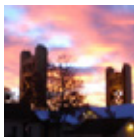


# A Guidebook to Living Green

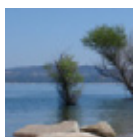
in Sacramento California



Sustain life -  
be wise and  
efficient about  
resources



Whats better  
than green?  
Sustainability.



Blue is the  
color of water,  
Green is the  
color of life.

for sustainable sites & landscapes

## **A Guidebook to Living Green in Sacramento**

2009

*This is a free educational publication designed to market and direct Sacramento Residents to efficient, sustainable help. In no way shall this document be sold at any cost.*

### Abstract.

This Guidebook will include resources to products, services and guidance to planning sustainable landscapes with sources of businesses in both city and county. Other methods for research will include refining and utilizing information from local business, county material to incorporate sustainable methods in the development of sustainable structures.

### Acknowledgements.

The content of this guidebook is made possible with the guidance of my mentors and committee, all of which have been so wonderful to support me and all of my endeavors.

Mark Francis, Landscape Architecture Senior Project Professor, University of California, Davis

Heath Schenker, Landscape Architecture Senior Project Advisor, University of California, Davis

Tin Wah Wong, Landscape Architect, City of Sacramento

Randy Rosalex, Director of Operations, Green Sacramento Builders

Josh Daniels, Owner, Green Sacramento

Kim Glassard, Founder, Organic Sacramento

Jeremy Schulz & the Schulz Family, Sacramento Residents & Homeowners

### Summary.

Per SustainLane 2008, Sacramento is the 14th Greenest City in the United States. Many homeowners are interested in being green but for so many other homeowners, building green is confusing and overwhelming. Local groups and agencies are available to help. With this guidebook, Sacramento residents can learn basic principles and terms and find the resources to help them finish their 'Green' project all from their own backyard.

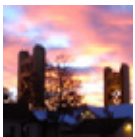
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## GREEN WINDOWS: VIEWS INTO SACRAMENTO'S SUSTAINABLE LANDSCAPES

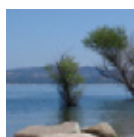
Like on the cover, messages are placed throughout this guidebook to consider for sustainable encouragement.



Sustain life - be wise and efficient about resources



Whats better than green? Sustainability.



Blue is the color of water, Green is the color of life.

# Introduction to Sustainability



history is a lesson towards a liveable city



## History.

The green movement is a re-emergence of practical guidelines. These guidelines are old, basic concepts lost to technology. It is very important that we sustain vital resources for our children. As we realize our

it Green, and local sources like Sacramento Munciple Utility District (SMUD), and Sacramento County Water Athority (SCWA) among many others. Building green can vary depending on your location as regulations on the building codes and permit process. Contact your local building department to find your local codes.

Sometimes simplicity is the answer to enhance the quality of life

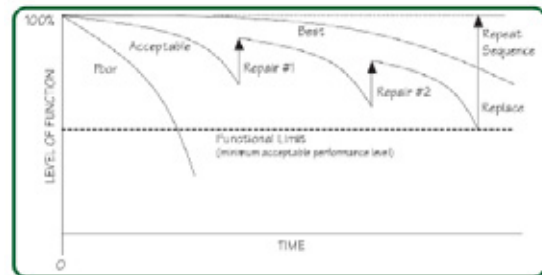


1. What is Sustainability? Source: impact on the world, green building is a practical option. Green requirements and standards are now being implemented by the federal agencies encourage us to do this.

To be familiar with the current green building efforts, some important figures in the industry can provide information and resources you need like the Environmental Protection Agency (EPA), United States Green Building Council (USGBC), Build

Generally speaking, you'll find in this guidebook that the consciousness of the function of landscapes is the key to sustaining home life. In many cases, it is very much a landscape Architect's role to perfect and renew this lost symbiotic yet personal relationship with our environment.

## Why green?



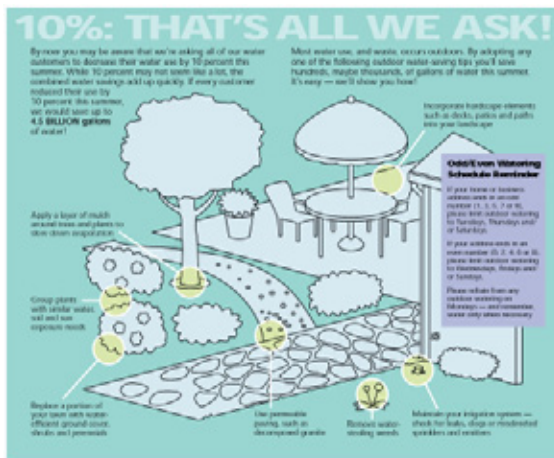
1. Durability by Design, US department of Housing and Urban Development

Being ‘Green’ is a term that has put a higher priority on environmentally conscience practices. Considering our environment more is a sustainable way to live. Sustainability is a principle based environmental, social and economic practices; a goal to meet the needs of the present without compromising the needs of the future. Sustainability is a balance of environmental, social and economic needs to create a promised future for mankind.

You’ll find that the immediate benefits of practicing sustainability can save money, increased pleasure and enjoyment of our environment and can promote general well being and an over all, improved quality

.....

SAVE RESOURCES IN YOUR LANDSCAPE BY FOLLOWING JUST A FEW PRACTICES



*This diagram shows water efficiency techniques at home.*

1. '10% That's all we ask'

of life.

Practicing sustainability may require you to rethinking and change the way things function in life. Like developing a preferred purchasing plan to

THINGS YOU’LL FIND IN THIS GUIDEBOOK:

- HOW SUSTAINABLE LANDSCAPES SUPPORTS GREEN LIFESTYLES
- HOW TO GO CARBON FREE, ZERO WASTE, ENERGY EFFICIENT, IN 10 YEARS
- SUSTAINABLE BUSINESSES AND OTHER SOURCES IN SACRAMENTO
- GREEN HOME DEVELOPMENTS, LOCATIONS AND BUILDERS TO VISIT TO BUY ONE – WITHOUT BUILDING.
- HOW TO BE GREEN WITHOUT BUILDING.

consider affordability as a wholistic cost, from cradel to grave. There may be hidden costs beyond the shopping cart - even far after its functional life.

Sustainability is about being efficient with available resources including energy. Choosing the best materials will improve durability and maintenance over the funtional life over the life cycle, cradle to grave. It is easy to take advantage of Energy and Water when it’s so readily available. These are resources that can be provided by your landscape which may also save money from your bills.

People may practice green to save lots of money. There are tax incentives, rebates and grants available to offset the costs to become green.

Sustainable practices like reducing Carbon and CLFC’s, planting trees for carbon sequestering will help improve air quality to prevent Global Warming.

People may go green to reduce their impact on the world. You can measure one aspect of the impact you have by checking your carbon footprint at <http://www.carbonfootprint.com/>. The current trends of population, the use of non-renewable resources, global warming, global dimming, among many other threats we face are some driving ethical reasons to practice sustainability.

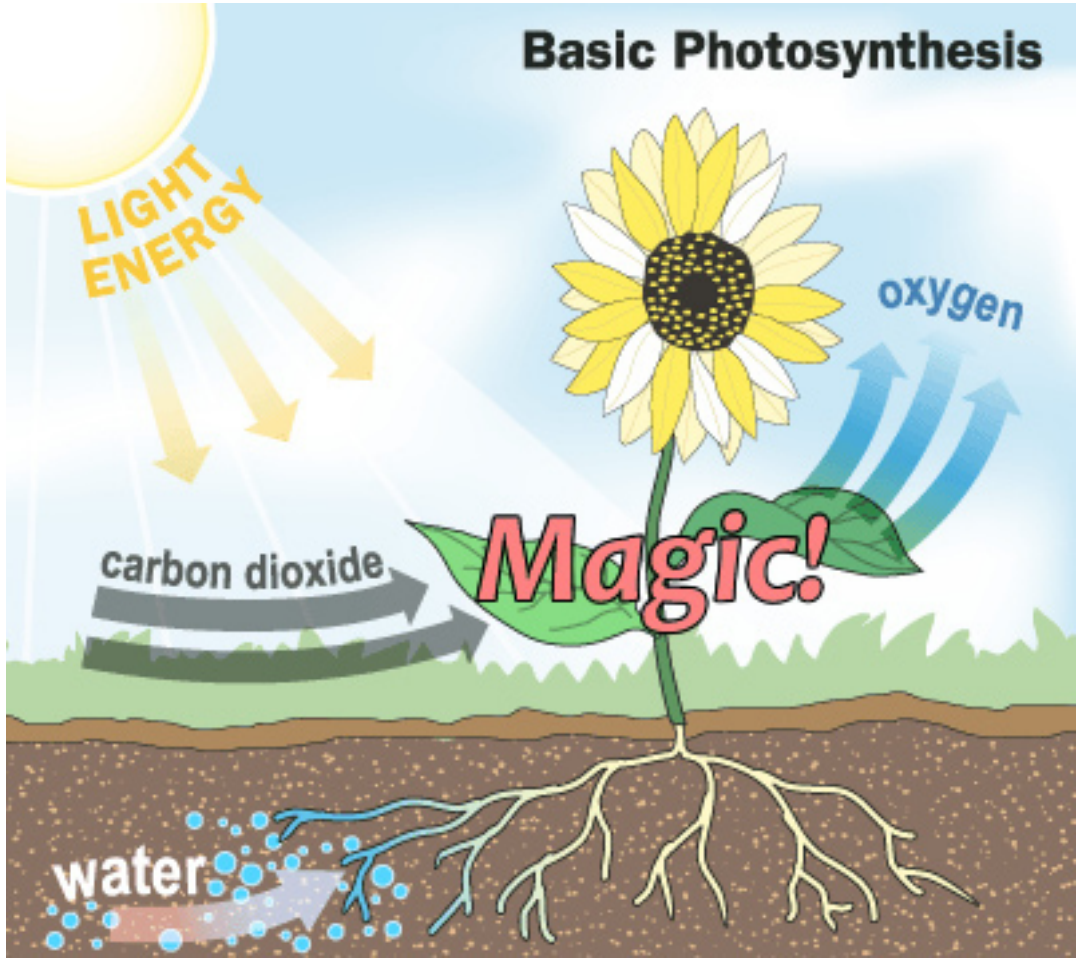
There are sources for green building guidelines for accreditation, like the USGBC Leadership in Energy Efficient Design (LEED), which provides a certificate

from credits earned by meeting or exceeding green building techniques.

Green up homes for better health. Improve the grounds and maintain them to prevent homes from becoming sick homes, promoting sick building syndrome. The durability of a typical new home may have hidden costs just in the long term maintenance and inefficiency.

.....

.....



where ever  
you go there  
are plenty of  
opportunities  
to recycle



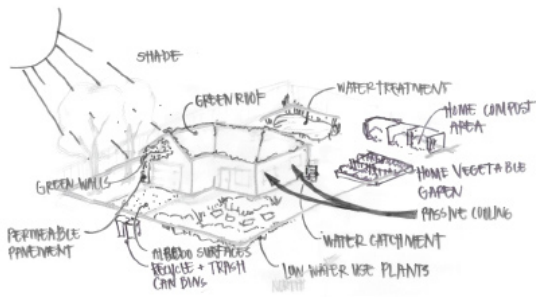
# How to use this Guidebook.

guidance should always be taken lightly however greatly considered.

## Interpreting sustainable practices.

If you're planning for sustainability at home, the first place to start is in the landscape. Practicing this guidebook will help make your home more efficient and cheaper to operate as well as preserving resources. These practices are catered to respond to the needs of Sacramento residents and provide resources in order to live efficient and green with a working landscape.

This guidebook can help you design permaculture,



HOME WITH A SUSTAINABLE LANDSCAPE mimicking natural ecological systems for efficiency, a common practice in landscape architecture.

The practices are formatted by topic and then by chapter title. You can locate a practice easily by looking it up by topic or alphabetically in the index of this guidebook.

### PERMACULTURE LANDSCAPE PRINCIPLES

- MIMICK THE DESIGN OF NATURAL SYSTEMS.
- REDUCE; BECAUSE NATURE IS SLOW.
- REUSE AND RECYCLE WHAT YOU USE FOR TRASH TAKES A LONG TIME TO RETURN TO THE MATERIALS WE NEED.
- PROMOTE POSITIVE ON SYMBIOTIC RELATIONSHIPS.
- PROMOTE A DIVERSITY. LEARN THE FUNCTION OF THINGS.
- RESPECT THE NATURAL HEALTH OF A LANDSCAPE WHEN DESIGNING FOR HUMAN ACCESSIBILITY AND FUNCTION.

SOURCE: [HTTP://WWW.BRADPETERSTON.CA/SUSTAINABLE\\_LANDSCAPES.HTM](http://www.bradpeterston.ca/sustainable_landscapes.htm)

.....  
The topics in this guidebook are categorized as:

Siting & Planning

Materials & Resources

Water

Energy

Home Economics

.....  
See the table of contents for sustainable practices on page X of this document.

# how to use this guidebook.

A Guidebook to Living Green In Sacramento for Sustainable Sites and Landscapes

## Home Economics

### Organic Vegetable Garden



a picture representing the practice

#### Definition

Organic vegetable gardening is a practice that uses material that was once alive. This excludes chemical fertilizers but includes composting. Be sure to keep a diary every season on your experiences.

#### Overview

Sacramento's 1941 Front Yard Landscape Code Ordinance 17.68.010 was amended in 2007, allowing Sacramento Residents to plant fruits and vegetables in the front yard.

#### Considerations

Don't disturb the soil to much will tilling which can disturb microbes and beneficial soil biota. You can hire a backyard farmer, a farmer hired weekly to maintain your backyard garden and leave a basket of vegetables you every week. Avoid physical controls, barriers, handpicking, and spraying jets which can uncurl pests. Use natural bio-icide to control pests like praying mantis and ladybugs.

#### Guidelines

Rotate crop seasons with nitrogen fixing beans. Don't have a garden? Check with your local farms and farms markets, and local Community Supported Agriculture (CSA) subscriptions.

#### Incentives

Therapy, Fresh fruits & vegetables

#### Suppliers and Resources

Community Gardens Coalition, Gala's Garden, a guide to home scale permaculture, How to grow more vegetables on less land ..., Organic Sacramento, Sacramento Gardening, Soil Born Farms, Sustainable Sites & Landscapes, Teaming with Microbes...

[www.soilborn.org](http://www.soilborn.org) a source for farms, organic markets and opportunities for food.

[http://www.cityofsacramento.org/parksandrecreation/parks/community\\_garden.htm](http://www.cityofsacramento.org/parksandrecreation/parks/community_garden.htm), City of Sacramento Community Gardens - rent a plot today!

<http://www.ethicalworld.co.uk/pics/organic-tomato.png>,

[http://www.laminatedgardenguides.com/images/growing\\_vegetables\\_big.JPG](http://www.laminatedgardenguides.com/images/growing_vegetables_big.JPG)

big.JPG

Biointensive gardening,

#### Life Cycle Cost Analysis

Consider the initial costs for vegetable seeds and organic methods throughout the season and the year. See how much your investments can grow.



a picture to represent information for practicing incentives

We can build Sacramento a Sustainable Future from our own backyard



## DEFINITION

A brief definition of the practice.

## OVERVIEW

A summary of thoughts as it applies to sustainable landscape design.

## CONSIDERATIONS

Think about these when you plan for this best practice. These are not requirements, merely suggestions.

## GUIDELINES

To be able to successfully accomplish this practice, you should comply with these guidelines.

## INCENTIVES

Most practices give you something back. Like produce, rebates or other little incentives. Win-Win!

## LIFE CYCLE ANALYSIS

Consider the cost from cradle to grave to be fully aware of the financial investment for choosing this practice.

## SUPPLIERS AND RESOURCES

Find where to go in Sacramento for services and professionals who are available to help. Just look them up in the directory. Find books or websites with more helpful information.

.....

WHATEVER YOU HAPPEN TO BE LOOKING FOR, THE INFORMATION IN THIS GUIDEBOOK IS MEARLY A STEPPING STONE TO HELP YOU FIND LOCAL SOURCES AND REGULATIONS APPLICABLE TO SACRAMENTO.

.....



there are  
tools for  
carbon free  
lifestyles



# Sustainable Practices.

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Organic Vegetable Garden  
*Maintenance*  
Gleaning  
Integrated Pest Management (IPM)

Working to sustain life for our children is one of the greatest gifts we can give.



# 1 Siting & Planning

## Pick a site.

If you're in the market for a new home, after you secure your financial means, consider getting help to choose a site that matches your family's values for economical, environmental and social factors. Consider location, humidity mapping, exposure & orientation, wind patterns, water bodies, among others that may help resource efficiency. You can learn more about sustainable siting from the practices under the Siting & Planning topic of this guidebook.

## Where is the site?

This guidebook is designed to comply with the City of Sacramento Codes for Landscaping. Check to see if your home resides within the jurisdiction of Sacramento City or Sacramento County.

### County of Sacramento Building Department

#### *Downtown Location*

827 7th Street, Room 102

Sacramento CA 95814

(916) 875-5296

.....

### WHAT ARE THE CODES?

17.68.010 LANDSCAPING REQUIREMENTS.

LANDSCAPE DESIGN: [HTTP://CITYOFSACRAMENTO.ORG/CODE/DOCUMENTS/R2000-523.PDF](http://CITYOFSACRAMENTO.ORG/CODE/DOCUMENTS/R2000-523.PDF)

15.92.080 MAXIMUM APPLIED WATER ALLOWANCE

WATER EFFICIENCY: [HTTP://CITYOFSACRAMENTO.ORG/PARKSANDRECREATION/PPDD/PDF/ORDINANCE-WATER\\_REQ.PDF](http://CITYOFSACRAMENTO.ORG/PARKSANDRECREATION/PPDD/PDF/ORDINANCE-WATER_REQ.PDF)

CHAPTER 12.28 OBSTRUCTIONS TO VISIBILITY AT INTERSECTIONS

17.76.010 WALL, FENCE AND GATE GENERAL REQUIREMENTS

SOURCE: [HTTP://CITYOFSACRAMENTO.ORG/CODE/LANDSCAPING-REQUIREMENTS.HTML](http://CITYOFSACRAMENTO.ORG/CODE/LANDSCAPING-REQUIREMENTS.HTML)

No matter where you live, codes should be considered as the required baseline for all sustainable design. But don't stop there, consider being *more* efficient than the codes require. Also check the map appendicies for more information on geographic and political features in Sacramento.

.....

## Designing

Choosing and planning the site can be time consuming but whether you're picking a site to build a home or finding a home to live in you should not skip this step.

