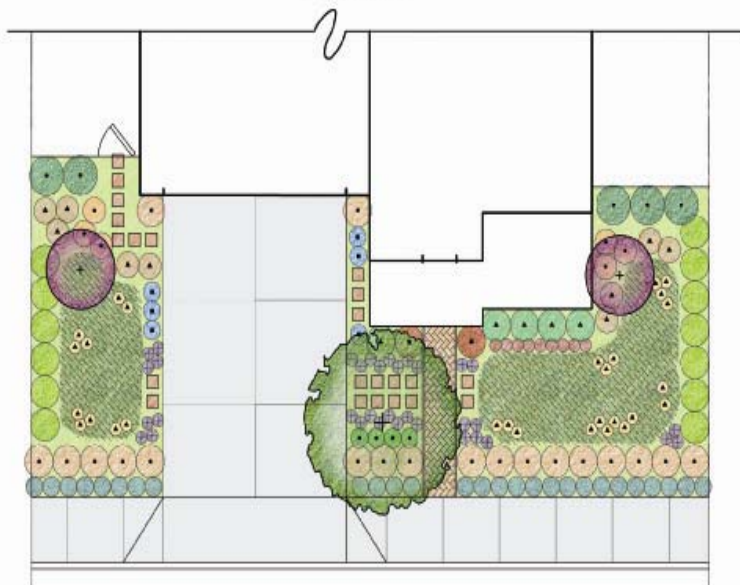
Landscape Templates

- For “typical” and “zero-lot line” homes
- Bay Area; Central Valley; Sierra Foothills; Southern Coastal, Inland, and Foothills
- Landscape design with plant list; irrigation design with schedule & water budget

"TYPICAL" SIZED LOT HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

60'x80' LOT



Plant Count
TREES 3
SHRUBS 167
GROUNDCOVER 250 SF

PAVING:

ENTRY AND SIDE WALKWAY TO BE SAND-SET PERMEABLE UNIT PAVERS, DECOMPOSED GRANITE, PEBBLES OR OTHER SURFACE LIGHT IN COLOR FOR LOW HEAT EMISSION. DRIVEWAY TO BE PERMEABLE CONCRETE, PERMEABLE ASPHALT OR UPGRADED TO SAND-SET PERMEABLE PAVER UNITS. IMPERVIOUS SURFACE SHOULD BE MINIMIZED.

MULCH:

3 INCHES OF MULCH IN ALL AREAS. SHEET MULCHING AND RECYCLED GREEN WASTE MULCH ARE RECOMMENDED.

FIRE:

TEMPLATES ARE BASED ON INDIVIDUAL LOTS WITHIN A SUBDIVISION. WHEN DEVELOPING UP AGAINST MIDLANDS OR OTHER FIRE SENSITIVE AREAS FOR AN INDIVIDUAL PARCEL OR A PROJECT, A FIRE MANAGEMENT PLAN SHOULD BE CREATED.

DRAINAGE:

DOWNSPOUTS SHOULD BE DIRECTED INTO LANDSCAPE WITH GRADING FOR PROPER DRAINAGE AWAY FROM HOUSE. RUNOFF DURING PLANT ESTABLISHMENT MUST BE ACCOMMODATED ON-SITE.

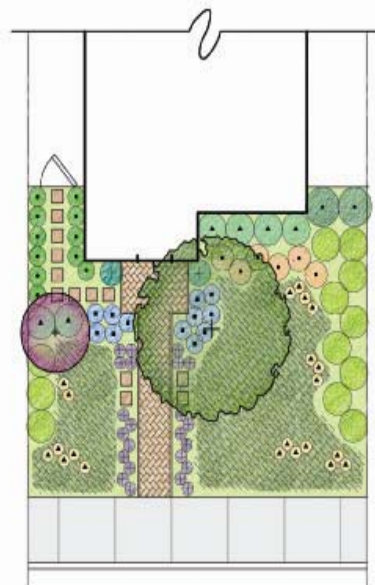
PLANT RESOURCES:

