# Landscape Guidelines and Policy

## ACKNOWLEDGEMENT:

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COVER PHOTO: This view of Harkins Slough shows the abundant diversity of native species.

# Intent

The landscape guidelines introduce sustainable practices that may be applied to both City owned and private landscapes and are intended to address implementation strategies, design aesthetics, and maintenance of planting and irrigation. The guideline language may be useful to reference during plan review or maintenance audits. Future City ordinances and policies may reference or build upon these principles to incorporate sustainable practices into new legislation. Finally, homeowners, maintenance personnel, property managers and owners, may reference the guidelines to learn about sustainable practices and find links to useful information.

The guidelines are developed around a series of sustainability principles and goals that are tailored to the Watsonville environment. The urbanized areas of town are interlaced with natural wetlands, creeks, and rivers that elevate the importance of sensitive habitats and water resource protection. Guidelines also address particular design goals – each strengthening the unique character of Watsonville.  The organizing principles are:

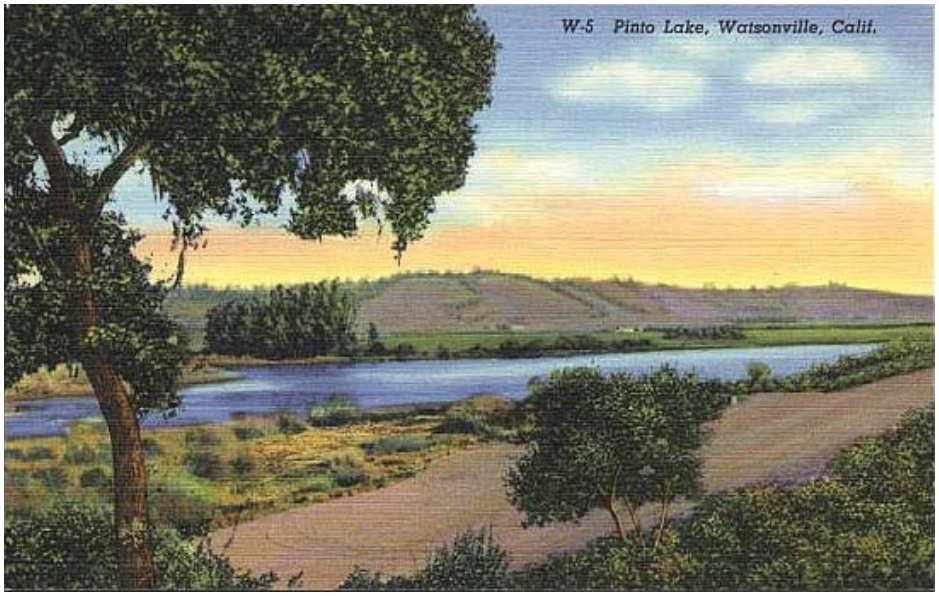
Sustainability Principles

- Protect Natural Waterways – Wetlands and River
- Conserve Groundwater and Prevent Water Waste
- Preserve and Create Habitat
- Conserve Materials and Energy

Design Principles

- Reinforce a Sense of Place
- Make Watsonville More Beautiful and Livable
- Improve Safety
- Protect Buildings and Infrastructure

Aerial View of the Pajaro River Watershed  (Source: pajarowatershed.org)




Historic postcard of Pinto Lake, Wastonville  (Source: Santa Cruz Public Librareis)

# Sustainability Guidelines

## Protect Natural Waterways – Wetlands and River

All of the rainwater that falls within the city of Watsonville makes its way through drain pipes into either the city's wetlands (sloughs) or the Pajaro River. Any pesticides, herbicides and sediment from soil erosion that is picked up in rainwater will make its way into these valuable natural resources. The following practices will protect the wetlands and river from pollution from the city's gardens and planted areas.