LOOK UP YOUR SITE ON THESE MAPS  
 .....  
 SACRAMENTO CITY MAP  
 SACRAMENTO WATER PURVEYORS  
 TOPOGRAPHY  
 WASTE MANAGEMENT SERVICE AREAS  
 WITH RECYCLING CENTERS, DUMP SITES,  
 ETC.  
 SCHOOLS SERVICE AREAS PER DISTRICT  
 BUILDING DEPARTMENT REVIEW AREAS  
 COUNCIL MAP & PLANNING AREAS WITH  
 CONTACT INFORMATION  
 FLOOD MAP OF SACRAMENTO  
 SMUD SERVICE AREAS  
 PG&E SERVICE AREAS

Once you're familiar with the sites conditions and your goals, proceed to the design phase:

1. Integrated design team meeting & site visit
2. Identify Project Principles and goals

CONSIDER THESE PROFESSIONALS AS PART OF YOUR LANDSCAPE'S INTEGRATED DESIGN TEAM

- o LANDSCAPE ARCHITECTS
- o HORTICULTURALISTS
- o ARCHITECTS
- o RESTORATION ECOLOGISTS
- o CIVIL ENGINEERS MECHANICAL ENGINEERS
- o ELECTRICAL ENGINEERS
- o MAINTENANCE STAFF
- o HOMEOWNER OR REPRESENTATIVES

The following are steps to consider when pre-designing your ideal site:

- First, conduct a pre-design site assessment (SSI 2.1 prereq.)
- Determine site conditions and available resources and features onsite prior to design
- Evaluate any and all possible sustainable practices that may apply with this guide.
- Assemble an integrated design team (Sustainable Sites Initiative prerequisite 2.2) to oversee the project from the pre-design phase through construction and even through occupation and operation.
- See whole building design guide resources
- Site Program plan. Decide the performance and improvement goals (SSI 2.3 prereq.) This may include choosing a LEED rating.

3. Project description and parameters
  4. Diagram schedule
  5. Conceptual Design
  6. Identify encourage any Stakeholders (SSI 2.4 credit)
  7. Identify local needs and services
- .....

## Siting & Planning

### General Landscape Efficiency



#### Definition

Landscapes are welcoming to family, friends and local wildlife.

#### Overview

Landscapes do a lot more for us than we think. The habitat needs a variety of plants and can take care of the landscape if a few basic needs are met.

#### Considerations

Landscapes with plants that function in the landscape like native plants, or plants that promote wildlife like host plants like Pipevine. Remove non-native invasive plants. Don't use chemicals which may kill plants and insects that you don't intend to, use integrated pest management strategies. Use less potable water and more rainwater in the landscape. Landscapes with efficient watering may be eligible for rebates on your water bill. Keep plants away from buildings to reduce insect entry and/or moisture issues. Plant vegetative buffers with natural plantings to promote native soils and structure. Landscaping may help minimize chemical use.

#### Guidelines

Group plants with like water needs in 'hydrozones' where adequate water is provided. Select plants that promote native or natural habitat and wildlife where possible.

#### Incentives

Thriving plants with less water

#### Suppliers and Resources

Create an Oasis with Greywater, River Friendly Landscape Guidelines, Sustainable Sites & Landscapes

River-friendly Landscaping

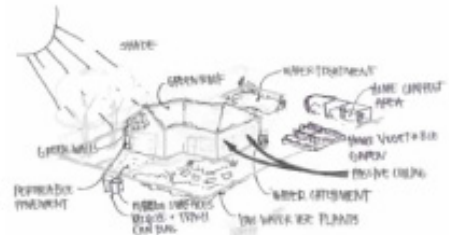
<http://www.sacramentostormwater.org/SSQP/riverfriendly/photos.asp>, WUCOLS, a book which outlines what the water needs are for a very complete plant list.

[http://groups.ucanr.org/sactomg/Fair\\_Oaks\\_Horticulture\\_Center/WEL\\_Garden.htm](http://groups.ucanr.org/sactomg/Fair_Oaks_Horticulture_Center/WEL_Garden.htm),

River Friendly Guidelines

#### Life Cycle Cost Analysis

Consider the soil, water, materials, energy sourcing, construction and maintenance practices along with many others to determine the best landscape design for your site.



We can build Sacramento a Sustainable Future from our own backyard

## Siting & Planning

### Maintain Equitable design



#### Definition

Design your site to be equal for all users: man, woman, old, young, tall, short, blind, wheelchair users, etc.

#### Overview

Design a landscape where all people can be included. For example, your child would love a playground in your backyard, build one that can support adults too.

#### Considerations

For your personal landscape, determine the programs and the requirements for design throughout age and your family's users. Design your site so that in an accident, you may still have access by means of wheelchair, walker, crutches, etc.

#### Guidelines

Follow guidelines by American Disabilities Act (ADA), design within the abilities of average humans for comfort and accessibility through out life of the family.

#### Incentives

Social Stewardship

#### Suppliers and Resources

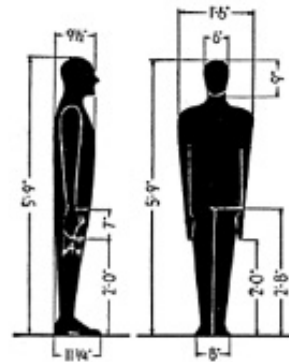
City of Sacramento, County of California

[www.livingwage.geog.psu.edu/](http://www.livingwage.geog.psu.edu/), <http://www.caldag.com/>,  
<http://ilcwaukee.org/files/Pictures/HandicappedAccessible.png>,  
<http://www.fas.harvard.edu/~loebinfo/loebinfo/Proportions/humanfigure.html>

Landscape Architect

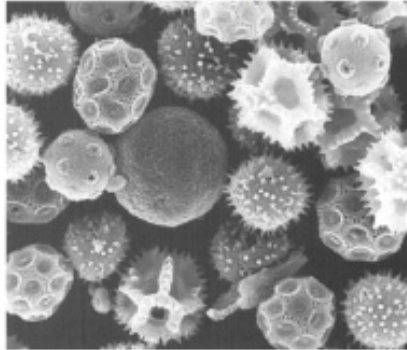
#### Life Cycle Cost Analysis

Conduct your own life cycle cost analysis in regards to this matter.



## Siting & Planning

# Outdoor air quality



### Definition

Allergies are common in Sacramento due to the valley condition for SMOG. Keep outdoor air quality optimal around your home.

### Overview

According to the coalition for clean air, exposure to chemicals can cause Cancer, Asthma, Visual disorders, and long term damage to organs. For after construction outdoor air quality, plant low allergen plants and plant more trees for carbon sequestering.

### Considerations

In addition to healthful practices, use trees for carbon sequestering, control vehicle emissions around your landscape, choose non-allergen plants, promote vegetative air filters to remove allergens. Look for products with certifications from Green Seal, Ecologo, EWG's skin deep, and the U.S. EPA's design for the Environment (DFE) Formulator Program.

### Guidelines

Conduct studies to determine potential outdoor air quality harms. As for a pollen-free landscape from your landscape designer. Plant trees for carbon sequestering and local air improvement.

### Incentives

Healthy environments for improved respiratory function and overall health. Make outdoors enjoyable again.

### Suppliers and Resources

California Native Plant Society, California Native Plants for the Garden, Eco Landscape California, Sustainable Sites & Landscapes  
[www.coalitionforcleanair.org](http://www.coalitionforcleanair.org) for safe household cleaner recipes.  
<http://www.pollen.com/allergy-weather-forecast.asp>,  
<http://www.epa.gov/ebtpages/air.html>,  
<http://www.vancouver.wsu.edu/fac/weber/paleoslides/images/pollen.jpg>, <http://pdfbox.com/images/thumbnail/266-asthma-flyer.gif>  
Green Sacramento, Sustainable Sites & Landscapes

### Life Cycle Cost Analysis

Consider your outdoor air quality and do your own life cycle cost analysis to see if this practice is beneficial for you.



## Siting & Planning

# Maintenance Plan



### Definition

Having a maintenance plan for the year will greatly improve the durability and vitality of your home and landscape. Depending on your climate, maintenance seasons may come at different times; contact your designer or architect for suggestions if they haven't provided this already.

### Overview

A maintenance plan can improve the life cycle cost as well as promote a healthier home.

### Considerations

Consider the appropriate seasons for weatherizing, fertilizer applications, check systems, IPM timing, and other monthly or weekly activities to keep up durability. Consider removing or getting rid of plants or high maintenance items that makes time for maintenance difficult.

### Guidelines

Create a landscape maintenance plan can help you schedule and follow up on projects to increase the durability of items.

### Incentives

Efficient and Durable landscape.

### Suppliers and Resources

Sustainable Sites & Landscapes

<http://www.slolandscaping.com/wp-content/uploads/2009/05/landscape-maintenance-300x225.jpg>,  
<http://www.oaklandnet.com/community/Chapter6MaintenancePlan.pdf>

Online Resources, Landscape Designer.

### Life Cycle Cost Analysis

Conduct your own lifecycle cost analysis with the things at home that require maintenance.

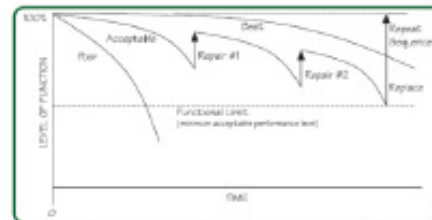
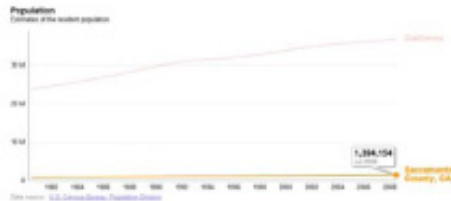


Figure 2.2 - Loss of Function vs. Time for Three Hypothetical Materials or Products of Different Quality Levels (poor, acceptable, and best)



## Siting & Planning

# Dense development Sites



### Definition

Dense development will slow the development of prime farm land or Greenfields and encourage building within existing infrastructure for improved commute with local amenities and resources.

### Overview

Choose you site centralized among services which will improve a homeowner's commute to these common services.

### Considerations

When choosing a location for a home, consider all services that are regularly used for daily operations: consider work, gas stations, churches, drug stores, banks, grocery stores, and other places you may visit on a regular basis. The average density of Sacramento is 4,711 per square mile. Consider living in high density areas for convenience and to preserve undeveloped land. Don't forget to walk or bike to these conveniences and leave your car at home.

### Guidelines

Minimum density of 10 units within a 1/2 mile radius or 10 different 'basic' services.

### Incentives

Efficient commuting,

### Suppliers and Resources

Sustainable Sites & Landscapes

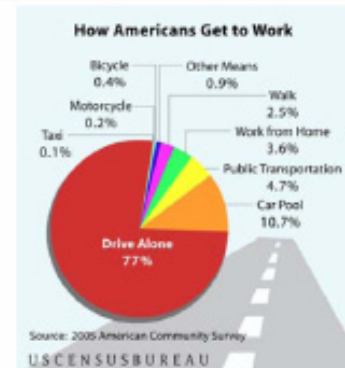
Google Maps, Sacsites.org,

[http://contexts.org/graphicsociology/files/2009/03/american\\_commute\\_sm.jpg](http://contexts.org/graphicsociology/files/2009/03/american_commute_sm.jpg),

Realtor, Landscape Architect

### Life Cycle Cost Analysis

Conduct an analysis to see how far you drive from services in a month. Look into alternative transportation or move to a place that has closer conveniences



We can build Sacramento a Sustainable Future from our own backyard

## Siting & Planning

# Develop on brown fields or greyfields

Sustainable Sites



### Definition

Brownfields are areas of land that have already been built on. These sites are sometimes damaged and are in need of restoration which will reduce Greenfield site disturbance.

### Overview

Repairing soils and ecology is a better choice than building on and damaging ecology rich land such as Greenfields.

### Considerations

When choosing a site, select a Brownfield over a gray or green field to preserve farmland and habitat. Brownfields may have toxic materials onsite, it may be necessary to remediate the toxins and repair them onsite with plants called bioremediation. Identify any opportunities for agricultural uses, but be sure to get a full soil report to identify potential contaminants.

### Guidelines

Make sure that your landscape is not so contaminated that it may effect the health of your family. Do not grow vegetables until levels are under control. Restore the contaminated urban soils.

### Incentives

Compensation & Liability Act (Superfund) Tax Incentives

### Suppliers and Resources

County of California

ASTM E1903-97, EPA, CERCLA, Local Codes,

<http://www.conservation.ca.gov>, Urban Soil in Landscape Design by

Phillip J. Craul,

<http://www.emeraldinsight.com/fig/1120260101005.png>

Realtor, Restoration Specialist, Landscape Architect

Value of a brownfield as a function of remedial cost and future sales/sq. ft.

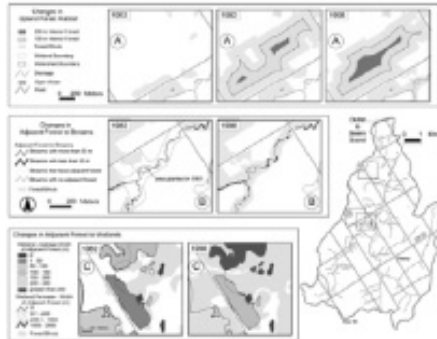
No.	SQ. FT.	Present Value (\$)	Site specific risk cost		Market Value		Market Value		Market Value	
			Remediation (\$)	Residual (\$)	Before (\$)	After (\$)	Before (\$)	After (\$)	Before (\$)	After (\$)
A	25	4,750,000	1,000,000	3,750,000	1,000,000	1,000,000	2,750,000	2,750,000	500	20,400
B	25	5,000,000	1,000,000	4,000,000	1,000,000	3,000,000	3,000,000	500	100	40,000
C	25	5,000,000	1,000,000	4,000,000	1,000,000	3,000,000	3,000,000	500	100	40,000
Total	75	14,750,000	3,000,000	11,750,000	3,000,000	6,750,000	8,750,000	1,500	300	120,000

### Life Cycle Cost Analysis

Conduct your own life cycle cost comparison to see if choosing a brownfield site is more economical with considerations of the impact of greenfields otherwise.

## Siting & Planning

# Habitat Restoration Sites



### Definition

Identify the potential habitat and the threatened or endangered species that could be favorable.

### Overview

Our Mediterranean habitat has been lost significantly in the past 100 years. We can turn this around if we work to restore habitats especially those sensitive or threatened habitat.

### Considerations

Stabilize and promote the ecology by promoting habitats for all life. Conserve existing natural areas, restore damaged areas.

### Guidelines

Limit the construction disturbances. Look up the state and federal threatened or endangered species lists before building on a site. Design your landscape to encourage or to support the natural habitat.

### Incentives

Healthy Habitat = healthy world. Providing places for animals to live helps us to preserve and respect other species.

### Suppliers and Resources

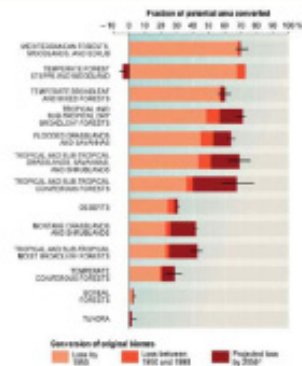
Eco Landscape California, ECOS, River Friendly Landscape Guidelines, Sustainable Sites & Landscapes

Wildlife Action Plans (<http://www.wildlifeactionplans.org>), [http://ecos.fws.gov/tess\\_public/StateListing.do?state=all](http://ecos.fws.gov/tess_public/StateListing.do?state=all), EPA restoration techniques

Ecologist, Environmental Restoration Specialist

### Life Cycle Cost Analysis

What is more precious than protecting our world for our children to enjoy. Conduct your own life cycle cost analysis for your future.



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## Siting & Planning

# Protect and Restore Water bodies

Sustainable Sites

**Non-County of Sacramento Residents**

If you live in any of the following **incorporated cities**, please contact your local City offices to determine your parcel's flood zone status.

City	Number
Citrus Heights	916-727-4770
Elk Grove	916-478-2252
Folsom	916-355-7272
Galt	209-366-7230
Salt Lake	916-777-6082
Sacramento	916-808-5061

### Definition

Goal is to protect bodies of water by reducing risk of natural disaster and or protecting habitat. avoiding development on high risk land will help sustain functions of water bodies and help to ensure the flood safety

### Overview

Choose a building site that does not damage the ecology and does not leave your family in the risk of building in these sensitive environments check the appendices of this guidebook for the 100 year flood plan in Sacramento.

### Considerations

Consider soft engineering to restore. Provide at least 300' of buffer from the site to wildlife migration corridors or habitat. USGS costal erosion mapping. See sediment and erosion control guidelines, like using bio-engineered systems for erosion control on slopes. CASQA.

If your site is within the 100-year flood plan, be sure have a plan and properly maintain your plan incase of an emergency. Check the appendices of this guidebook for suggestions on a family preparedness plan.

### Guidelines

Build at least 5 feet above the 100-year flood plan, more than 100' from a wetland, do not build on farmland (Greenfields), or within 50' of water bodies, public parkland and do not endanger the habitat of any species.

### Incentives

This practice may promote the safety of your family and sensitive ecological features.

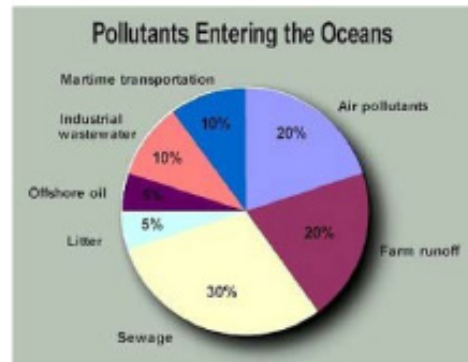
### Suppliers and Resources

California Water Board, City of Sacramento, County of California, ECOS

USDA NRCS stream restoration design handbook (2007), NOAA restoration center resources, EPA, Federal Interagency Stream Restoration Working Group "Stream Corridor Restoration: Principles, Processes, and Practices" 1998., FEMA, USDA, CFR, Clean Water Act, <https://www.msa.saccounty.net/waterresources/stormready/floodzone.asp>, [http://www.information.org/images/graph\\_ocean-pollutants.jpg](http://www.information.org/images/graph_ocean-pollutants.jpg)  
Ecologist, Real-estate Agent

### Life Cycle Cost Analysis

the siting of your home is one of the most important in considering the life cycle cost of the home. Conduct your own and choose your site wisely.



## Siting & Planning

# Soil & Grading



### Definition

Soil and Grading in construction is important in building healthy landscapes. Spoil is contaminated soil typically in urban soils.

The sustainable pr Rapidly renewable materials Concrete with fly ash or regional materials

### Overview

Preserve soils and build them up as healthy soil is one of the most important aspects of healthy, sustainable landscapes. Do not excessively import soils or change the grade.

### Considerations

Where possible promote oxygen and recycle organic material and waste. Agricultural grasses are helpful for food, foraging and erosion control. Analyze the soil for contaminants and a horizon map. Work to improve and heal spoils through bioremediation. Minimize soil disturbance on the site in design and in construction. Use as lightweight machinery as possible to reduce damage to the soil structure. Minimize planting mounds or other topography changes. The easiest way to preserve healthy soil is to resist excavation. Consider stockpiling all native soils on the site.

### Guidelines

Conduct soil tests and document imported soil. Maintain original site soil types. Minimize Grading that cuts more than 12 inches. Balance cut and fill calculating a 10% increase in volume to fill.

### Incentives

Healthy sites and less work/maintenance.

### Suppliers and Resources

Sustainable Landscape Construction, Teaming with Microbes...

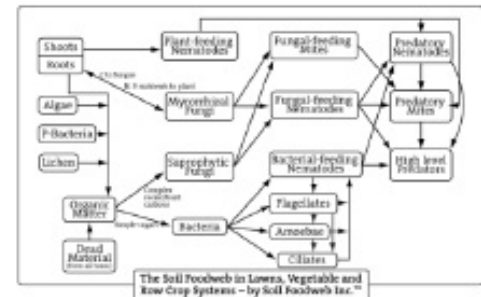
USDA Natural Resources Conservation Service Resources (<http://soils.usda.gov/sqi/>), USDA natural Resources Conservation Service Resources, Urban soil Primer, Building Soil (<http://www.buildingsoil.org>),

<http://www.landscapesouth.com/images/services.jpg>, Sacramento soils map, <http://websoilsurvey.nrcs.usda.gov/app/>.