THE SAMPLE PLANT LEGEND ABOVE PROVIDES GUIDANCE FOR APPROPRIATE PLANT SELECTION. SELECTIONS SHOULD BE MODIFIED TO ADDRESS DIFFERENT SOLAR ORIENTATIONS, SOIL CONDITIONS, AND OTHER MICRO-CLIMATIC FACTORS OF A PARTICULAR BUILDING SITE. RESOURCES FOR ADDITIONAL PLANT SELECTIONS AND SUBSTITUTIONS INCLUDE SUNSET'S WESTERN GARDEN BOOK, EDITED BY KATHLEEN NORRIS BRENZEL; WATER USE CLASSIFICATION OF LANDSCAPE SPECIES (WUCOLS). <http://www-facilities.stanford.edu/environment/landscape.pdf> AND YOUR LOCAL CHAPTER OF THE CALIFORNIA NATIVE PLANT SOCIETY (www.cnps.org)

ZERO-LOT LINE HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

30'x80' LOT



Plant Count
TREES 2
SHRUBS 95
GROUNDCOVER 250 SF

PLANT CLIMATE:

BAY AREA SUMMERS ARE HOT AND DRY INLAND WITH MINIMAL MARINE LAYER INFLUENCE AND MOSTLY COOL AND FOGGY NEAR THE COAST. WINTERS ARE MILD AT THE COAST AND SOME FREEZE OCCURS IN THE INLAND VALLEYS.

BAY AREA FRONT YARD PRODUCTION

SAMPLE

SAMPLE PLANT LEGEND

SYMBOL	BOTANICAL NAME	COMMON NAME
	<i>xChitalpa T. 'Morning Cloud'</i>	NCN
	<i>Quercus agrifolia</i>	Live Oak
	<i>Quercus suber</i>	Cork Oak
	<i>Arbutus unedo 'Elfin King'</i>	Dwarf Strawberry Tree
	<i>Cotinus coccinea</i>	Smoke Tree
	<i>Lagerstroemia 'Natchez'</i>	Crape Myrtle
	<i>Leptospermum l. 'Compacta'</i>	Dwarf Tea Tree
	<i>Luma apiculata</i>	NCN
	<i>Myrtus communis</i>	Myrtle
	<i>Rosemarinus 'Collingwood Ingram'</i>	Rosemary
	<i>Berberis l. 'Maria'</i>	Gold Pillar
	<i>Myrsine africana**</i>	African Boxwood
	<i>Rhamnus C. 'MSB'</i>	Dwarf Coffeeberry
	<i>Ribes sanguineum**</i>	Current
	<i>Arctostaphylos purissima</i>	Lompoc Manzanita
	<i>Santolina C. 'Nana'</i>	Dwarf Lavender Cotton
	<i>Polystichum californicum**</i>	Sword fern
	<i>Helictotrichon sempervirens</i>	Blue Oak Grass
	<i>Lavandula a. 'Munstead'</i>	Lavender
	<i>Nassella tenuissima</i>	Mexican Feather Grass
	<i>Armeria maritima</i>	Common Thrift
	<i>Panstermon h. 'Purdy'</i>	Purple Beard Tongue
	<i>Arctostaphylos 'Emerald Carpet'</i>	Emerald Carpet
	<i>Thymus serpyllum*</i>	Creeping Thyme*
	<i>Rubus pentstemon*</i>	Bramble*

* Can tolerate light traffic
 ** Can tolerate shade

SUNSET ZONES - 15, 16, 17




















NORTH



1" = 10'-0"