### CAPTURE AND TREAT RAINWATER ON SITE

Typically, city drainage systems are designed to move rainwater to the drainage system and into the nearest water body as quickly as possible. This increases pollutants in the natural water bodies and increases erosion, which is harmful to the natural ecology of the rivers and wetlands. Gardens and other planted areas are the perfect places to begin to change this pattern. When rainwater is absorbed into gardens, living soil and plant roots filter out pollutants and slow the water down before it enters into natural waterways. The main approaches to sustainable stormwater management that can be implemented in gardens and other landscapes are:

- Prepare the soil properly to absorb water. Avoid soil compaction during construction, and add a 1-3" layer of compost and aerate or till compacted soils. Add a 2-4" layer of recycled woodchip mulch to increase the soil's water-holding capacity.
- Drain impervious areas into planting areas. This means sloping walkways, patios and driveways toward planted areas rather than towards drain inlets. Downspouts carrying roof water can also be directed into planted areas, swales or rain gardens. Erosion can be controlled by adding gravel or cobble stones where water enters planting areas.
- Minimize impervious areas. Consider permeable types of paving, such as permeable precast concrete pavers and gravel for driveways and patios.

### EROSION CONTROL

Soil that enters the stormwater drainage system causes flooding and harms the plants and animals that live in the wetlands and rivers. The following methods should be used to minimize erosion:

- Planting: Plant bare areas as soon as possible during construction. Use plants that will quickly cover bare soil and provide a network of roots to stabilize the soil. On slopes, create watering basins or berms downslope of plants or planted areas.

A vegetated swale filters stormwater at the Redwood Shore Library in Redwood City, CA.

Rain garden in Highland Park, NJ

- Mulch: After construction, cover bare soil with a minimum of 2 inches of mulch to prevent erosion.
- Erosion-control materials: On steep slopes where mulch will not stay put, install jute netting or other biodegradable erosion-control materials until the plants have matured.
- Irrigation: Drip irrigation systems are less wateful than spray systems, and they cause less erosion. Install drip irrigation underneath the mulch layer. Observe the irrigation system during operation for signs of runoff. Set the irrigation timer to apply only as much water as can be absorbed into the soil without creating runoff. Use the "multiple start time" or "cycle and soak" functions on your timer so that the soil is given time to slowly absorb the water.
- Construction site best practices: Utilize erosion control and sediment barriers to prevent erosion and off-site transport of sediment during construction process.

## Conserve Groundwater and Prevent Water Waste

One of the biggest environmental impacts of planted areas is the over-use of water, which is an increasingly precious resource. To ensure that groundwater will be available for future generations of Watsonville citizens, it is critical that our gardens, parks and other planted areas are watered as efficiently as possible.

### PREPARE THE SOIL TO STORE WATER

Creating healthy soils is the link between protecting water quality and conserving water resources. Healthy soils store water and nutrients, regulate stormwater flow, neutralize pollutants by immobilizing or degrading them, and resist pests by providing habitat for beneficial organisms. Healthy soils contain living organisms such as beneficial bacteria, micorrhizae (fungi that cooperate with plants) and earthworms.

Create healthy, drought-resistant soils by adding compost and mulch. A robust, living soil with sufficient organic matter will hold more water, and require less frequent irrigation than a soil without sufficient organic matter. A 2-4" layer of mulch prevents evaporation of water from the soil, also reducing the need to irrigate.

Properly selected soil amendments can go a long way towards achieving the goal of establishing beautiful, successful, low-water-use landscapes. Soil amending should be based on the results of a soil analysis performed by a soil laboratory. Healthy soils should have a minimum organic content of 5% by dry weight.

Steps to creating healthy soil:


Suggested stormwater management area plants
Additional information can be found at www.centralcoastlidi.org.

Street runoff flows through curb cuts into stormwater planters, El Cerrito, CA

- Remove and store topsoil before grading
- Protect soil from compaction and aerate compacted soils
- Defend against erosion
- Amend the soil with compost
- Maintain a 2-4" layer of mulch in planted and unplanted areas
- Avoid synthetic, quick-release fertilizers
- Minimize the use of chemical herbicides and insecticides

Use organic compost. As a rule of thumb, apply 9 cubic yards per 1,000 square feet and till into top 9 inches. Compost can be bought at garden-supply outlets. Home composting is also a great way to generate compost on an ongoing basis and keep yard and food waste out of the landfills. For home-composting, use only vegetable waste. (See further discussion of compost in the "Reduce Waste" section below.)