General Contractor

### Life Cycle Cost Analysis

The life cycle cost analysis is based on the cost for cut and fill, the impact to the soil food web and the loss of healthy top soil for plant growth.



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technology  
can make us  
forget our  
natural roots



# 2 Materials & Resources

## What is it?

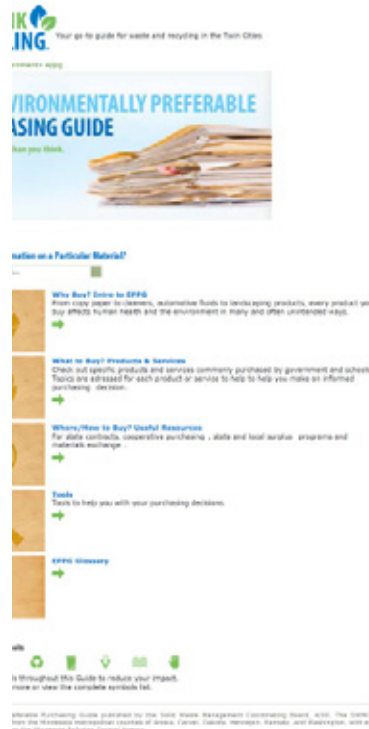
To buy sustainable materials, it's very important to know what you're buying and where it comes from. Knowing what things are made of is important to the health of your home as well as knowing the durability.

Develop a preferred purchasing plan for your home.

Determine what's important to you: Environmentally and Economically. Online purchasing is risky but doable if the vendor can provide history on the materials in the product.

Look under the Materials section of the guidebook for more information on saving money with efficient materials.

Finding Neem Oil? Find it here under these green companies.



Source: <http://www.rethinkrecycling.com/>

For efficient materials and lessons on preferable purchasing

.....

## Materials & Resources

### General Material Efficiency



#### Definition

Material efficiency is confirming that the products you buy are made from sustainable resources in a healthy way.

#### Overview

Sustainable materials help us to ensure that there will be resources for our future generations and will help us to make as little impact as we can to benefit our future generations.

#### Considerations

Check for product warranties, recycled content, non recycled material resource history and source, environmental impact, and any information on durability. Look for materials made from rapidly renewable resources. For example, use byproducts, recycled material, or rapidly growing materials as primary resources. Composite wood Products and agrifiber products are acceptable if are no urea-formaldehyde resins. Don't use wood from forests that are not certified by the FSC. Opt for soft woods instead of hard woods as hard woods are limited and some are threatened species.

#### Guidelines

Develop a preferred purchasing program. Purchase regional items (manufactured less than 500 miles away) to minimize the transportation costs and to reduce your carbon footprint.

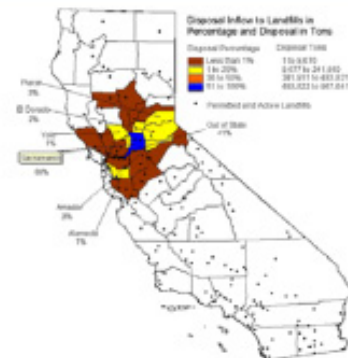
#### Incentives

Reusing materials for cost efficiency and to sustain materials which reduces environmental impact.

#### Suppliers and Resources

Florin-Perkins Landfill, Green Sacramento, Kiefer Landfill, ReStore, Waste Drop Off

The habitat for humanity's ReStore, Sacramento Municipal Waste Agency, ASTM, ISO requirements, <http://www.ciwmb.ca.gov/LGCentral/Summaries/Images/InflowMaps/2004/Sacramento.gif>, Sacramento Municipal Waste, LEED-MR



#### Life Cycle Cost Analysis

A plastic water bottle can remain in a landfill for 1,000 years. The cost of an item begins with the initial price and continues in cost ending with the cost of disposal. Consider the environmental costs of disposal of your waste.

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## Materials & Resources

# Plants/Landscaping



### Definition

Using native plants, like this Spice Bush *Calycanthus occidentalis*, can reduce water as well as promote habitat for the region.

### Overview

Non-invasive plants and calculations of Biomass density planning can help build a more sustainable landscape design.

### Considerations

Choose plants with low water requirements, like natives which can promote a sense of place, limit turf, and use a high efficient micro-irrigation system and look for alternative water sources. Use temporary irrigation systems? Note plants that are fire adapted, edible, useful, cause allergies, promote beneficial insects. Consider plants and landscapes that are functional and work for the home owner's needs. Consult your landscape designer for more information. In construction, save as many plants on site as possible.

### Guidelines

Reduce the use of irrigation by 50% from the mid-summer baseline case. Use captured water, recycled waste water, or other non-potable water sources. Preserve and restore any viable plants onsite by calculating biomass density index (BDI). Remove invasive

### Incentives

Habitat, water savings

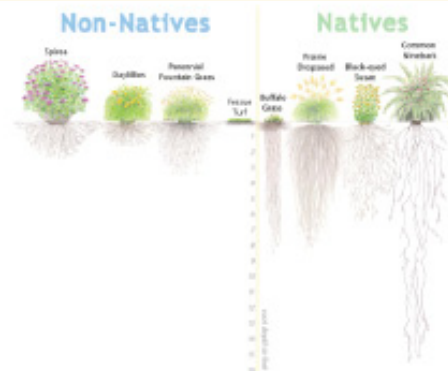
### Suppliers and Resources

California Native Plant Society, California Native Plants for the Garden, Plants and Landscapes for Summer Dry Climates..., River Friendly Landscape Guidelines, Sustainable Sites & Landscapes EPA green landscaping ([www.epa.gov/greenacres/](http://www.epa.gov/greenacres/)), WUCOLS, North American Native Plant Society, National Invasive Species Information Center, <http://www.plainfield-il.org/docs/village/Natural%20Landscaping%20Poster%204.jpg>, <http://www.nca.net/~cnps/spicebsh.jpg>, [http://www.marc.org/environment/Water/know\\_your\\_roots.htm](http://www.marc.org/environment/Water/know_your_roots.htm)

Landscape Designer

### Life Cycle Cost Analysis

Environments change so it may be difficult to analyze the life cycle cost of plants however, selecting the right ones may provide a greater return, like natives or edibles. Consider these in the life cycle cost analysis.



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## Materials & Resources

# Trees Landscape Design



### Definition

Trees are tall plants with a single trunk. They can be deciduous or evergreen and offer many benefits like seasonal beauty or food.

### Overview

Trees offer shade, food, carbon sequestering, among many other benefits. Planting trees today for our future is a sustainable approach in your landscape.

### Considerations

Consider trees in the systems of Heating, Cooling, Wind breaks and irrigation and septic systems (competition with root structures). Preserve heritage and existing viable trees. In construction, protect trees with fencing around the drip line as to not damage or compact the soil and roots.

### Guidelines

In construction, maintain the existing grade around trees or else provide terracing or tree wells to protect trees from grade changes. Thin at risk branches and maintain trees to preserve. Plant trees accordingly to the site with a Landscape Designer.

### Incentives

Cleaner air, Carbon sequestering, Shade and resources for your children.

### Suppliers and Resources

Sacramento Municipal Utility District (SMUD), Sacramento Tree Foundation

[www.isa-arbor.com](http://www.isa-arbor.com),

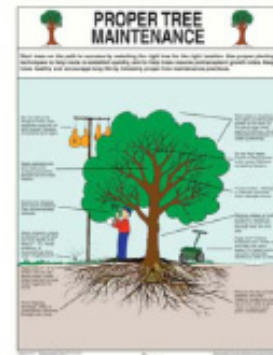
<http://www.arapahoeacres.com/ProperTreeMaintenanceColor8x11.jpg>

, [http://www.ihpworkshops.com/images/oak\\_tree\\_and\\_v\\_fog.jpg](http://www.ihpworkshops.com/images/oak_tree_and_v_fog.jpg),

Landscape Architect/Designer, Arborist

### Life Cycle Cost Analysis

Consider the lifecycle of a tree and select one that complements your goals to determine if the investment is a good choice for you.



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## Materials & Resources

# Turf Landscape Design



### Definition

Turf, traditionally a fescue blend with bluegrass or rye allows a wide variety of activities at a home. Synthetic turf is a common alternative for game fields due to lower maintenance and water use. Note the manufacturer's recommendations on maintaining synthetic turf before making your decision.

### Overview

Turf is pretty high maintenance to keep in Sacramento. A more sustainable solution is to not plant a lawn or else using native meadow grasses instead.

### Considerations

Consider putting your turf on your roof! Or else consider using organic allelopathic Pre-emergent in the spring helps the weeds from germinating - just make sure all your grass seeding occurs in the fall. Slow growing grasses can help keep maintenance down. Opt for low water use trees and shrubs instead. Use fish emulsion or liquid earth worm castings for high nitrogen fertilizers. Keep grass clippings on the lawn to return the nutrients to the soil and to help maintain the moisture content in the soil - just don't wait too long between clippings. Consider blends of fescue and native weeds, like enviro-lawn to achieve an all year long lush green lawn with less watering, maintenance and fertilizer. Keep your lawn a little longer to promote longer roots and less weeds.

### Guidelines

Schedule irrigation for early morning watering, Sept-June. Do not overspray on the concrete; it's illegal in Sacramento. Keep grass at it's recommended clipping height. Opt for low tech lawn mowers or an electric one!

### Incentives

Getting rid of your lawn helps improve water efficiency, maintenance, and provides you with the room you've always wanted for a vegetable garden.

### Suppliers and Resources

California Native Plants for the Garden, Eco Landscape California, Sustainable Sites & Landscapes, The Encyclopedia of Ornamental Grasses

Western Garden Book, Outside Pride Enviro-Lawn, Rhizomatous Turf Grass, <http://www.outsidepride.com/resources/states/california.html>, <http://anrcatalog.ucdavis.edu/pdf/8044.pdf>  
Landscape Designer

### Life Cycle Cost Analysis

Grass seed prices may vary with season. Do your own life cycle cost comparison for this sustainable practice.

Product Name	Species	Category	Applications
La Prima	Bermuda Grass	Warm Season	Lawns - Full Sun
Yukon	Bermuda Grass	Warm Season	Lawns - Full Sun
Supreme	Buffalo Grass	Warm Season	Lawns - Full Sun
Lark	Zoysia Grass	Warm Season	Lawns - Mostly Sunny to Full Sun
Compadre	Zoysia Grass	Warm Season	Lawns - Mostly Sunny to Full Sun
Seashore Paspalum	Seashore Paspalum	Warm Season	Coastal Lawns - Mostly Sunny to Full Sun
Champion	Poa Grass	Cool Season	Lawns - Better Overseed On Warm Season Grasses
Rhapsody	Poa Grass	Cool Season	Lawns - Full Sun in Cool Zones
Comde Extreme	Fescue - Tall Type	Cool Season	Lawns - Partial to Full Sun
Midnight	Kentucky Bluegrass	Cool Season	Lawns - Full Sun in Cool Zones
World Cup	Kentucky Bluegrass	Cool Season	Lawns - Full Sun in Cool Zones
Bluestone	Poa Fescue, Rye, Bluegrass Mix	Cool Season	Lawns - Mostly Sunny to Full Sun in Cool Zones
Poa Supera	Supera Bluegrass Mix	Cool Season	Lawns - Very Shady in Cool Zones
Highland	Orchard Bluegrass	Cool Season	Coastal Lawns - Full Sun
Luxury	Poa Fescue	Cool Season	Lawns - Partial Sun in Cool Zones

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## Materials & Resources

# Compost

## Reduce, Reuse, Recycle



### Definition

Composting, or 'green manure', helps transform waste into soil amendments. Examples of such are Vermiculture and Yard Waste Composting. Available to purchase at Home Improvement Stores

### Overview

Compost makes humus to enhance soil structure preventing erosion, and loosening compacted soil. Biodynamics of healthy soil. Composting bins can come in a variety of shapes and sizes, build your own or purchase a composting bin.

### Considerations

Use old compost in the new bin to introduce fungi and bacteria necessary to breakdown compost. . Use a 3 bin system with a sifting screen with 1/4 - 1/2" holes. Vermiculture, or using worms to break down carbon and nitrogen rich waste for a fine, ready to use fertilizer.

### Guidelines

Don't use bones, dairy, poop, meat, and infested or diseased material. Compost systems need 1 part nitrogen, like vegetables, to 3 parts carbon, like leaves. Keep the compost moist enough to wring out like a sponge, about 40%. Mix the pile weekly.

### Incentives

Nutrient rich top soil from waste, resulting in lush vegetative growth.

### Suppliers and Resources

Gaia's Garden, a guide to home scale permaculture

[www.cityofsacramento.org/utilities](http://www.cityofsacramento.org/utilities),

<http://www.greengeek.ca/2006/05/05/easy-composting-in-your-kitchen/> 'nature mill' \$399.00, PJ Dunn Worm farm in Galt 1.209.712.3646.

Guide to Compost

### Life Cycle Cost Analysis

Composting is free! Follow these guidelines for nutrient rich soil.



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## Materials & Resources

# Composite Wood & Agrifiber Products



### Definition

Do not choose urea-formaldehyde resins. Examples: particle board, fiberboard, plywood, wheat board, strawboard, strawboard, panel substrates, door cores.

### Overview

Recycled wood and agrifiber products can significantly reduce and improve the building materials.

### Considerations

In outdoor applications, choose wood that is naturally rot-resistant, like redwood, cypress and cedar. Consider recycled wood-plastic composite lumber for deck and railings which is a better alternative than pretreated wood.

### Guidelines

Choose the right materials for the site. Choose materials that have been recycled and can be recycled. Balance the materials already on the site to reuse or else recycle for no waste to the landfill.

### Incentives

Materials that are renewable, requires less maintenance, longer lasting, and ultimately lower cost.

### Suppliers and Resources

Green Sacramento, Home Depot, Lowes, Osh

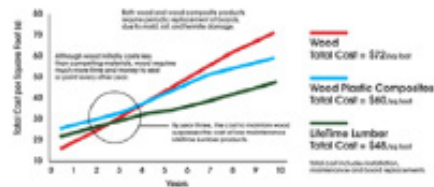
[http://greensource.construction.com/products/images/0710\\_06.jpg](http://greensource.construction.com/products/images/0710_06.jpg),

[http://www.bercoredwood.com/html\\_pages/trex.html](http://www.bercoredwood.com/html_pages/trex.html),

### Life Cycle Cost Analysis

Research materials and the needs of your project like the life expectancy to determine the life cycle cost analysis with this practice.

LIFETIME LUMBER SAVES YOU TIME AND MONEY



## Materials & Resources

# Certified Wood from FSC **Reduce, Reuse, Recycle**



### Definition

Trees have the ability to store carbon from the air as they grow, called carbon sequestering. The Forest Stewardship Council (FSC) certifies wood grown from renewable forests as a measure to prevent deforestation.

### Overview

Wood and lumber can come from anywhere that grows trees. Sometimes you may find cheap wood that is sourced from forests that are not renewable in order to conserve viable forests for a sustainable environment.

### Considerations

Look for the FSC stamp to ensure that your wood is coming from responsible forestry sources.

### Guidelines

Look for the FSC stamp on wood products and ask for the source of your wood products to confirm their certification.

### Incentives

Environmental Stewardship, responsible planned deforestation.

### Suppliers and Resources

Green Sacramento, Home Depot

[http://www.metafore.org/index.php?p=Forest\\_Certification\\_Resource\\_Center&s=147](http://www.metafore.org/index.php?p=Forest_Certification_Resource_Center&s=147),

Green Sacramento

### Life Cycle Cost Analysis

When you use wood in any application, make sure that the source is credible when considering the life cycle cost analysis.



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## Materials & Resources

# Mulch

## Reduce, Reuse, Recycle



### Definition

Mulch is typically used in beds to retain moisture and to resist weeds as the shrubs in these beds grow to shade out the weeds.

### Overview

Bark has the best color when it is new. As it fades and breaks down, homeowners are encouraged to lay more down which can be costly if 4-6 inches should be spread over the beds. A more sustainable method is to design plants to grow in closer.

### Considerations

Consider mulch with a high allelopathy to resist seed germination of weeds in your beds like Shredded cedar bark. Other types of bark have different purposes like water retention, weed abatement, among many other uses. What ever trees and branches maybe thinned out on the site can be chipped down to make mulch. You can even use newspaper as mulch.

### Guidelines

Maintaining mulch at 4-6 Inches deep can significantly reduce your weeds which may starve your plants of water.

### Incentives

Less weeding, watering, and free for residents from SMUD

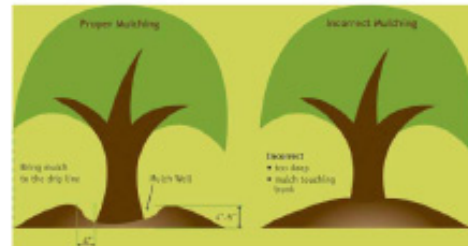
### Suppliers and Resources

Sacramento Municipal Utility District (SMUD), Sacramento Tree Foundation, Sustainable Landscape Construction

<http://www.valleyredwood.com/>,

<http://www.southernmulch.com/uploads/products/All-Products.asp>

Landscape Designer, Homeowner

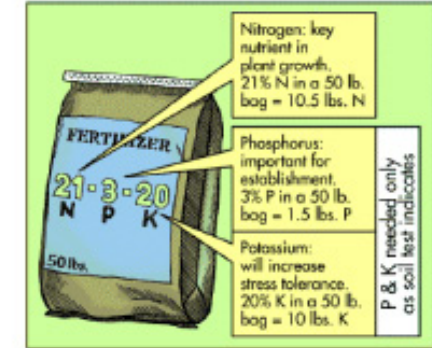


### Life Cycle Cost Analysis

Bark and mulch prices may vary with season. Do your own life cycle cost comparison for this sustainable practice.

## Materials & Resources

# Organic Fertilizers



### Definition

Usually measured in nitrogen, phosphorus or potash (NPK). Organic fertilizers are made from things that were once alive like bone meal, alfalfa, seaweed, grape pumace, bat guano, etc.

### Overview

Excess use of chemical fertilizers may burn plants due to the extreme amounts of nutrients.

### Considerations

Consider natural alternatives from home instead of commercial like composting, Vermiculture, and yard waste as mulch to return lost nutrients into the soil. Determine pH requirements, Nutrient capacity in soils.

### Guidelines

Mix your own fertilizers after a soil nutrient analysis. Look for bone meal, blood meal, fish emulsion, bat guano, grape pumice, alfalfa, earthworm castings and manure for alternatives from other fertilizers.

### Incentives

Healthier plants, cheaper costs.

### Suppliers and Resources

Eco Landscape California, ECOS, Forever Healthy Organics, Sacramento Gardening, Sustainable Sites & Landscapes  
<http://www.hort.cornell.edu/gardening/lawn/almanac/images/fertilizer3.gif>, [http://www.ehow.com/how\\_9123\\_make-own-fertilizer.html](http://www.ehow.com/how_9123_make-own-fertilizer.html)

### Life Cycle Cost Analysis

Conduct your own life cycle cost analysis to identify which method is best for you.