SAMPLE BASE SCHEDULES FOR ESTABLISHED LOW WATER USING PLANT MATERIAL

IRRIGATION SYSTEM LEGEND		
→	1 1/4" SHUT-OFF VALVE-DOMESTIC SUPPLY	-BY OTHER SECTION OF CONTRACT-PROVIDING 15 GPM AT 55 PSI MIN.
	IRRIGATION BACKFLOW PREVENTION DEVICE-1" IRRIGATION CONTROLLER	-12" ABOVE GRADE TO PROTECT DOMESTIC SUPPLY
	RAIN SENSOR	-SMART TECHNOLOGY INDOOR OR EXTERIOR MOUNT
	REMOTE CONTROL VALVES	-ADJUSTABLE RAIN SHUT-OFF DEVICE
	DRIP CONTROL ASSEMBLY	-BELOW GRADE IN VALVE BOX WITH 2 CU FEET OF GRAVEL BELOW
	IRRIGATION MAIN STUB-OUT-1 1/4"	-125 MESH FILTER AND 40 PSI REGULATOR WHERE PSI IS EXCESSIVE
	12" POP-UP SPRAY HEAD	-PROVIDE ALL SPARE STATION WIRES AND COMMON IN VALVE BOX
	12" POP-UP SPRAY HEAD	-MATCHED PRECIP WITH CHECK -10" RADIUS VALVES-19" I.T.Q.
	NOTE: 8" POP-UP BODY IS TO BE USED WHERE NATURE PLANT MATERIAL IS LESS THAN 9" HEIGHT.	-MATCHED PRECIP WITH CHECK -8" RADIUS VALVES-8" I.T.Q.
	DEEP ROOT WATERING TUBE	-USE 1 GPM/BUBBLER AS ALTERNATE TO HAND WATERING
	IRRIGATION MAIN-1 1/4"	-1120/SCHEDULE 40 PVC PIPE -18" COVER
	IRRIGATION LATERAL	-1120/GLASS 200 PVC PIPE -12" COVER
	ELECTRICAL CONDUIT-1"	-1120/SCHEDULE 40 PVC PIPE -3/4" COVER
	SLEEVING-3"	-1120/SCHEDULE 40 PVC PIPE -3/4" COVER
	TO DRIP IRRIGATION	-POINT SOURCE OR MULTI-OUTLET -8" COVER EMITTERS
	CONTROLLER STATION NUMBER	
	GALLONS PER MINUTE THROUGH	
	VALVE CONTROL VALVE SIZE	



**BAY AREA FRONT YARD
PRODUCTION
SAMPLE**



NORTH



1" = 16'-0"

San Francisco Base Schedule																
STA	PRECIP	RUN TIME	CYC	CYC TIME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Spray GC	1.8	48	10	5	0	0	0	0.7	1.1	1.4	1.5	1.4	1.2	0.7	0	0
Drip Strub	0.4	267	12	23	0	0	0	0.4	0.7	0.9	0.9	0.9	0.8	0.4	0	0
Subsurface Drip - Ground Cover	1.1	61	7	8	0	0	0	0.7	1.1	1.4	1.5	1.4	1.2	0.7	0	0
Drip Ground Cover	0.4	167	7	23	0	0	0	0.7	1.1	1.4	1.5	1.4	1.2	0.7	0	0
Drip/Rozz watering-Trees in planting	8	35	31	1	0	0	0	0.2	0.3	0.3	0.4	0.4	0.3	0.2	0	0
Oakland Base Schedule																
STA	PRECIP	RUN TIME	CYC	CYC TIME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Spray GC	1.8	48	10	5	0	0	0	0.6	1.1	1.6	1.8	1.7	0.4	0	0	0
Drip Strub	0.4	267	12	23	0	0	0	0.3	0.7	1	1.1	1.1	0.3	0	0	0
Subsurface Drip - Ground Cover	1.1	61	7	8	0	0	0	0.6	1.1	1.6	1.8	1.7	0.4	0	0	0
Drip Ground Cover	0.4	167	7	23	0	0	0	0.6	1.1	1.6	1.8	1.7	0.4	0	0	0
Drip/Rozz watering-Trees in planting	8	35	31	1	0	0	0	0.1	0.3	0.4	0.5	0.4	0.1	0	0	0
San Jose Base Schedule																
STA	PRECIP	RUN TIME	CYC	CYC TIME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Spray GC	1.8	48	10	5	0	0	0.6	1	1.6	1.7	2	1.8	1.6	0.9	0	0
Drip Strub	0.4	267	12	23	0	0	0.4	0.6	1	1.1	1.2	1.1	1	0.6	0	0
Subsurface Drip - Ground Cover	1.1	61	7	8	0	0	0.6	1	1.6	1.7	2	1.8	1.6	0.9	0	0
Drip Ground Cover	0.4	167	7	23	0	0	0.6	1	1.6	1.7	2	1.8	1.6	0.9	0	0
Drip/Rozz watering-Trees in planting	8	35	31	1	0	0	0.2	0.3	0.4	0.4	0.5	0.4	0.4	0.2	0	0

NOTE: SOME PLANTS PREFER SPRAY WHILE OTHERS DO BETTER WITH DRIP. THE IRRIGATION DESIGN WILL NEED NOT ONLY TO TAKE INTO CONSIDERATION

SAMPLE WATER USE PROJECTIONS FOR TEMPLATE PLANTING/IRRIGATION

Estimated Water Use-San Francisco															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Spray GC	265	0	0	80	156	248	325	347	342	290	164	11	0	0.7	1,960
Drip GC	300	0	0	70	137	218	287	305	299	255	145	9	0	0.9	1,726
TOTAL	565	0	0	150	293	466	612	652	639	546	309	20	0		3,686
Estimate per day /days of irrig a month		0	0	150	293	466	306	336	339	546	309	20	0		
MAWA = 12368 30% OF MAWA projected use															
Estimated Water Use-San Francisco															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Drip GC	828	0	0	190	369	587	772	822	825	688	389	25	0	0.9	4,648
TOTAL	828	0	0	190	369	587	772	822	825	688	389	25	0		4,648
Estimate per day /days of irrig a month		0	0	190	369	587	386	411	425	688	389	25	0		
MAWA = 12,368 30% of MAWA projected use															
Rainwater potential for 980 sq ft roof 9,539															
Greywater Potential for 2 showers/day 17,820															
Estimated Water Use-Oakland															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Spray GC	265	0	0	7	130	254	382	432	396	150	7	0	0	0.7	3,709
Drip GC	320	0	0	6	115	224	356	380	349	88	6	0	0	0.9	3,505
TOTAL	585	0	0	13	245	478	738	812	745	239	13	0	0		3,215
Estimate per day /days of irrig a month		0	0	13	245	478	359	406	375	389	13	0	0		
MAWA = 10,209 31% of MAWA projected use															
Estimated Water Use-Oakland															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Drip GC	828	0	0	17	329	622	906	1024	940	258	17	0	0	0.9	4,052
TOTAL	828	0	0	17	329	622	906	1024	940	258	17	0	0		4,052
Estimate per day /days of irrig a month		0	0	17	329	622	453	512	470	258	17	0	0		
MAWA = 14,729 28% of MAWA projected use															
Rainwater potential for 980 sq ft roof 9,537															
Greywater Potential for 2 showers/day 17,820															
Estimated Water Use-San Jose															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Spray GC	265	11	13	148	245	397	435	460	417	368	211	66	7	0.7	2,753
Drip GC	300	9	11	130	214	332	361	425	348	324	186	58	6	0.9	2,406
TOTAL	565	20	24	278	460	729	772	885	765	692	397	124	13		5,159
Estimate per day /days of irrig a month		20	24	278	460	729	386	432	393	692	397	124	13		
MAWA = 11,062 46% of MAWA projected use															
Estimated Water Use-San Jose															
Values	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Drip GC	828	0	0	190	369	587	772	822	825	688	389	25	0	0.9	4,648
TOTAL	828	0	0	190	369	587	772	822	825	688	389	25	0		4,648
Estimate per day /days of irrig a month		0	0	190	369	587	386	411	425	688	389	25	0		
MAWA = 11,062 30% of MAWA projected use															



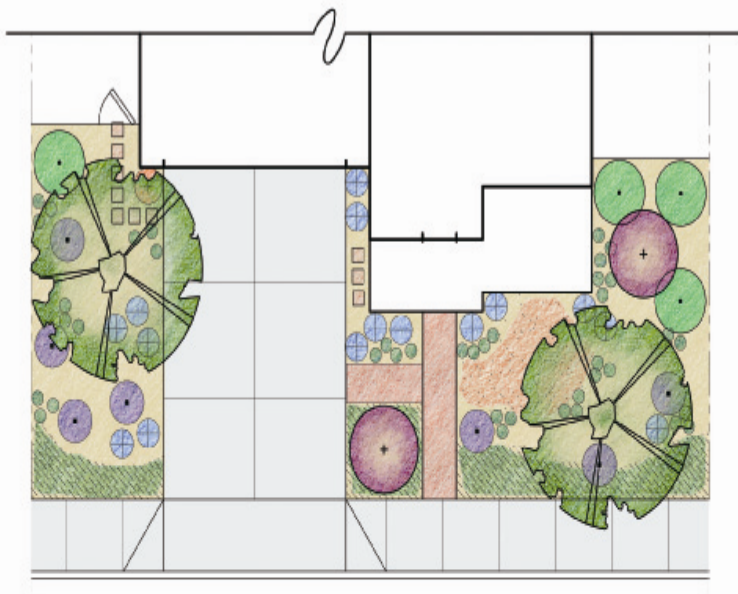
Irrigation Samples

- Irrigation system layout
- Water Application schedules for base plant materials
 - Sprays
 - Drip
 - Subsurface
- Water use estimates