Organic Fertilizer Calculator Quick User's Guide  
<http://www.berkeleywater.org/organic-fertilizer-calculator>



We can build Sacramento a Sustainable Future from our own backyard

## Materials & Resources

# Recycled Material Resources



### Definition

Post Consumer resources are like the glass or paper that has already been used by the consumer. Preconsumer materials may include byproduct materials from the manufacturer which is not usually used by a consumer.

### Overview

There are materials all around us! Using materials that have already been used will reduce the lifecycle cost.

### Considerations

Consider these alternate sources for building in construction like walls and garden art. Instead of using one time use products, choose materials that last.

### Guidelines

LEED credits are awarded to project that reuse or recycle materials in building. Purchase things that can be recycled or is not damaging to the environment upon disposal, like corn oil bottles.

### Incentives

Less re-purchasing = more money saved. Less materials in the landfill.

### Suppliers and Resources

Florin-Perkins Landfill, Green Sacramento, ReStore

ISO 14021-1999 (definition of recycled material), ReStore Sacramento, Landfill recycle programs

### Life Cycle Cost Analysis

Buying one time use products may significantly impact the environment. Landfills can become stressed to manage the trash from consumers. Reducing and reusing materials saves the environment and reduces the acres that consumers may require to acquire all these resources.





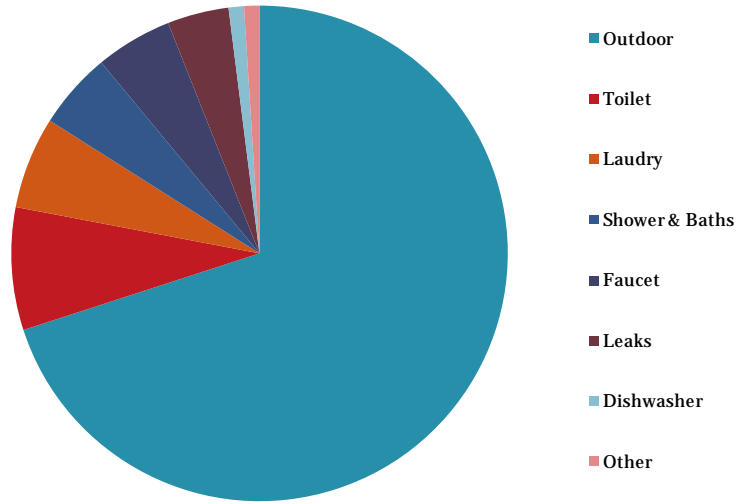
recreate as its  
a privilege  
to live in this  
environment



# 3

## Water

### Where your water bill goes



WHERE CAN YOU SAVE WATER WITH EFFICIENT LANDSCAPES?

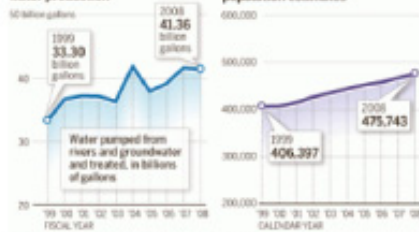
## Water

# General Water Efficiency

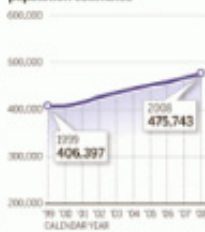
### WATER HOGS?

Over the last decade, Sacramento's water usage has grown by 24 percent, while its population has grown just 17 percent.

#### Sacramento city water production



#### Sacramento city population estimates



Sources: Sacramento City Department of Utilities, California Department of Finance  
SHARON SHAWA sakata@shades.com

### Definition

Fresh water is one of the world's most precious commodities in the world, making up only 2% of the world's water.

### Overview

Now, as our population grows, water efficiency is a good idea.

### Considerations

Fix leaks in appliances, piping and irrigation. Replace your toilet. Replace your close washer. Select proper plants in your landscape. Water only when you need.

### Guidelines

Comply with the Sacramento Code for Water consumption: 15.92.080 Maximum applied water allowance. Three steps to water efficiency 1) cut back on water use 2)recycle water 3)store water on land to recharge groundwater.

### Incentives

Water conservation, water availability.

### Suppliers and Resources

California Water Board, Plants and Landscapes for Summer Dry Climates..., Rainwater Harvesting for Drylands, River Friendly Landscape Guidelines

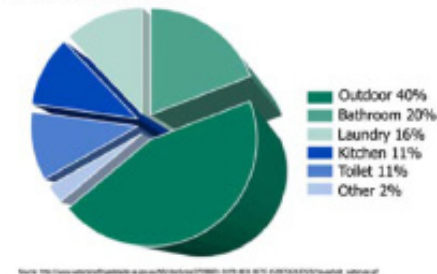
[www.friendsoftheriver.org/3easysteps](http://www.friendsoftheriver.org/3easysteps), <http://www.sswd.org/>,  
<http://www.msa.saccounty.net/waterresources/>,  
<http://www.svwqc.org/>

Sacramento Valley Water Quality Coalition, Sacramento Suburban Water District

### Life Cycle Cost Analysis

Consider the impact of your water consumption on the environment and conduct your own life cycle cost analysis with the amount of water your family uses in a year to determine potential savings.

Household Water Use



## Water

# Automatic Irrigation System



### Definition

Using an Automatic Irrigation system can be effective in reducing the amount of potable water.

### Overview

An automatic irrigation system helps a homeowner water during appropriate times with appropriate amounts to reduce the risk of overwatering or under watering.

### Considerations

Use BMPs:

1. Assure Overall Quality of the Irrigation System
2. Design the Irrigation System for the Efficient and Uniform Distribution of Water with an Irrigation Schedule
3. Install the Irrigation System to Meet the Design Criteria
4. Maintain the Irrigation System for Optimum Performance with routine checks
5. Manage the Irrigation System to Respond to the Changing Need for Water Use reclaimed water for irrigation; let the plants clean the water for you.

Consider using gray water in your irrigation system as your city and county codes permit (The City of Sacramento may not consider using gray water in irrigation applications until 2011)

### Guidelines

Use waste water for irrigation purposes on appropriate sites and districts. Water your lawn between midnight and 10 a.m. Check local codes on watering practices.

### Incentives

Using less water in your landscape will significantly reduce your water use bills. If you eliminate irrigation, this could reduce your bill as much as half!

### Suppliers and Resources

Create an Oasis with Greywater, Lowes, Osh

Hunter Irrigation (commercial), Rainbird (residential), Toro Irrigation.  
City of Santa Monica 'Guidelines for the design and construction of water-efficient irrigation systems' (provided sample irrigation plan), BMPs from Colorado [www.ncwcd.org](http://www.ncwcd.org), <http://www.rainxchange.com/>, [http://www.allianceforwaterefficiency.org/Rainfall\\_Shutoff\\_Devices.aspx](http://www.allianceforwaterefficiency.org/Rainfall_Shutoff_Devices.aspx), [http://theamericanirrigationcompany.com/Home\\_Page.html](http://theamericanirrigationcompany.com/Home_Page.html)  
Landscape Designer/Architect

### Life Cycle Cost Analysis

Your irrigation costs may vary with the size of your landscape. Do your own life cycle cost comparison for this sustainable practice.

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## Water

# Groundwater Recharge

irrigation



### Definition

Practice recharging the groundwater with on site storm water treatment methods like Infiltration trenches, Drywells, Retention & Detention Basins & Vegetative Swales.

### Overview

In storm events, the excess waste water can wash off sediment and debris as well as contaminants that may have been brought up from parking lots or fertilizers. To protect our waterways from pollution, these on site methods will treat the runoff.

### Considerations

Smaller versions like infiltration trenches and vegetative swales in Parking Lots. Retention and Detention Basins do well to treat the waste water from larger sites.

### Guidelines

Choose the right method for your site. Conduct water discharge analysis to determine how polluted the water runoff can be. Do not rely on generalized geotech surveys, check the soil in the site. Locate potential water bodies that maybe impacted.

### Incentives

Clean water ways

### Suppliers and Resources

River Friendly Landscape Guidelines, Sustainable Sites & Landscapes

<http://www.sgah2o.org/sga/>,

<http://www.euwfd.com/assets/images/Groundwater-pollution02.jpg>,

<http://www.southareawatercouncil.org/background.php>,

### Life Cycle Cost Analysis

Consider the water bodies impacted by the volume of water run off, soil types, and required maintenance in order to select appropriate method in this life cycle cost analysis.



## Water

### Irrigation Shut offs



#### Definition

Efficient irrigation systems should use sensors to monitor the water usage as it is needed in the landscape. Other sensors may include Rain Shut Offs.

Using sensors may save plants or reduce water use to as needed.

#### Overview

Some plants like California Lilac (*Ceanothus*), require little to no water. Excessive watering is not only not needed but undesirable for the health and vitality of some of these.

#### Considerations

LEED credits are awarded to preserve water efficiency at least 20%. Water use calculations are based on month of July. Install sensors in appropriate places to accurately sense weather conditions.

#### Guidelines

Use Weathered Based Evapotranspiration Controllers in landscaped areas greater than 2,000 square feet. However, Rain Sensors should be used in any application. Check the Sacramento water conservation codes, Article XI of Ch.13.04.

#### Incentives

Cheaper water bills, less plant fatalities, water efficiency sensors from Sacramento Department of Utilities.

#### Suppliers and Resources

California Water Board, City of Sacramento Department of Utilities

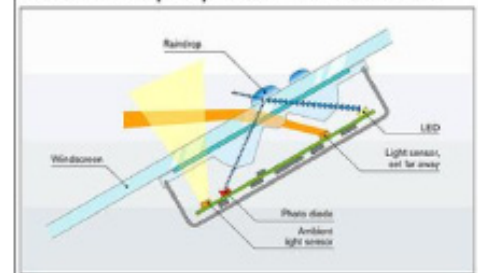
[http://www.greenthinkers.org/blog/2007/05/orbits\\_rain\\_sensor\\_sprinkler\\_t.html](http://www.greenthinkers.org/blog/2007/05/orbits_rain_sensor_sprinkler_t.html), <http://nelsonirrigation.co.uk/6.html>

Hunter website for product information and specifications.

#### Life Cycle Cost Analysis

The components may save enough money to pay for itself relatively soon. Consider warranties and the water savings.

Basic functional principle of the Bosch Rain Sensor



## Water

# Micro Irrigation System



### Definition

Also known as drip irrigation, the system, designed for small spaces, is easy to install and maintain for any homeowner.

### Overview

Drip/micro irrigation is a low pressure irrigation system that uses less water than traditional systems. Piping, emitters or sprays applies water to each plant. Knowing the right GPH is important to know for your plant's water requirement.

### Considerations

If you're a home DIYer, read the manufacturer's specifications when considering a product. Design your irrigation system per their recommendations but know your site specific characteristics: soil, water need, topography and slope. An irrigation specialist should be able to help you work through it. It is beneficial to know the microclimate of the zones in your landscape to accurately gauge your landscapes watering needs throughout the year. Try to recycle components where possible. Consult a LEED AP for more information on water efficiency.

### Guidelines

Only water what you need per your local codes. Use automatic controls to help maximize your water use with weather sensors.

### Incentives

Easy watering and irrigation construction.

### Suppliers and Resources

Home Depot, Lowes, Osh

[http://www.builditsolar.com/Projects/Water/Drip\\_Irrig\\_Guide\\_06-03-24.pdf](http://www.builditsolar.com/Projects/Water/Drip_Irrig_Guide_06-03-24.pdf), <http://www.dax-environmental.co.uk/drip-irrigation-stake-placing.jpg>, <http://www.thecityofsacramento.com/irrigation/>

Call a certified irrigation professional, Landscape Designer/Architect

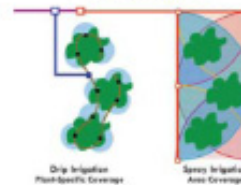
### Life Cycle Cost Analysis

Because drip irrigation is above ground, it may be difficult to keep un damaged. Hoses and emitters may become clogged overtime and should be cleaned. It may be more practical for small garden projects. However you may conclude that the water savings and the less invasive repair strategies and costs is a better life cycle cost than below ground irrigation.

Guidelines for the Design & Construction of Water Efficient Irrigation Systems in the City of Sacramento

### Why Drip Works:

- No Overspray
- No Runoff
- No Blocked Spray
- Fewer Weeds
- Water Any Time
- Emitter Adjustment
- 85% - 95% Efficiency



## Water

# Wastewater treatment systems



### Definition

Waste water can be storm water, sewage water among other kinds. Wastewater can be classified as gray water, or black water. Most waste water is not potable or allowed for use in incorporated City of Sacramento. Check your local codes for permissible uses.

### Overview

Subsurface and surface application differences apply. Fewer code requirements may be available than gray water treatment. Reducing potable water and using waste water increase your water efficiency. In 2011, city codes may be revised for gray water use.

### Considerations

Consider integrating on-site passive wastewater treatment systems in your landscape. Some examples of treating waste water mimic natural biological systems like wetlands. Consult a Landscape Architect and/or biologist for efficient system designs. Calculate your household water demand and yields to begin calculating waste water treatment. Throw out your oils, fats and grease to keep cleaner pipes and healthier water treatment systems.

Keeping all of the water you can on site can reduce the potable water use in your landscape.

### Guidelines

Reduce potable water usage by a minimum of 50% or treating and reusing as much as 50% waste water onsite for sustainability. Use cisterns, swales and retention ponds or trenches to use all the waste water on the site, naturally.

### Incentives

Water Efficiency and reduction of potable water. Less impact on the grid. SCRSD may offer incentives for ultra low flush toilets.

### Suppliers and Resources

City of Sacramento, City of Sacramento Department of Utilities, County of California, ECOS

[http://www.owue.water.ca.gov/docs/graywater\\_guide\\_book.pdf](http://www.owue.water.ca.gov/docs/graywater_guide_book.pdf),

<http://aquaforia.com/archives/7596>,

<http://www.scaleroenvironmental.com/category/categories.aspx?id=6&name=Water%20Quality>,

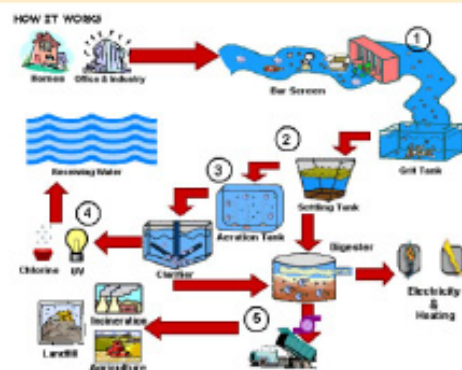
<http://www.mub.org/images/wastewatertreatment.gif>, Sacramento County Regional Sanitation District (SCRSD),

Landscape Architect, Biologist, Energy Policy Act of 1992, Sacramento County Water Agency, Sacramento County Code,

### Life Cycle Cost Analysis

Consider where your water goes and how much water you could save if you could capture and reuse waste water in your own life cycle cost analysis

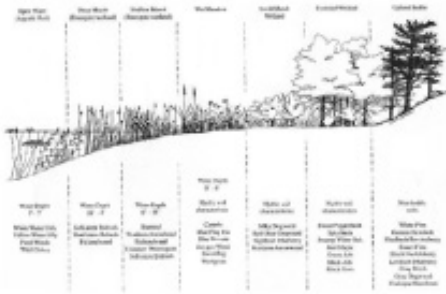
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## Water

# Waste Water Management

## Aquatic Plants: Wetlands, Retention/dete



### Definition

All plants have a purpose. In wetlands, certain plants can purify waste water in unique ways making wetlands a natural way to clean water.

### Overview

Wetlands are naturally occurring ways to purify water before entering in the rivers. Wetlands remove sediment, pollutants, and offer habitat for wildlife.

### Considerations

Consider the potential greenhouse gas production from waste water ponds per the EPA guidelines and requirements for environmental and human health. Consider the potential contaminants that may seep into the ground water. Locate natural water bodies to prevent pollution.

### Guidelines

These plants help clean waste water catchment areas: Water Hyacinth, Common Cattail, Bur Reed, Alligator Weed, Giant Bulrush (pg 332) and Kanafa.

### Incentives

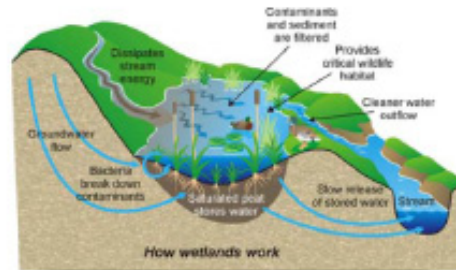
Cleaner water, natural treatment of contaminants in water cycle.

### Suppliers and Resources

Hart Restoration, Sustainable Sites & Landscapes

<http://www.epa.gov/wetlands/>,

<http://beachwoodhistoricalalliance.files.wordpress.com/2009/03/wetlands-diagram.jpg>, <http://www.newp.com/wetland.jpg>



### Life Cycle Cost Analysis

Consider the cost to build an efficient wetlands, retention and detention ponds capable of meeting the city and county code requirements for onsite treatment.



## Water

# BioSwale, Rain Gardens, and Biofiltratio



### Definition

Landscapes have the ability to clean and recharge the ground water from runoff of impermeable surfaces in storm events.

### Overview

Increase site infiltration by slowing water. Fast water can cause erosion.

### Considerations

Use the TR-55 curve number as mentioned in 3.16 of the Sustainable sites initiative; appendix G.

### Guidelines

Construct less impermeable surfacing to handle the rainwater quantity in storm events. Do not contaminate groundwater.

### Incentives

Promote water efficiency, groundwater recharge.

### Suppliers and Resources

River Friendly Landscape Guidelines, Sustainable Sites & Landscapes

[http://www.gabetilove.com/Pictures/Dry\\_Swale\\_Blueprint.gif](http://www.gabetilove.com/Pictures/Dry_Swale_Blueprint.gif),

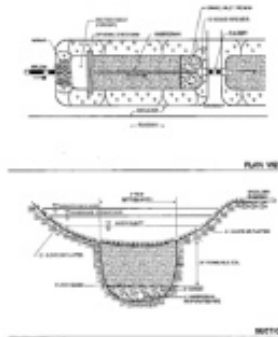
<http://www.werf.org/livablecommunities/images/mittabor.gif>,

<http://watercenter.unl.edu/WRR1/WaterResearch/HarveyRecharge.pdf>

Landscape Designer/Architect

### Life Cycle Cost Analysis

Consider the cost to build a swale system efficient enough to contain the water runoff from the impermeable area. Consider permeable surfaces to supplement the percolation, reduce pollution by sediment, chemicals among others.



## Water

# Reduce Potable Water Use



### Definition

Potable water is clean, fresh, drinkable water provided by your water purveyor from the Sacramento County Water Authority (SCWA). Check in the appendices of this guidebook for your water purveyor.

### Overview

The following practices will effectively reduce or eliminate potable use which may help reduce your water bills, reduce pressures from the city grid, and make you and your family water efficient and water wise.

### Considerations

Using gray water from your clothes washers, showers, bathtubs, and lavatory sinks can be used for irrigation water to reduce your water consumption at home. Gray water maybe considered at black water by county code if it sits in vegetative swales for more than 24 hours. Black water is water that is toxic under certain conditions like sewage. Black water should be properly treated. To find out how much rain you could collect on your roof, take the area of the roof (a x b), multiply by the annual rainfall amount, then multiply by .5618 to get your average annual gallons.