"TYPICAL" SIZED LOT HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

60'x80' LOT



PLANT COUNT

TREES 4
SHRUBS 67

GROUNDCOVER 150 SF

PAVING:

ENTRY AND SIDE WALKWAY TO BE SAND-SET PERMEABLE UNIT PAVERS, DECOMPOSED GRANITE, PEBBLES OR OTHER SURFACE LIGHT IN COLOR FOR LOW HEAT EMISSION. DRIVEWAY TO BE PERMEABLE CONCRETE, PERMEABLE ASPHALT OR UPGRADED TO SAND-SET PERMEABLE PAVEMENT UNITS. IMPERVIOUS SURFACE SHOULD BE MINIMIZED.

MULCH:

3 INCHES OF MULCH IN ALL AREAS. SHEET MULCHING AND DECOMPOSED GRANITE MULCH ARE RECOMMENDED.

FIRE:

TEMPLATES ARE BASED ON INDIVIDUAL LOTS WITHIN A SUBDIVISION. WHEN DEVELOPING UP AGAINST MIDLANDS OR OTHER FIRE SENSITIVE AREAS FOR AN INDIVIDUAL PARCEL OR A PROJECT, A FIRE MANAGEMENT PLAN SHOULD BE CREATED.

DRAINAGE:

DOWNSPOUTS SHOULD BE DIRECTED INTO LANDSCAPE WITH GRADING FOR PROPER DRAINAGE AWAY FROM HOUSE. RUNOFF DURING PLANT ESTABLISHMENT MUST BE ACCOMMODATED ON-SITE.

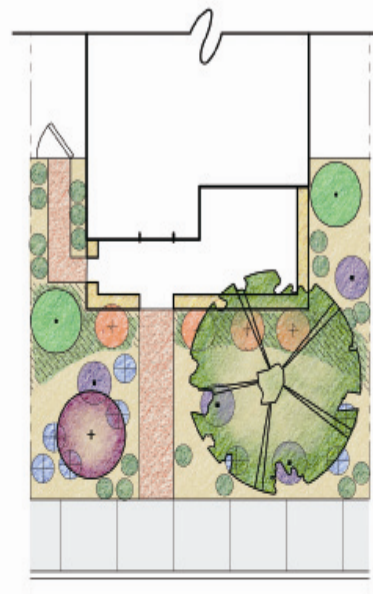
PLANT RESOURCES:

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ZERO-LOT LINE HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

30'x80' LOT



PLANT COUNT

TREES 2
SHRUBS 36

GROUNDCOVER 100 SF

PLANT CLIMATE:

HIGH DESERT SUMMERS ARE HOT AND DRY. WINTERS ARE COLD AND FAIRLY DRY WITH OCCASIONAL HIGH WINDS.

HIGH DESERT FRONT YARD PRODUCTION SAMPLE

SAMPLE PLANT LEGEND

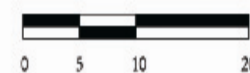
SYMBOL	BOTANICAL NAME	COMMON NAME
LARGE TREES		
	<i>Cercidium floridum</i> <i>Parkinsonia acutata</i> <i>Olea</i> s. 'Swan Hill'	Blue Palo Verde Mexican Palo Verde Olive
SMALL TREES		
	<i>Chilopsis linearis</i> <i>Cercis occidentalis</i>	Desert Willow Western Redbud
SHRUBS		
	<i>Rhus ovata</i> <i>Simmondsia chinensis</i> <i>Caesalpinia gilliesii</i>	Sugar Bush Jopba NCH
	<i>Cistus macrocarpa</i> <i>Leucophyllum frutescens</i> <i>Salvia gregii</i>	Rockrose Texas Ranger Sage
AGAVE, SUCCULENTS, YUCCA AND GRASSES		
	<i>Agave americana</i> <i>Agave shawii</i> <i>Yucca whipplei</i>	Agave Agave Our Lord's Candle
	<i>Agave parryi</i> <i>Dasylistron wheeleri</i>	Hesperaloe Desert Spoon
	<i>Festuca ovina glauca</i> <i>Eriogonum umbellatum</i>	Blue Fescue Sulfur Flower
GROUNDCOVER		
	<i>Baccharis 'Centennial'</i> <i>Santolina chamaecyparissus</i> <i>Verbena peruviana</i>	'Centennial' Coyote Bush Lavender Cotton Verbena

* Can tolerate light traffic

SUNSET ZONES - 11, 13



NORTH

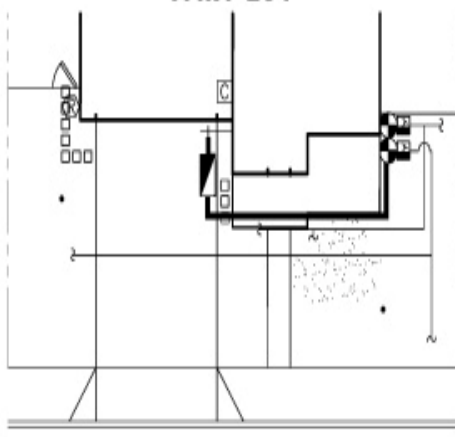


1" = 10'-0"

"TYPICAL" SIZED LOT HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

60'x80' LOT

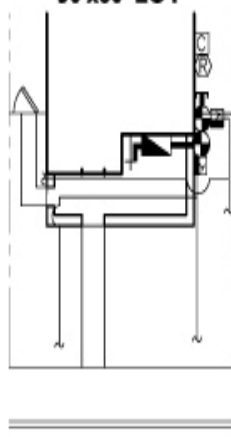


IRRIGATION ZONES
DRIP TO SHRUBS
SPRAY FOR GROUND COVER
BUBBLERS TO DEEP ROOT WATERING TUBES

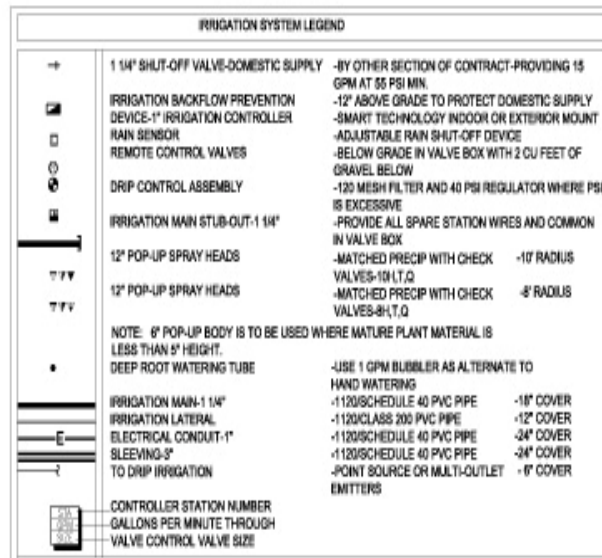
ZERO-LOT LINE HOUSE

SOUTH FACING FRONT GARDEN, TYPICAL

30'x80' LOT



IRRIGATION ZONES
DRIP TO SHRUBS
DRIP FOR GROUND COVER
DEEP ROOT WATERING TUBES



HIGH DESERT FRONT YARD PRODUCTION SAMPLE



NORTH



1" = 16'-0"

SAMPLE BASE SCHEDULES FOR ESTABLISHED LOW WATER USING PLANT MATERIAL

STA	PRECIP	RUN TIME	CYC	CYC TIME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ROOT DEPTH	SOIL EFF	GPM	infiltration	
Drip Shrub	0.40	233	4	53	0.6	0.9	1.4	1.9	2.4	2.7	2.7	2.4	1.9	1.4	0.8	0.5	0.80	1.75	0.90	10	0.35
Subsurface Drip - Ground Cover	1.10	53	3	19	1.0	1.4	2.2	3.1	3.8	4.3	4.4	3.8	3.1	2.2	1.3	0.9	0.50	1.75	0.90	10	0.35
Drip Ground Cover	0.40	146	3	53	1.0	1.4	2.2	3.1	3.8	4.3	4.4	3.8	3.1	2.2	1.3	0.9	0.50	1.75	0.90	0	0.35
DeepRoot watering-Trees in planting	8.00	31	12	3	0.3	0.3	0.6	0.8	1.0	1.1	1.1	1.0	0.8	0.6	0.3	0.2	2.00	1.75	0.85	10	0.35