### Guidelines

Always check and meet or exceed city, county and state water use requirements. Use purification systems to remove impurities. Conduct a use analysis to see where you can reduce your usage.

### Incentives

SCWA offers incentives for water efficient appliances like toilets and washing machines.

### Suppliers and Resources

California Water Board, City of Sacramento Department of Utilities, Create an Oasis with Greywater, Sustainable Sites & Landscapes  
<http://www.msa2.saccounty.net/dwr/scwa/Pages/default.aspx>,  
<http://www.sacbee.com/livinghere/story/1640532.html>,  
<http://www.waterproofingadelaide.sa.gov.au/WPA/ProgressImplementation/RWU/HWU/>  
Sacramento County Water Authority, water purveyor, Landscape Architect

### Life Cycle Cost Analysis

depending on your family's water use and applicable codes, life cycle costs of potable water use may vary. Conduct your own comparisons.



## Water

# Storm water Pollution Prevention



### Definition

Storm water carries away garbage, sediment, oil, and fertilizers, among other things. With impermeable Hardscapes, wastewater can travel quickly to water bodies thus polluting waterways.

### Overview

Keeping water onsite will help reduce pollutants entering the streams and waterways that may be damaging to wildlife. Storm water can also cause erosion.

### Considerations

Before any construction activity, provide an Erosion and Sedimentation Control Plan (ESC) ask mandated by EPA. Designate Construction staging areas and restrict vehicle access to designated areas to reduce damage to the site.

### Guidelines

Stabilize with seed and mulch or construct barriers such as traps, fences, dikes, etc. Retain waste water onsite. Keep your car from leaking oil and other debris. Do not use water to wash off driveways and walkways, use an electric blower instead.

### Incentives

This is a city, county and state requirement for construction on sites larger than one acre.

### Suppliers and Resources

California Water Board

California Storm water Quality Assoc. (CASQA), EPA Construction General Permit, Local Codes, [http://ci.santa-rosa.ca.us/SiteCollectionImages/PWStorm\\_waterpollution.jpg](http://ci.santa-rosa.ca.us/SiteCollectionImages/PWStorm_waterpollution.jpg), [http://www.sullivancounty.org/planningPDF/Children%27s\\_coloring\\_sheet\\_-](http://www.sullivancounty.org/planningPDF/Children%27s_coloring_sheet_-)

[\\_A\\_homeowner%27s\\_guide\\_for\\_stormwater\\_pollution\\_prevention.gif](#)  
SWPPP Inspector, Contractor, Home owner



### Life Cycle Cost Analysis

Fresh Water is a precious commodity especially to some sensitive niches. Keeping water clean is the best thing for the life cycle

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## Water

# Waste Water Management

## Permeable Hardscapes



### Definition

Permeable Hardscapes can come in a variety of materials from pavers to concrete to help percolate water instead of contributing to water runoff.

### Overview

Water infiltration with porous materials will promote water efficiency and will recharge the ground water.

### Considerations

Identify ASTM compliant products, which meets US testing standards. Consider porous turf-paving systems in driveways and parking areas. Locate groundwater and prevent contamination of water bodies. Consider using recycled materials.

### Guidelines

Look at maps for locating water bodies that may benefit from water percolation. Keep slopes with areas of permeable Hardscapes close between .5 and 5% to allow percolation.

### Incentives

Improved water percolation and groundwater recharge

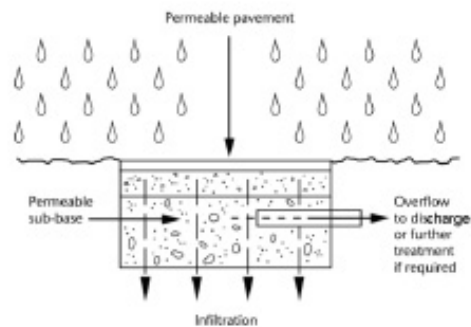
### Suppliers and Resources

Sustainable Sites & Landscapes

<http://www.astm.org/>,  
[http://www.epa.gov/oaintmt/stormwater/stormwater\\_techniques.htm](http://www.epa.gov/oaintmt/stormwater/stormwater_techniques.htm),  
<http://www.landarch.uiuc.edu/resources/courses/coursewebsites/LA441Web/Readings2006/EPA-PorousPaving.pdf>,  
<http://www.netregs.gov.uk/static/images/NetRegs/pavementAKP.GIF>

### Life Cycle Cost Analysis

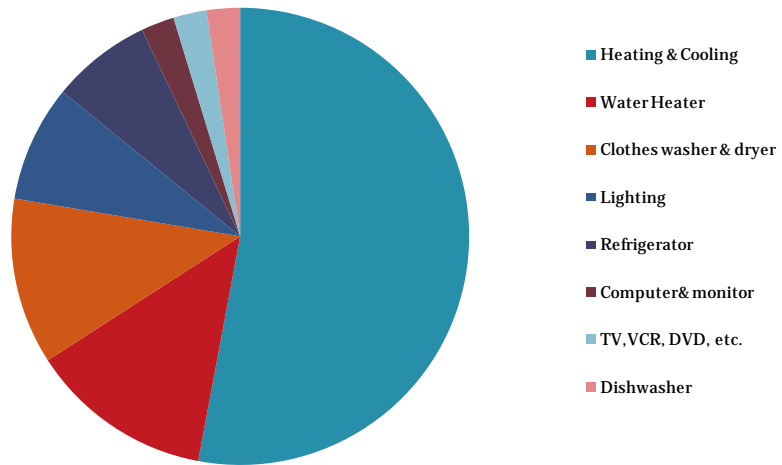
Consider the amount of water that runs off from your site and the ability to recharge the ground water in your area to conduct this life cycle cost analysis.



# 4

## Energy

### Where your energy bill goes



WHERE CAN YOU SAVE ENERGY WITH EFFICIENT LANDSCAPES?

## Energy

# On site Energy



### Definition

Solar power comes from Photovoltaic Panels (PV) or even the natural heat and light that you get from it just being up in the sky. Wind energy can come from wind mills or turbines. Geothermal energy comes from the heat of the ground. Bio-gas can come off of bio waste like the logs in your fireplace. Biomass can keep places warm or cool just by their consistent temperature. Hydro-electric is an option too if it's low impact to the environment and lucky enough to have water running through your property.

### Overview

Having your own energy source at home may mean you never have to pay electricity bills.

### Considerations

Consider free energy audits on your home. Verify your energy efficiency often and check where you can improve for rebates in energy. Ask for quotes from renewable energy specialists.

### Guidelines

Place solar panels in strategic areas in your landscape, where there is maximum exposure. Measure your energy use to see what kind of system you're going to need.

### Incentives

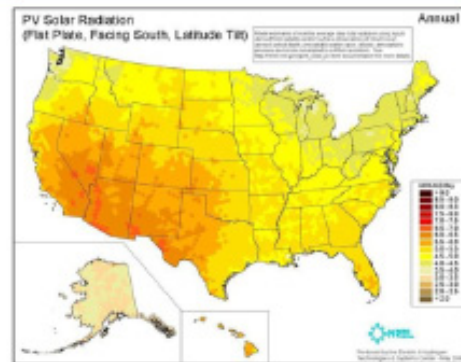
Energy Rebates for extra energy

### Suppliers and Resources

ECOS, REC Solar, Solar Cookers International, Solar Living Institute, Sustainable Sites & Landscapes  
Department of Energy, SMUD,  
[http://futurist.typepad.com/my\\_weblog/images/2007/08/19/773px\\_us\\_pv\\_annual\\_may2004\\_4.jpg](http://futurist.typepad.com/my_weblog/images/2007/08/19/773px_us_pv_annual_may2004_4.jpg),  
Solar sales associate, Landscape Architect, Electrical Contractor

### Life Cycle Cost Analysis

Consider your environment and resources before doing your own life cycle cost analysis. Choosing an appropriate energy source may improve the lifetime costs.



## Energy

# Efficient Lighting



### Definition

For night time landscapes, Outdoor lighting is a must to provide safety and functionality.

### Overview

Low voltage lighting and LEDs are efficient alternatives from other traditional bulbs such as High pressured Sodium, Magnesium Halide among other vapor and halogen lights.

### Considerations

Be aware of light pollution. Minimize the impact of nocturnal environments and improve the night sky visibility.

### Guidelines

Reduce lighting by a minimum of 80% per ASHRAE/IESNA standard 90.1-2004. Use a timer, motion control device, or other controls to preserve energy and lamps.

### Incentives

Efficient lighting for efficient energy use, and environmental stewardship to see the night's sky.

### Suppliers and Resources

Emigh Hardware, Home Depot, Lowes, Osh

ASHRAE/IESNA 90.1-2004, ANSI, CA energy code title 24,  
<http://www.sitelights.com/>,  
[http://www.ledlightingsupplier.co.uk/images/power\\_diagram.gif](http://www.ledlightingsupplier.co.uk/images/power_diagram.gif),  
<https://secure.outdoorfurnitureco.com/images/light.jpg>  
Landscape Architect, Electrical Engineer

### Life Cycle Cost Analysis

Choosing the right lamp for the job is half of it.  
Conduct a study with a lighting specialist to determine your best option.

Power Comparison LED Bulbs vs Conventional Halogen Bulbs		
Total LED Power	Equivalent to Halogen	Energy Saving
 1.3W → 20W	 10W	 8W
2.5W → 30W	10W	15W
4.0W → 50W	20W	17W
3x1.30W → 5W	30W	25W
3x2.50W → 8W	30W	40W
6x1.30W → 8W	60W	52W
9x1.30W → 14W	60W	71W

## Energy

### Biomass Energy



#### Definition

Biomass & Bio Gas are energy sources from organic material. The most commonly available source of heat and light is from burning wood.

#### Overview

Since renewable, efficient, biofuels can be cheaper and more practical than petroleum sources. Use for heat, light, electricity.

#### Considerations

It is illegal to burn on days that are not considered burn days - check at [sparetheair.com/burncheck](http://sparetheair.com/burncheck). Consider the byproducts of existing materials for alternative fuels like methane or natural gas. Biowaste can be a sufficient source of energy. Be aware of carbon and other byproducts from use.

#### Guidelines

Don't burn wood on days that are not permitted by the City of Sacramento. Biomass energy can lead to releasing carbon in the air, contributing to poor outdoor air quality.

#### Incentives

Cheaper, available, renewable fuel.

#### Suppliers and Resources

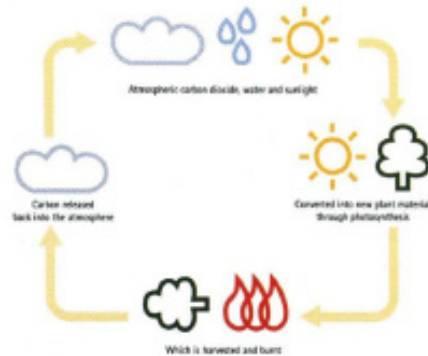
City of Sacramento, County of California

<http://www.sparetheair.com/burncheck.cfm>,  
<http://www.geniix.com/images/carbon-cycle.jpg>,  
[http://www.ambbeijing.um.dk/NR/rdonlyres/04853A83-59E6-40C7-8013-74E853784CC0/0/biomass\\_sources1.jpg](http://www.ambbeijing.um.dk/NR/rdonlyres/04853A83-59E6-40C7-8013-74E853784CC0/0/biomass_sources1.jpg),

Landscape Architect, Environmental Engineer

#### Life Cycle Cost Analysis

Consider the environmental, social and economical costs choosing bio fuels.



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# Energy

## Solar Power/Photovoltaics



### Definition

Flat plate solar collectors

### Overview

Solar energy is a renewable resource. While equipment may be expensive but returns for providing energy to the city grid may help the choice for this practice.

### Considerations

Consider the orientation of your home and the efficiency of the solar panel you choose.

### Guidelines

Choose the optimal location in your landscape for Photovoltaics.

### Incentives

You may be eligible for SMUD solar rebates and incentives

### Suppliers and Resources

Greenery, Home Energy Audits, REC Solar

<http://www.renewableenergyworld.com/assets/images/story/2009/1/23/1-1332-cansia-calls-for-dramatic-growth-of-solar-pv-in-ontario-through-higher-tariffs.jpg>,  
Solar Sales Representative

### Life Cycle Cost Analysis

Consider the price for the equipment and the return over time to determine the life cycle cost for this practice.

The Roadmap – A Two Program Approach

Segment	Generative		Consumptive	
	Traffic Parks	Commercial	Commercial	Residential (Retrofit)
Segment 100%	None	100	0	0
Investment Cost (\$ Mil)	\$0.00 - \$1.00	\$0.00 - \$0.50	\$0.00 - \$0.50	\$0.00 - \$0.50
Annual System Cost	\$10,000,000	\$1,000,000	\$100,000	\$100,000
Class	Residential (New)	Residential (Retrofit)	Commercial (New)	Commercial (Retrofit)
Physical Structure	Call: Equity	Call: Equity	Call: Equity	Call: Equity
Physical Benefits	Reduction in peak demand generation Customer development - generate capacity growth Contribution to clean renewable energy generation	Reduction in peak demand generation Customer development - generate capacity growth Contribution to clean renewable energy generation	Reduction in peak demand generation Customer development - generate capacity growth Contribution to clean renewable energy generation	Reduction in peak demand generation Customer development - generate capacity growth Contribution to clean renewable energy generation
Net-Cost/Yearly Revenue/Return Investment	\$0.00	\$0.10	\$0.10	\$0.10
Target to End Point?	2014 - 2016	2017 - 2018	2014 - 2016	2014 - 2016
Program Structure	Standard fee structure	Standard fee structure	Standard fee structure	Standard fee structure
Call Required?	Yes	Yes	Yes	Yes
Strong Requirements	Applies to all industrial, commercial and agricultural land	Applies to all industrial, commercial and agricultural land	Applies to all industrial, commercial and agricultural land	Applies to all industrial, commercial and agricultural land
Climate Data	Treated under to end items	Treated under to end items	Treated under to end items	Treated under to end items

\* Not fully aligned with appropriate government programs and support

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## Energy

# Shade and Passive Cooling



### Definition

With passive cooling, you can keep landscapes and surrounding climates cool in the Summer time by creating microclimates with the shade and moisture from plants.

### Overview

Shade from Trees, wind, vents and other things in your landscape can contribute to a cooler climate at home. See how your landscape can work for you following these simple guidelines.

### Considerations

Trees surrounding the building will effect the natural breezes but will provide shade. Choose the right shade tree as not all trees offer close to 100% shade, reducing the Urban Heat Island Effect.

### Guidelines

Design passive cooling systems with trees for the summer time as a base line. Draw air from favorable outdoor microclimates around the building. Use trees and landscaping to reduce cooling loads.

### Incentives

Cooler home with less energy bills, more enjoyable exteriors in Summer.

### Suppliers and Resources

Sacramento Municipal Utility District (SMUD), Sacramento Tree Foundation, Sustainable Sites & Landscapes  
<http://www.annewhistonspirn.com/images/la-passivecooling.jpg>,  
<http://images-0.redbubble.net/img/art/size:large/view:main/2282844-6-shade-tree.jpg>, <http://www.epa.gov/hiri/pilot/archives/Sacramento.pdf>  
Landscape Architect

### Life Cycle Cost Analysis

Determine how efficient your heating and cooling can be by using this practice and determine the savings when conducting your own life cycle cost analysis.

### PLANTS FOR PASSIVE COOLING



## Energy

### Onsite Energy



**Definition**

A renewable, natural energy. Wind is a resource in your landscape that is borrowed - not used.

**Overview**

Wind Turbines can create energy any way the wind blows and can be safer than wind mills. They're ideal in already windy landscapes.

**Considerations**

Use wind turbines instead of solar when adequate sun is not available and wind is available. Design the landscape with wind turbine in mind as to not break the wind speed.

**Guidelines**

Plan your site with wind in mind: choose a location with constant wind, or design the site's landscape to favor wind. Contact a wind power service rep, SMUD or a landscape architect to help you design one more efficiently.

**Incentives**

Quiet Power feed day and night, Energy refunds, and renewable materials.

**Suppliers and Resources**

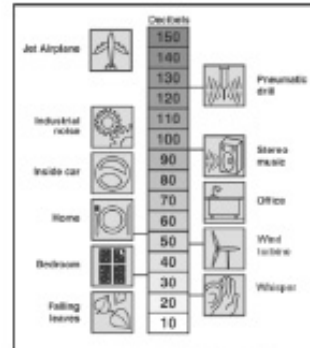
Greenery, Home Energy Audits

SMUD,  
[https://www.arigreenenergy.com/uploads/pics/solar\\_wind\\_system\\_02.jpg](https://www.arigreenenergy.com/uploads/pics/solar_wind_system_02.jpg),  
[http://l.treehugger.com/images/2007/10/24/maglev\\_wind\\_turbine.jpg](http://l.treehugger.com/images/2007/10/24/maglev_wind_turbine.jpg),  
<http://www.omafr.gov.on.ca/english/engineer/facts/03-047f12.gif>,

Landscape Architect, Wind Power Representative.

**Life Cycle Cost Analysis**

Conduct your own life cycle cost analysis to see what alternative power method works best in your landscape.



# 5

## Home Economics

### Be efficient by maintenance.

Don't have time or the money to build? No problem, you can do a lot of things to improve home efficiency just by improving maintenance. Here are some things to do in Sacramento.

Write a Maintenance Plan

- 

#### DID YOU KNOW?

Go to [SMUD.ORG](http://SMUD.ORG) FOR

- FREE SHADE TREES
- GET REBATES
- ATTEND A FREE CLASS: JUST CALL 916.732.6738
- OFFSET YOUR CARBON FOOTPRINT
- JOIN GREENERGY: FOR AN ADDITIONAL 6 DOLLARS ON YOUR BILL, ALL OF YOUR ELECTRICITY WILL BE FROM RENEWABLE RESOURCES
- CHECK THE SOLAR ELECTRIC PV ESTIMATOR
- HAVE IN-HOME ELECTRICAL REPAIRS DONE FOR \$6 A MONTH
- PROTECT YOUR ELECTRONIC EQUIPMENT FROM POWER SURGES FOR \$7 A MONTH
- VOLUNTEER TO GET REBATES FROM THE PEAK CORPS
- GET YOUR TREES TRIMMED AT 916.732.5854
- GET FREE WOOD CHIPS FOR YOUR GARDEN AT 1708 59TH STREET 9-2:30PM MONDAY -FRIDAY. CALL 916.732.5854

## Home Economics

### Beekeeping



#### Definition

Native Bees to California are solitary Bees. European Honey Bees collect in Broods. They can fly up to 3 miles from the brood, or colony.

#### Overview

You don't need that much space because bee's flight pattern goes straight up. For two colonies, you can expect to spend \$200-\$400 on boxes. The cost of basic tools you need can be around \$50. You can buy a pound of worker bees and a queen.

#### Considerations

Provide bees with a fresh water supply. Consider your neighbors when you have Bee Hive. Use a smoker and a small propane torch to harvest honey. Acquire proper clothing, like a bee veil and gloves. Start your new hive in the spring. Clean the wood of the box with a fire torch, it can give the bees the sensation of a hollow tree. Move hives at night. European Bees work hard to produce honey. All Bees, including native ones help pollinate plants.

#### Guidelines

Your city and county has various ordinances. In the city of Sacramento, you can keep up to two boxes. To resist bee stings, try to be free from strong smells and odors and don't make sharp movements.

#### Incentives

Free Honey & Pollination

#### Suppliers and Resources

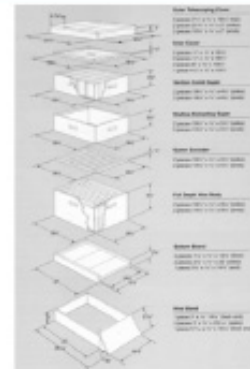
Sacramento Beekeeping Supplies, Wild West Feed Pets & Supplies

SABA, Sacramento Beekeeping Supplies,

Bee Keeper

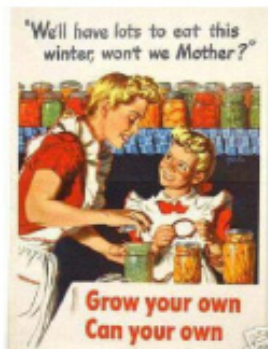
#### Life Cycle Cost Analysis

Bees are beneficial bugs for pollination. If you want to be a keeper, consider the value of honey and the costs throughout the life cycle.



## Home Economics

# Food & preserving



### Definition

Canning is a great way to preserve without drying. It is the science of creating a highly acidic environment so that you can eat the fruits and vegetables later in the year, safely.

### Overview

Don't be wasteful. Canning efficiently is easy to do without contaminating food.

### Considerations

When your garden has more fruits & vegetables than your family can eat before it goes bad, consider canning and preserving. You can dry fruit for leather or chips, you can dry vegetables and herbs. You can can tomato sauces, salsa, jams, and pickling.

### Guidelines

Make sure you have an air tight, acidic environment to keep food longer. Consult master preservers or take a class for methods to keep food from spoiling.

### Incentives

Don't waste all of your efforts! You can have fruits and vegetables all year long.

### Suppliers and Resources

Back to Basics, Homebrew Outlet

[www.homecanning.com](http://www.homecanning.com), <http://www.canningpantry.com/>,  
<http://www.takepart.com/blog/2008/10/24/canning-tomatoes-green-home-economics-101/>, <http://recipecurio.com/hot-water-bath-method/>

Master preserver classes (UC extension),

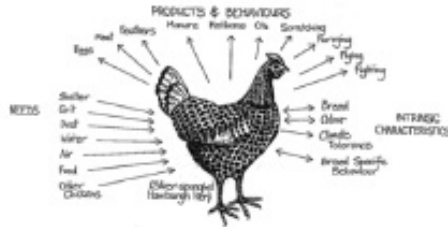
### Life Cycle Cost Analysis

Consider the benefit of preserving food that you produce in your life cycle cost analysis.



## Home Economics

# Chicken Cooping



### Definition

Chickens are good for eggs, meat, and chicken manure.

### Overview

The grocery store sells a dozen eggs for about \$4. Feed for chickens is about \$20 for a 5 lb. bag

### Considerations

Chicken raising is a part of permaculture at home. To complete a full circle for home nutrition and garden management.

### Guidelines

For Sacramento County, house lots must be 10,000 square feet and a conditional use permit must be acquired for \$4,500 - an expense paid off in about 10 years of chicken cooping for your family.

### Incentives

Permaculture

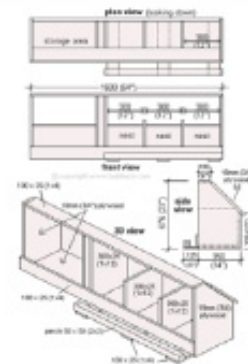
### Suppliers and Resources

California Grain & Feed Association, Capital Feed, River Valley Feed & Pet Supply, Western Feed & Pet Supply, Wild West Feed Pets & Supplies

<http://www.buildchickencoop.com/>, <http://www.henhutch.com/>,  
<http://www.msa2.sacounty.net/acr/Documents/Chickensand-zoning-letter-English.Edited.06.pdf>

### Life Cycle Cost Analysis

Conduct a lifecycle cost analysis to see if chicken raising is good for your family.



## Home Economics

### Ethnobotany

#### Food



#### Definition

The native edible plants of a region can tell you a lot about its culture. Food driven societies build their culture around the availability of food and the availability throughout time.

#### Overview

Even though Sacramento is an Americanized culture, it is still possible to find regional influences from the native edibles. Miwok culture is a great example of successful living in the Sacramento Region.

#### Considerations

Consider buying only local food to see how Sacramento like you can be.

#### Guidelines

Practice eating a more native Sacramento diet to enhance native culinary experiences from your own backyard.

#### Incentives

Cheaper better food, Promoting Native Sacramento Culture,

#### Suppliers and Resources

California Native Plant Society, California Native Plants for the Garden, Eco Landscape California, Sustainable Sites & Landscapes <http://www.sacatomato.com/Edible>, <http://www.greatvalley.org>, <http://www.sacog.org/rucs/farmers-markets.cfm>, <http://www.slowfood.com/>, <http://www.angelisland.org/miwok.htm>, [http://ctap295.ctaponline.org/~ccasner/images/igr\\_preping\\_acorn\\_meal.jpg](http://ctap295.ctaponline.org/~ccasner/images/igr_preping_acorn_meal.jpg)[http://www.bluecomcomics.com/archive/2008\\_02\\_01\\_narchive.html](http://www.bluecomcomics.com/archive/2008_02_01_narchive.html)

Sierra Club: Complete Book of Edible Landscaping by Rosalind Creasy, [http://www.lamerseeds.com/\\_pages/books.html](http://www.lamerseeds.com/_pages/books.html)

#### Life Cycle Cost Analysis

Determine the cost of the food you eat after transportation, pesticides and other environmental hazards when considering this life cycle cost analysis.



We can build Sacramento a Sustainable Future from our own backyard



## Home Economics

# Organic Vegetable Garden

Food



### Definition

Organic vegetable gardening is a practice that uses material that was once alive. This excludes chemical fertilizers but includes composting. Be sure to keep a diary every season on your experiences.

### Overview

Sacramento's 1941 Front Yard Landscape Code Ordinance 17.68.010 was amended in 2007, allowing Sacramento Residents to plant fruits and vegetables in the front yard.

### Considerations

Don't disturb the soil to much will tilling which can disturb microbes and beneficial soil biota. You can hire a backyard farmer, a farmer hired weekly to maintain your backyard garden and leave a basket of vegetables you every week. Avoid physical controls, barriers, handpicking, and spraying jets which can uncurl pests. Use natural bio-icide to control pests like praying mantis and ladybugs.

### Guidelines

Rotate crop seasons with nitrogen fixing beans. Don't have a garden? Check with your local farms and farms markets, and local Community Supported Agriculture (CSA) subscriptions.

### Incentives

Therapy, Fresh fruits & vegetables

### Suppliers and Resources

Community Gardens Coalition, Gaia's Garden, a guide to home scale permaculture, How to grow more vegetables on less land ..., Organic Sacramento, Sacramento Gardening, Soil Born Farms, Sustainable Sites & Landscapes, Teaming with Microbes...

[www.soilborn.org](http://www.soilborn.org) a source for farms, organic markets and opportunities for food.

[http://www.cityofsacramento.org/parksandrecreation/parks/community\\_garden.htm](http://www.cityofsacramento.org/parksandrecreation/parks/community_garden.htm), City of Sacramento Community Gardens - rent a plot today!, <http://www.ethicalworld.co.uk/pics/organic-tomato.png>, [http://www.laminatedgardenguides.com/images/growing\\_vegetables\\_big.JPG](http://www.laminatedgardenguides.com/images/growing_vegetables_big.JPG)

Biointensive gardening,

### Life Cycle Cost Analysis

Consider the initial costs for vegetable seeds and organic methods throughout the season and the year. See how much your investments can grow.



We can build Sacramento a Sustainable Future from our own backyard



## Home Economics

# Gleaning



### Definition

Garden + Cleaning = Gleaning. Before fruit is too far past due, gleaning groups collect unused fruits and vegetables for mass use.

### Overview

Before they start to decompose, gleaning fruit and vegetables is a great resource.

### Considerations

Join gleaning groups to collect citrus for marmalade, olives for olive oil or find other uses for fruits and vegetables in a mass ripening. Be sure to get permission from your neighbors.

### Guidelines

Ask your neighbors to see if they are willing to allow gleaning.

### Incentives

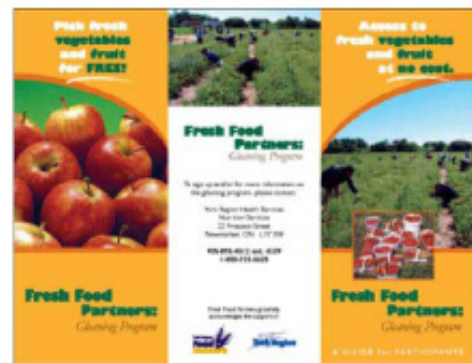
Free resources, efficient harvesting

### Suppliers and Resources

Organic Sacramento, Soil Born Farms, UC Davis Student Farm  
[http://i.pbase.com/o5/33/659633/1/69279228.GLzInT15.DSC\\_1924copy.jpg](http://i.pbase.com/o5/33/659633/1/69279228.GLzInT15.DSC_1924copy.jpg), <http://www.yrfn.ca/images/gleaning.jpg>,  
<http://www.usda.gov/news/pubs/gleaning/content.htm>  
<http://www.gftw.org/>,

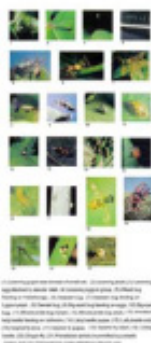
### Life Cycle Cost Analysis

Finding ways to reuse discarded or unwanted things can greatly improve a lifecycle cost analysis. Conduct your own to determine its value.



## Home Economics

# Maintenance Integrated Pest Management (IPM)



### Definition

IPM is a practice focused on using natural biological systems to control invasive species and blight.

### Overview

Nature is a sensitive thing, killing off insect populations with soaps, oils and systemic, they are all no match to the natural order of insect control which may promote the vitality of the plants by preserving beneficial insects in the soil.

### Considerations

Consider asking for a maintenance plan using IPM tactics from your landscape designer. Limit insecticidal soaps and oils which can kill beneficial insects

### Guidelines

Introduce and promote beneficial insects in your landscape like Ladybugs and Praying Mantis. Promote natural deterrents from plants like Iron Phosphate for slugs and snails.

### Incentives

No chemicals and healthier landscapes

### Suppliers and Resources

River Friendly Landscape Guidelines, Sacramento Gardening, Teaming with Microbes..., UC Davis Student Farm

<http://www.ipm.ucdavis.edu/>,

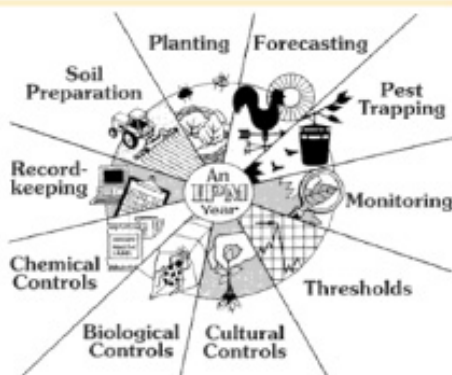
<http://insects.tamu.edu/images/insects/color/cotton/benefic.jpg>,

[http://www.ipminstitute.org/images/ipm\\_year.gif](http://www.ipminstitute.org/images/ipm_year.gif),

<http://www.pestproducts.com/sluggo.htm>,

<http://www.epa.gov/opp00001/factsheets/ipm.htm>

UC IMP online. <http://www.ipm.ucdavis.edu/>, EPA



### Life Cycle Cost Analysis

Practicing IPM will greatly decrease the use of pesticides by promoting beneficial insect and other natural methods

We can build Sacramento a Sustainable Future from our own backyard

# iv Appendices

## **A**

Service Professionals Directory

## **B**

Table of Maps



# Service Professionals Directory

## Help me!

Look in the directory to find help on any of the products and services mentioned in this guidebook

Many people in Sacramento can help you with your green project. But if it is home efficiency and improvement to better your bills, look for a Landscape Architect. An Architect can help you build a house or remodel with sustainable materials, an Interior Designer can help you with pick paint, shades and furnishings, but a Landscape Architect can design communities & habitat. They can site a new home for optimal efficiency, or make current home energy and water efficient without waiting for plants to grow. Landscape Architects are trained to be environmentally conscience and good Landscape Architects design sustainable systems for people and wildlife.

LOOKING FOR SUSTAINABLE BUSINESSES IN SACRAMENTO? CHECK OUT:

[HTTP://WWW.SACBERC.ORG/WEB/PROGRAMS/SSBP/](http://www.sacberc.org/web/programs/ssbp/)

## What can you do with the Directory?

Find Service Professionals in Sacramento

Find Businesses

Find Help and Expert Advice

Find Books and on-line resources

## Directory

Company	Business Phone	Address	City	State	ZIP Code	Web Page	Why contact?
EDAW	916.414.5800					<a href="http://www.sacogardens.org">www.sacogardens.org</a>	
Altista Corp	1.800.240.3340					<a href="http://www.hcmecanning.com">http://www.hcmecanning.com</a>	Canning
American Planning Association (APA)	312.785.6363						
Amtrak	1.800.USA-RAIL					<a href="http://amtrak.com">amtrak.com</a>	Regional Train Depot
Attracting Birds, Butterflies and other							
Back to Basics	1.801.571.7349					<a href="http://www.backtobasicsproducts.com">www.backtobasicsproducts.com</a>	Canning
Bellmarine	916.442.9089						Recycles concrete
Bredshaw Feed & Pet Supply	916.369.8225						
Butterfly Gardening							
California Grain & Feed Association	916.441.2272						
California Native Plant Society						<a href="http://www.cnpfa.org">www.cnpfa.org</a>	
California Native Plants for the Gard						<a href="http://www.sacvalleynews.org">www.sacvalleynews.org</a>	
California Water Board	916.341.5254					<a href="http://www.waterboards.ca.gov">www.waterboards.ca.gov</a>	State water resources control board
Capsy Fruits & Vegetables	1.800.796.6009	23806 State Highway 16	Capay	CA	95607	<a href="http://www.farmfreshtoyou.com">www.farmfreshtoyou.com</a>	\$29 per box
Capital Feed	916.445.6123						
City of Sacramento							
City of Sacramento Department of U	916.808.8260						
Coco Ranch	530.753.7003	1105 Kennedy Place #1	Davis	CA		<a href="http://www.cocoranch.com">www.cocoranch.com</a>	In season fruit basket, 30 week programs
Community Gardens Coalition	916.508.6025					<a href="http://saccommunitygardens.org">saccommunitygardens.org</a>	Grown your own
County of California	916.875.5555						
Cradel to Cradle							
Create an Oasis with Greywater						<a href="http://www.oasisdesign.net/greywater">www.oasisdesign.net/greywater</a>	
CRN	1.800.354.8211						Foreclosure auction

<u>Company</u>	<u>Business Phone</u>	<u>Address</u>	<u>City</u>	<u>State</u>	<u>ZIP Code</u>	<u>Web Page</u>	<u>Why contact?</u>
Custom Fireside Shop	916.331.2423	5545 Auburn Blvd.	Sacramento	CA	95841	<a href="http://www.customfireside.com">www.customfireside.com</a>	Fireplaces
Del Rio Botanical/Peabody Ranch	916.919.1843						
Eat Well Farms	866.627.2465	2657 Portage Bay East #3	Winters	CA		<a href="http://www.eatwell.com">www.eatwell.com</a>	Sustainable, full circle farm subscription (\$19-\$76)
Eco Landscape California						<a href="http://www.ecolandscaping.org">www.ecolandscaping.org</a>	
ECOS	916.444.0022						
Enigh Hardware	916.482.1900	3555 El Camino Avenue	Sacramento	CA			
Excaltour	916.381.4254	6083 Power Inn Road	Sacramento	CA		<a href="http://www.excaltourhydrator.com">www.excaltourhydrator.com</a>	
Farmer Fred						<a href="http://www.farmerfred.com">www.farmerfred.com</a>	
Florin-Perkins Landfill	916.383.2660						Recycles concrete
Forever Healthy Organics	916.781.9551					<a href="http://www.foreverhealthyorganics.com">www.foreverhealthyorganics.com</a>	
Full Belly Farm	530.796.2214	P.O. Box 251	Guinda	CA	95637	<a href="http://www.fullbellyfarm.com">www.fullbellyfarm.com</a>	
Gala's Garden, a guide to home scale							
Good Humus Produce	530.787.3187	12255 Co. Road 94A	Capay	CA	95607		
Green Sacramento	916.483.4332	1931 H Street	Sacramento	CA	95811		Interior home building products
Green Sacramento Builders	916.749.5804	1931 H Street	Sacramento	CA	95811	<a href="http://www.greensacramentobuilder.com">www.greensacramentobuilder.com</a>	Green Construction
Greenery	1.888.742.SMUD					<a href="http://www.smud.com/green">www.smud.com/green</a>	Get local, renewable energy
Greyhound	1.800.231.2222					<a href="http://greyhound.com">greyhound.com</a>	Regional Bus Depot
Hart Restoration							
Home Depot		Florin Road	Sacramento	CA			
Home Energy Audits						<a href="http://smud.org/energysmart(online.html)">smud.org/energysmart(online.html)</a>	
Homebrew Outlet	916.348.6322	5528 Auburn Blvd.	Sacramento	CA	95641		
How to grow more vegetables on less						<a href="http://www.growintensive.org">www.growintensive.org</a>	
Impossible Acres	530.750.0451	26565 Road 97D	Davis	CA	95616	<a href="http://www.impossibleacres.com">www.impossibleacres.com</a>	
Kiefer Landfill	916.363.5330						Cump
Kitchen Crafts	1.800.776.0575					<a href="http://www.kitchencrafts.com">www.kitchencrafts.com</a>	



Company	Business Phone	Address	City	State	ZIP Code	Web Page	Why contact?
Lowes							
Native Treasures							
Natural Capitalism...							
Natural Trading Company	916.663.9568					<a href="http://naturaltradingco.com">http://naturaltradingco.com</a>	
North Area Recovery Station	916.875.5555						
Organic Sacramento							
Osh							
Pacific Star Garden	530.666.7308	20872 Co. Road 99	Woodland	CA	95695		
Paratransit	916.429.2009					<a href="http://paratransit.org">paratransit.org</a>	For disabled and elderly
Peas and Harmony	916.247.5775		Granite Bay	CA			
PG&E	1.800.743.5000					<a href="http://www.pge.com">www.pge.com</a>	
PJ Dunn's Working Red Worms	209.712.3646	27395 N Kennefick Rd	Galt	CA	95632	<a href="http://www.harvestingrainwater.com">www.harvestingrainwater.com</a>	
Plants and Landscapes for Summer							
Rainwater Harvesting for Drylands							
REC Solar							
Regional Transit, Lightrail	916.321.BUSS					<a href="http://www.sact.org">www.sact.org</a>	Bus, Lightrail routes & fees
ReStore	916.440.1215					<a href="http://sfbj.org">sfbj.org</a>	Reusable Building materials
River Friendly Landscape Guidelines						<a href="http://www.riverfriendly.org">www.riverfriendly.org</a>	
River Valley Feed & Pet Supply	916.991.0077					<a href="http://www.rivervalleyfeed.com">www.rivervalleyfeed.com</a>	
Rivending Farm	530.796.3802	P.O. Box 42	Guinda	CA	95637		
Rudolf Steiner College Biodynamic College and CSA	916.961.8727	9200 Fair Oaks Blvd.	Fair Oaks	CA	95628	<a href="http://www.steinercollege.edu">www.steinercollege.edu</a>	2 acre farm practicing biodynamic farming
Sac Area Bicycle Advocates	916.444.6600					<a href="http://sacbike.org">sacbike.org</a>	Bike Routes for commuting
Sac Vegetarian Society	916.444.6600					<a href="http://sacramentovegetarian.society.org">sacramentovegetarian.society.org</a>	
Sacramento Bag Company	916.441.6121	530 Q Street	Sacramento	CA			Bags
Sacramento Beekkeeping Supplies	916.451.2337	2110 X Street	Sacramento	CA	95818		Beekkeeping
Sacramento Gardening						<a href="http://www.sacramentogardening.com">www.sacramentogardening.com</a>	