SAMPLE WATER USE PROJECTIONS FOR TEMPLATE PLANTING/IRRIGATION

Valves	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Drip GC	192	118	163	259	355	443	494	510	443	359	261	154	99	0.90	3,658
Drip Shrubs	373	229	316	503	689	860	960	991	860	697	507	350	193	0.90	7,106
TOTAL	565	347	479	761	1044	1302	1455	1502	1302	1056	769	454	292		10,764
Estimate per day /days of irrig a month		347	239	254	261	326	364	375	326	352	384	454	292		
MAWA = 22,890 47% of MAWA projected use															
Valves	SQ FT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	EFF	ANN GAL
Drip GC	208	128	176	280	384	479	536	553	479	389	283	167	108	0.90	3,963
Drip shrubs	600	369	508	809	1109	1383	1545	1595	1383	1121	816	482	310	0.90	11,431
TOTAL	808	497	685	1089	1493	1863	2081	2148	1863	1510	1099	649	418		15,393
Estimate per day /days of irrig a month		497	685	544	498	466	520	537	466	503	550	649	418		
MAWA = 32,735 47% of MAWA projected use															
Rainwater potential for 980 sq ft roof		1,709 annually													
Greywater Potential for 2 showers/day		17,820 annually													

MAWA = MAXIMUM ANNUAL WATER ALLOTMENT

RUNTIME = TOTAL AMOUNT OF MINUTES REQUIRED FOR PLANTING ROOT DEPTH IN CLAY LOAM SOIL

CYC = TOTAL NUMBER OF REPEAT CYCLES REQUIRED FOR CLAY LOAM SOIL

CYC TIME = ROUNDED MINUTES OF EACH CYCLE TO BE REPEATED BY "CYC" ALLOWING INFILTRATION MONTHLY NUMBER = NUMBER OF TIMES/MONTH TO APPLY RUNTIME (REFER TO EXAMPLE BELOW)

BASE SCHEDULE = ESTABLISHED PLANT MATERIAL WITH HISTORICAL WEATHER DATA (10 YEAR AVERAGE)

DURING ESTABLISHMENT PERIOD, ROOT DEPTH IS SHALLOWER, THUS REQUIRING MORE FREQUENT IRRIGATION WITH SHORTER RUN TIMES, STRETCHING OUT THE FREQUENCY AND EXTENDING THE TOTAL RUNTIMES AS THE PLANTING MATURES AND ROOTS PENETRATE INTO NATIVE SOIL CONDITIONS OVER A 3-5 YEAR SPAN. ESTABLISHMENT IRRIGATION FREQUENCY DEPENDS UPON THE TIME OF YEAR INITIAL PLANTING TAKES PLACE.

MONTHLY EXAMPLE:

THE NUMBER UNDER THE MONTH INDICATES THE NUMBER OF TIMES THAT ZONE NEEDS TO BE IRRIGATED DURING THAT MONTH. FOR FRACTIONS OF RUNTIMES PER MONTH, MULTIPLY THE # OF CYC BY THE DECIMAL. (EXAMPLE: SAN JOSE DRIP/GROUND COVER REQUIRES .6 RUNTIMES PER MONTH OF MARCH = .6 X 7(# OF CYC) = 4 CYCLES OF 23 MINUTES EACH (CYC).

NOTE: SOME PLANTS PERFER SPRAY, WHILE OTHERS DO BETTER WITH DRIP. THE IRRIGATION DESIGN WILL NEED NOT ONLY TO TAKE INTO CONSIDERATION PLANT PREFERENCES, BUT ALSO RUNOFF AND POTENTIAL BLOCKAGE WHERE THE PLANTING GROWS IN FRONT OF THE SPRAY HEADS. DRIP AND SPRAY ARE BOTH SHOWN ON THE TEMPLATES TO SHOW DIFFERENCES IN SYSTEM COSTS AND PROJECTED WATER USE.



Thank you for listening!
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