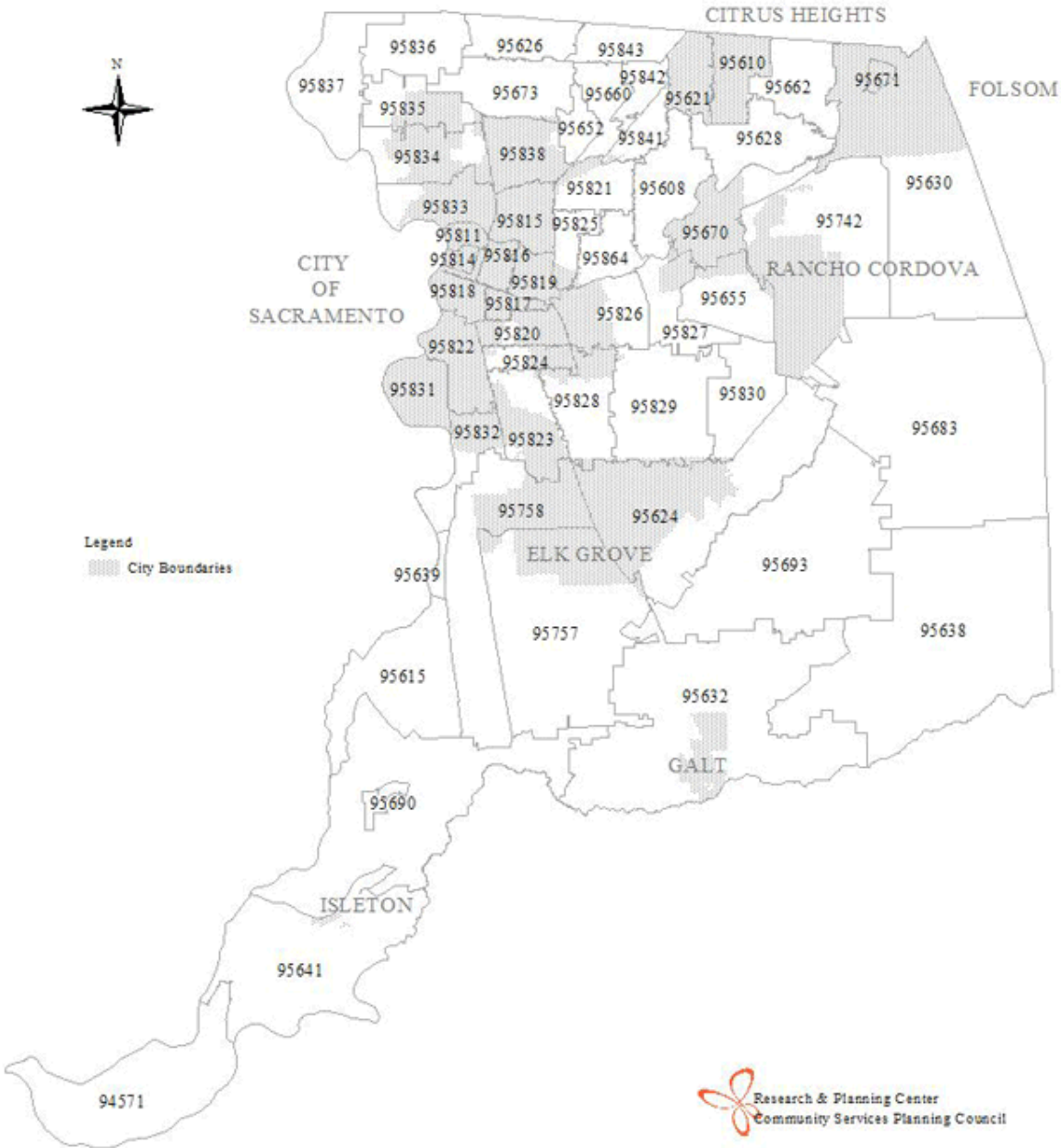
Company	Business Phone	Address	City	State	ZIP Code	Web Page	Why contact?
Sacramento Municipal Utility District (SMUD)	1.868.742.7683	6301 S Street	Sacramento	CA	95817	<a href="http://www.smud.org">www.smud.org</a>	Incentives and Rebates for energy efficiency
Sacramento Natural Foods Co-op	916-455.2667	1900 Alhambra Blvd.	Sacramento	CA		<a href="http://www.sacfoodcoop.com">www.sacfoodcoop.com</a>	Grocery
Sacramento Regional Travel Informa	511						Highway, transit, carpooling information
Sacramento Tree Foundation	916.924.8733					<a href="http://www.sacrejtsff.org">www.sacrejtsff.org</a>	Free Shade Trees
SNFC Learning Center	916-455.2667					<a href="http://www.sactree.com">www.sactree.com</a>	Classes in cooking, herbs, yoga, ect.
Soil Born Farms	916.363.9685	P.O. Box 661175	Sacramento	CA	95866	<a href="http://www.soilborn.org">www.soilborn.org</a>	
Soil Born Farms	916.363.9687	2140 Chase Drive	Rancho Cordov	CA	95670	<a href="http://www.soilborn.org">www.soilborn.org</a>	
Soil Born Farms	916.485.9687	3000 Hurley Way	Sacramento	CA	95866	<a href="http://www.soilborn.org">www.soilborn.org</a>	
Solar Cookers International	916-455.4499					<a href="http://www.solarcookers.org">www.solarcookers.org</a>	Solar Cooking and Recipes
Solar Living Institute	707.744.2017					<a href="http://solarliving.org">solarliving.org</a>	Skills-building workshops
Supershuttle Blue Van	1.800.BLUEVAN					<a href="http://www.supershuttle.com">www.supershuttle.com</a>	Transport to Sacramento International Airport
Sustainable Landscape Construction							
Sustainable Sites & Landscapes	916.605.6660	1931 H Street	Sacramento	CA	95811		Sustainable Landscape Design and Site Planning
Teaming with Microbes...							
Terra Firmita Farm	530.756.2800	P.O. Box 836	Winters	CA	95694	<a href="http://terrafirmitafarms.com">terrafirmitafarms.com</a>	Serves the best restaurants in San Francisco
The Encyclopedia of Ornamental Gra							
The Soap Saloon/Sunburst Bottling	916.334.4894	4500 Beloit Drive	Sacramento	CA	95838	<a href="http://www.soapsaloon.com">http://www.soapsaloon.com</a>	Soap Making
UC Davis Student Farm		Pomology Dept. University	Davis	CA	95616	<a href="http://www.usanorth.org">www.usanorth.org</a>	Excavation Reports
Underground Service Alert North	1.800.227.2600					<a href="http://www.msa.sacounty.net/sacgreen">www.msa.sacounty.net/sacgreen</a>	Drop off recyclables or hazardous waste
Waste Drop Off	916.875.7100						
Watanabe Farms	916.789.4752						
Western Feed & Pet Supply	916-452.4741					<a href="http://www.westernfeedandpet.com">www.westernfeedandpet.com</a>	
Wild West Feed Pets & Supplies	916.372.5225					<a href="http://www.boyersbest.com">www.boyersbest.com</a>	

# b

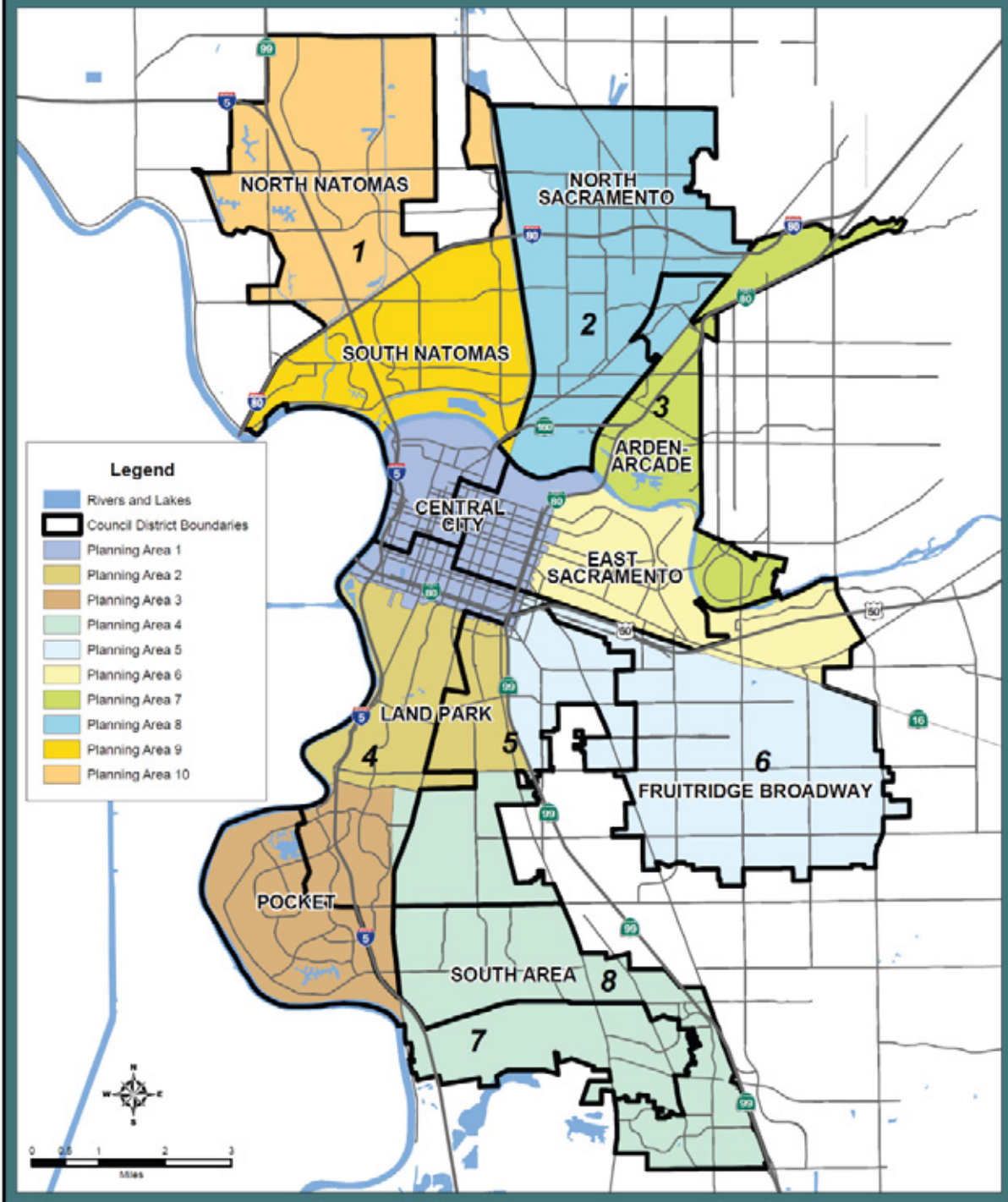
## Table of Maps

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# ZIP Code Map of Sacramento County



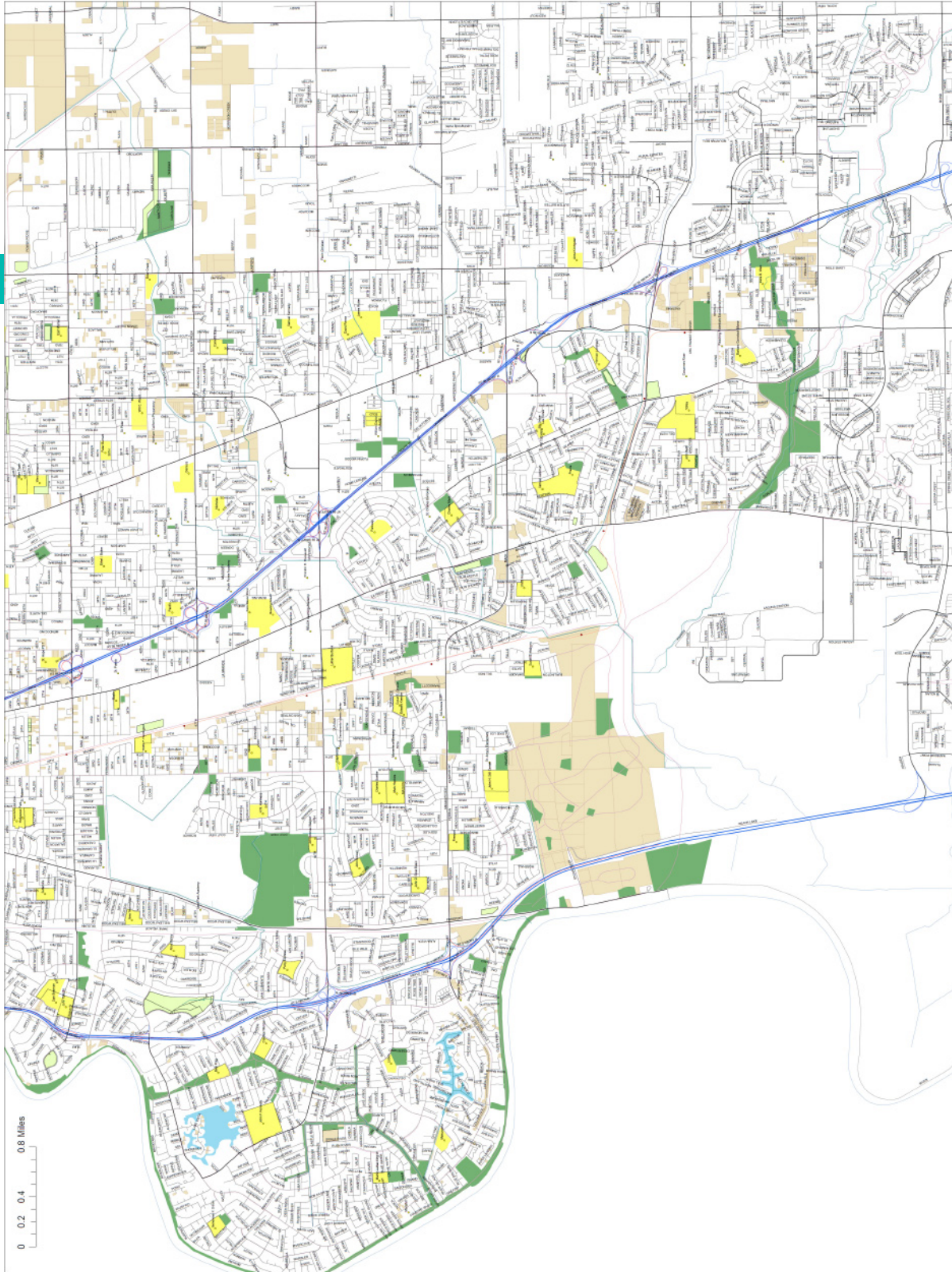
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chapter 1 Sacramento Council District & Planning Area Map

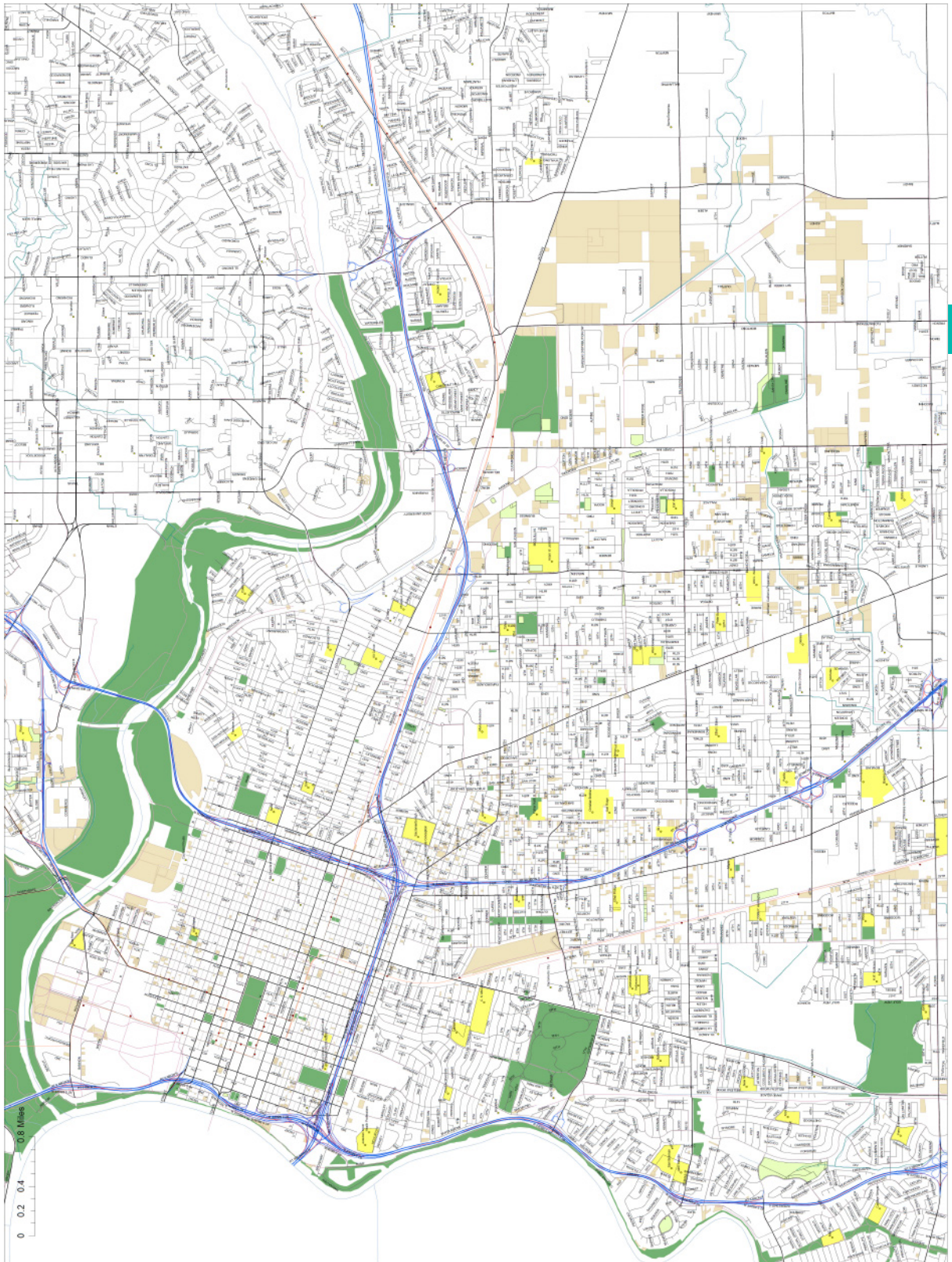
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**chapter 1** South Sacramento Area - Parks and Schools



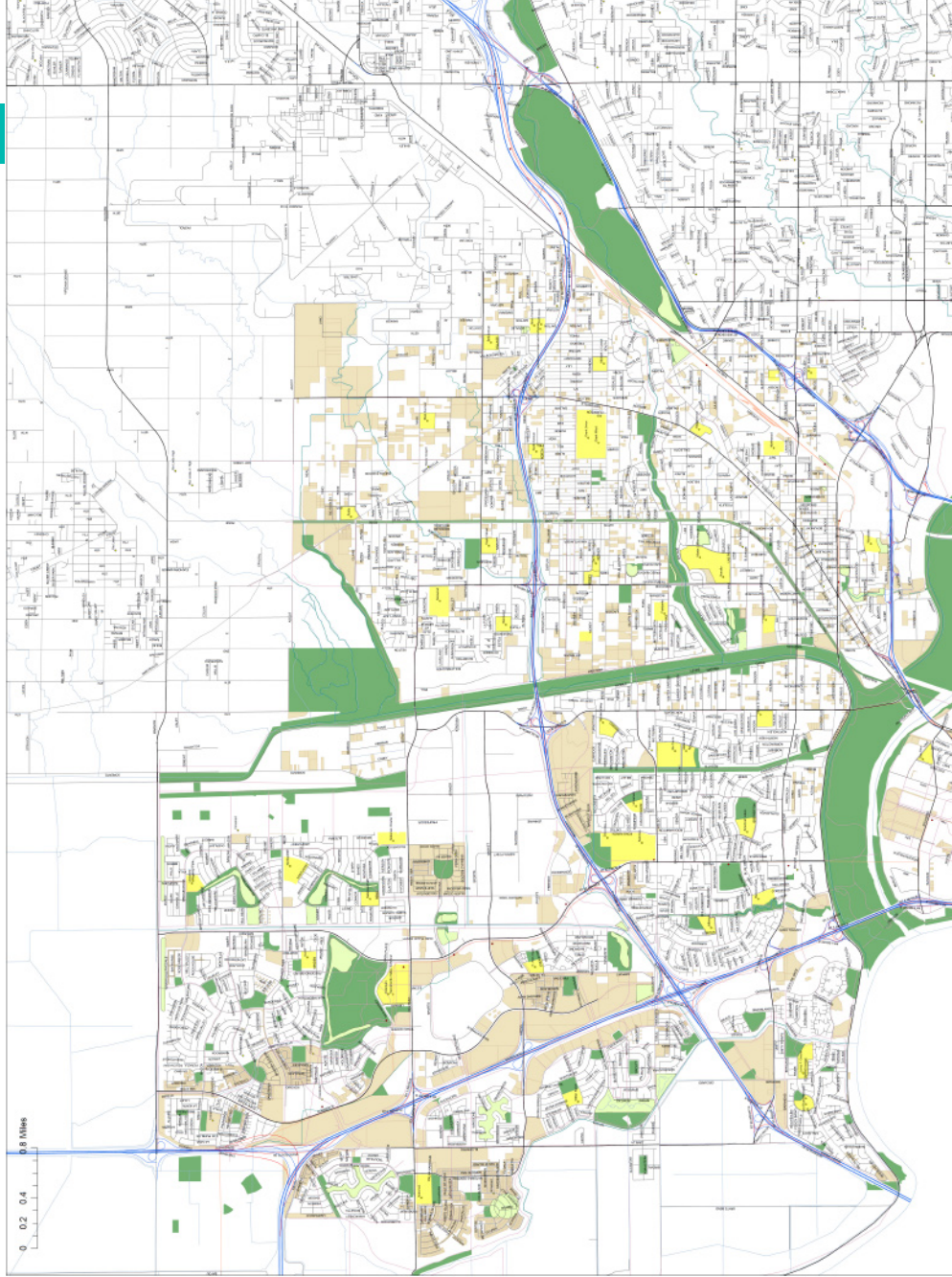
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**chapter 1** DownTown/MidTown Area - Parks and Schools

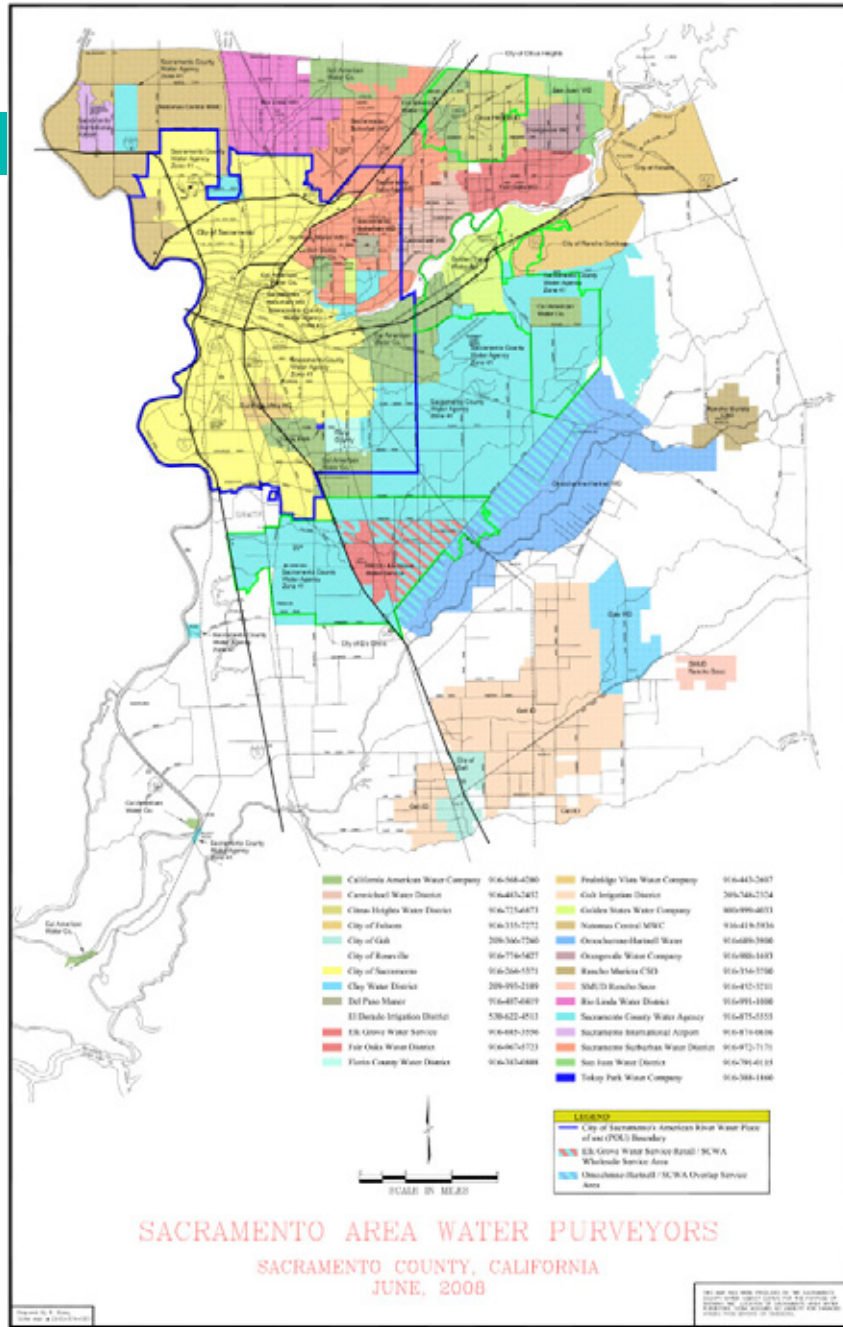


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chapter 1 North Sacramento Area - Parks and Schools



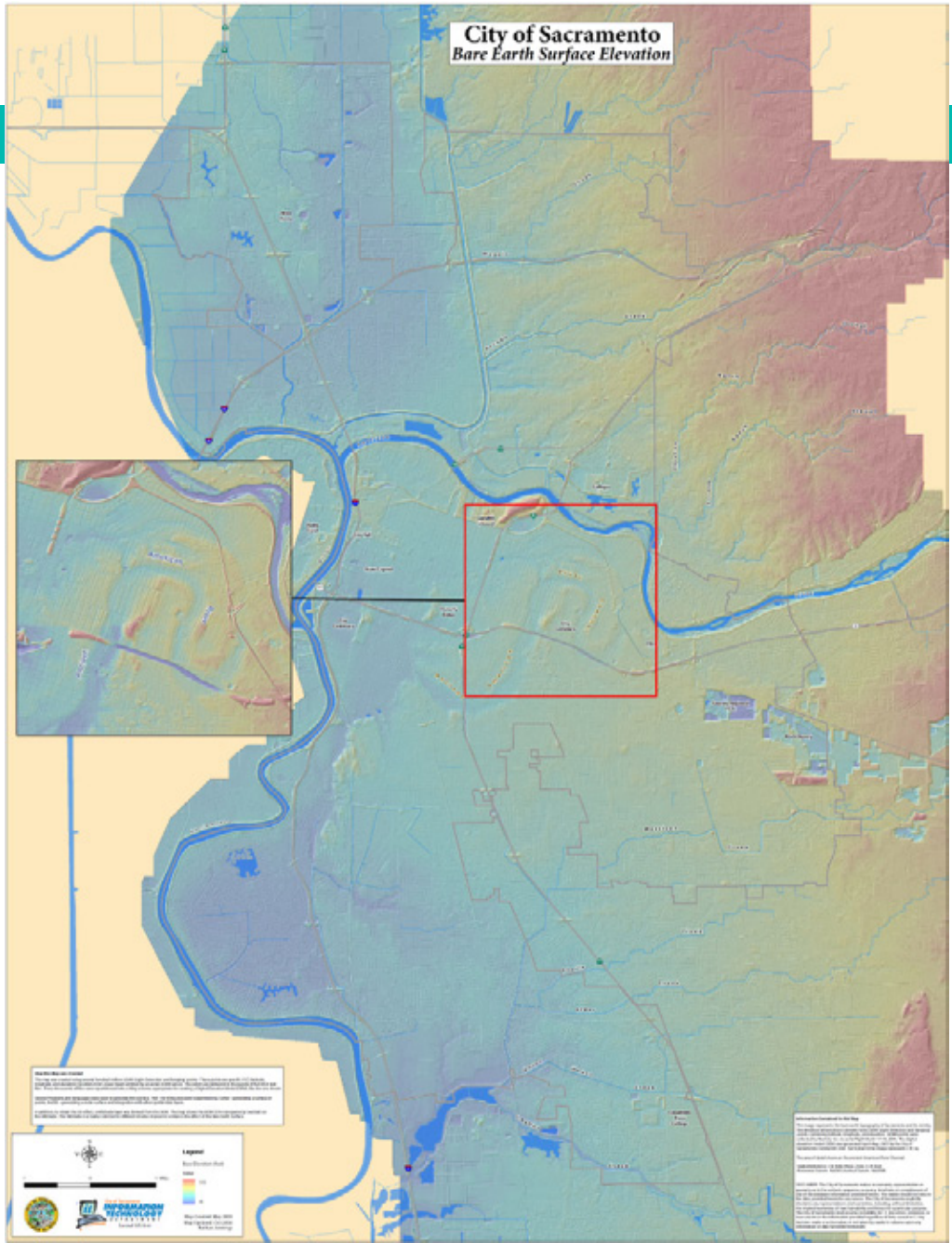




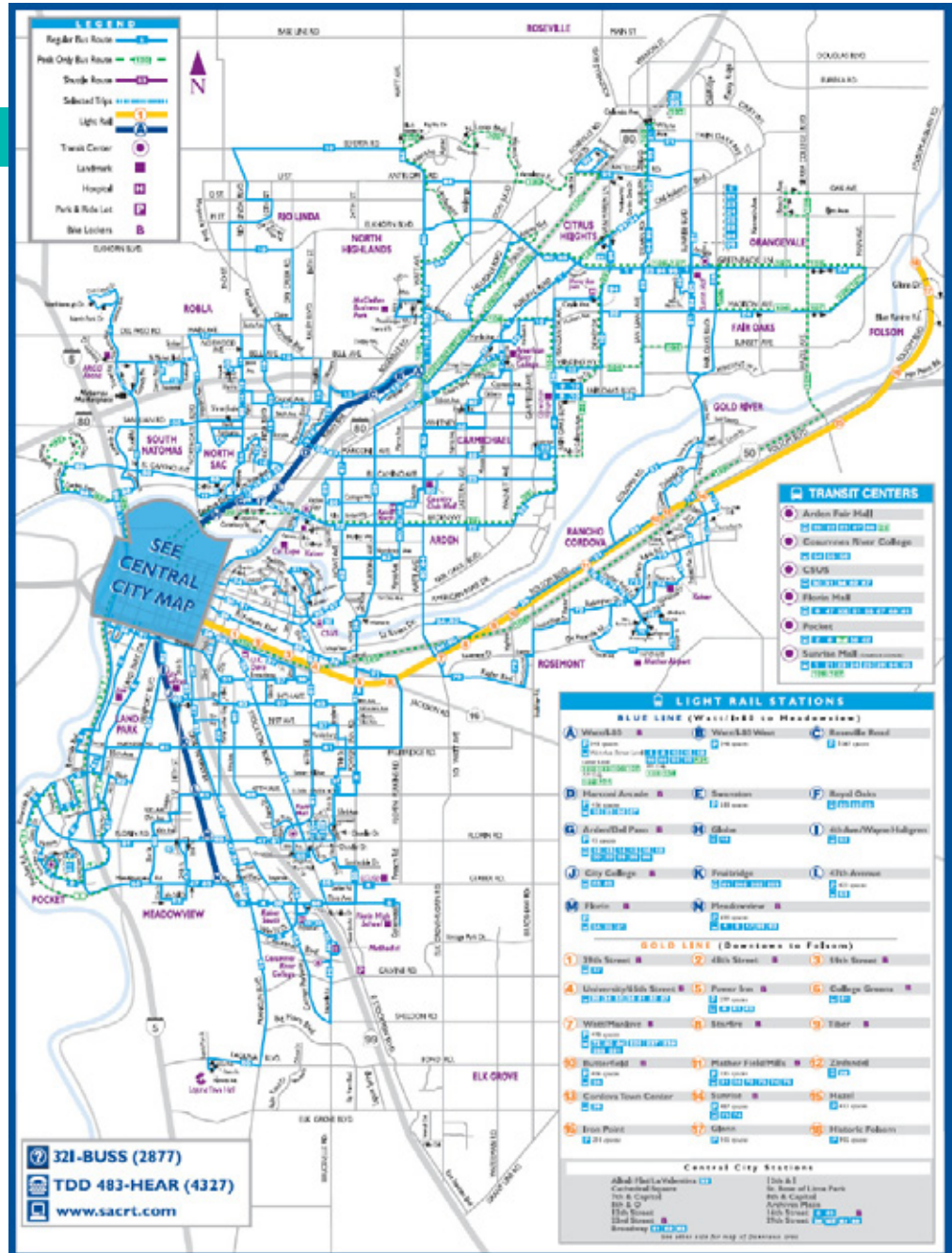
About your water purveyor.

1. Consider the service type when you buy
2. Check your rates frequently.
3. Check for rebates and incentives
4. Check for water use restrictions

chapter 1 know the topography of your site.

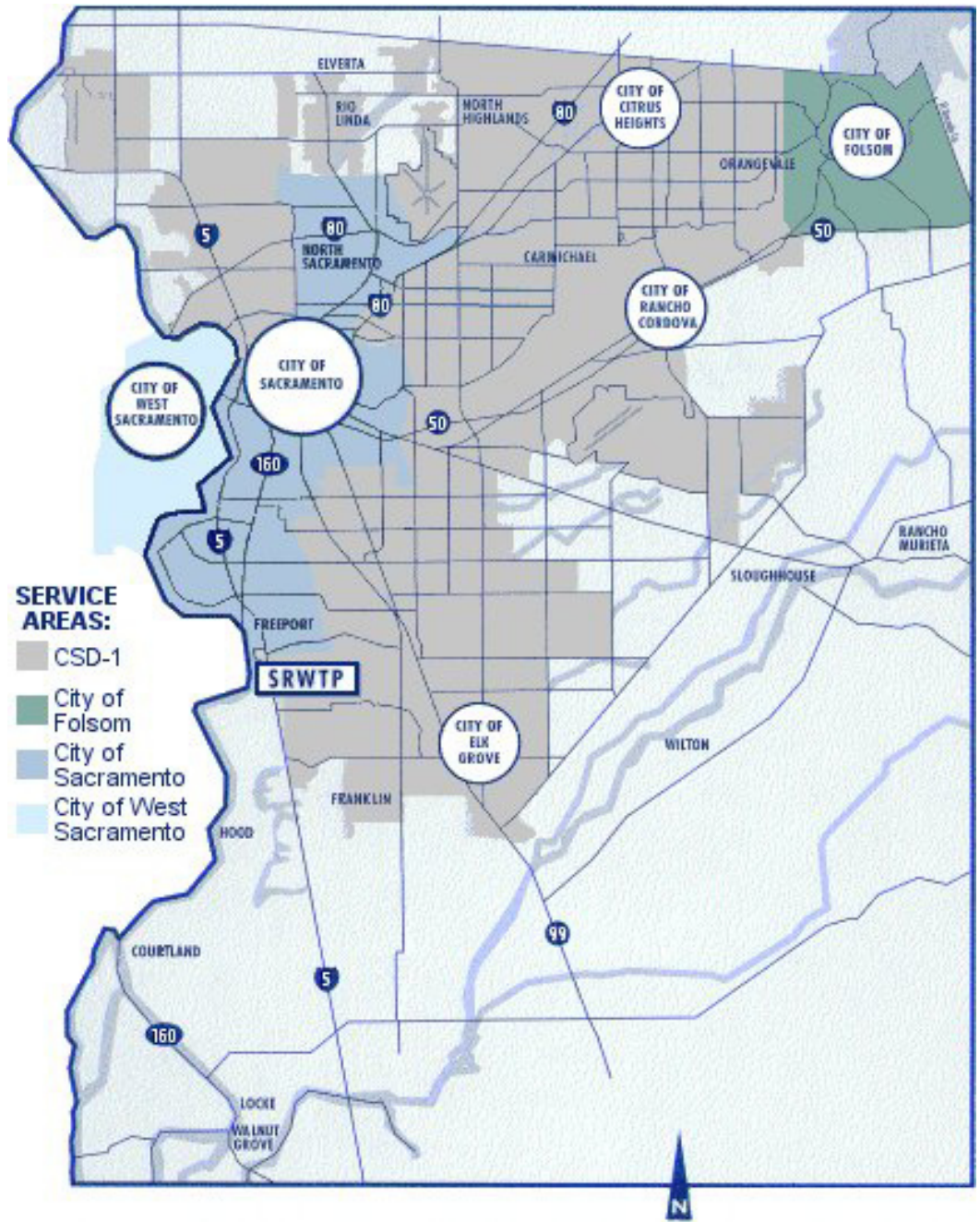


chapter 1 Public Transportation





chapter 1 sewer service Areas





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