### CHOOSE CLIMATE-APPROPRIATE PLANTS

The most important aspect of creating a water-efficient landscape is to use low-water-use plants. Water-loving plants should be used in smaller, less sunny areas, and located to maximize their impact. Also consider micro-climatic conditions such as topography, solar orientation and soil conditions to locate plants according to water need.

Recommended water-conserving plants reference publications:

- *City of Watsonville Recommended Plant List for the Pajaro Valley*
- *Water-Smart Gardening for Santa Cruz County (www.watersavingtips.org)*
- *Water Conserving Plants and Landscapes for the Bay Area and Plants, EBMUD*
- *Landscapes for Summer-Dry Climates of the San Francisco Bay Region, EBMUD*
- *Landscape Plants for California Gardens, by Bob Perry*
- *California Native Plants for the Garden, by Carol Bornstein et. al.*
- *Water Use Classification of Landscape Species (WUCOLS), University of California Cooperative Extension (www.emwd.org/conservation/pdf/wucolsb.pdf)*

### MINIMIZE LAWNS

Lawns are often the highest water-using areas in the lanscape. A typical 1,000 square-foot lawn irrigated with sprinklers in Watsonville needs about 35,000 gallons ow water a year to stay green and healthy. The same 1,000 square feet planted with low-water-use plants and watered with drip irrigation needs about 8,000 gallons a year -- a 77% savings!

Lawns should be limited to a maximum of 20% of the total irrigated landscape area, unless used for sport or recreational function. In heavily used sports fields, high-quality synthetic turf may be appropriate. Do not specify turf on slopes exceeding 20 percent, or areas narrower than 8 feet. Where the planting area is not expected to take foot traffic, use other drought-tolerant groundcovers. Where turf is proposed, a drought tolerant variety should be specified.

Suggested Lawn Alternatives:

- "No Mow" fine-leaf fescue blend (*Festuca rubra, F. rubra ssp. fallax, F. ovina ssp. hirtula, F. longifolia*): Shade tolerant, moderate water use
- Buffalo Grass - *Buchloe dactyloides*: Full sun, takes hard wear, low water use


Blue Grama Grass


Wooly Thyme


Dune Sedge


"No Mow" Fescue


Silver Carpet


Carex praegracilis, unmown

- Blue Grama Grass - *Bouteloua gracilis:* Full sun, tolerates alkaline and saline soils, mixes well with Buffalo Grass, low water use
- Dune Sedge - *Carex pansa:* Full sun to partial shade, best unmowed, low water use (2 times per month)
- California Field Sedge - *Carex praegracilis:* Full sun to partial shade, moderate foot traffic, moderate water use
- Wooly Thyme - *Thymus pseudolanuginosus:* Full sun to partial shade, moderate foot traffic, moderate water use
- Roman Chamomile - *Chamaemelum nobile*: Full sun to partial shade, moderate water use, flowers
- Silver Carpet - *Dymondia margaretae:* Prefers full sun to partial shade, tolerates full shade, moderate to regular water but very drought tolerant, can take light traffic.

### PLANT IN HYDROZONES

Different plants have different water requirements. Divide the landscape into low, medium, and high water use areas to prevent overwatering. Limit thirstier plants to smaller, high-visibility areas near the building and a water source, and to areas that naturally collect water.

### CONSIDER XERISCAPING OR NATURAL LANDSCAPING

Xeriscapes and Natural Landscapes need no summer water once established because they are designed with California Native and other drought tolerant plants that have adapted to our summer-dry climate. Materials such as crushed rock, pebbles and stone are used as an alternative to plants in many of Watsonville's neighborhoods. This can be an effective way to reduce water use. Rock and gravel-gardens should be shaded by trees to minimize glare and heat, and can be planted with succulents to add color and character. Rock gardens should be weeded by hand or with propane flaming, rather than with herbicides. Use permeable weed-control fabric rather than plastic sheeting so that rainwater can infiltrate into the soil.

### USE MULCH TO RETAIN SOIL MOISTURE

Mulch reduces evaporation, suppresses weeds, moderates soil temperature, prevents soil erosion, and adds soil nutrients as it decomposes. Planting areas should have a minimum of 2 inches of mulch, except where covered by groundcover plants. Sheet mulching with recycled wood chips and/or compost is the most effective and sustainable method of mulching.

The Applebees landscape retrofit in Watsonville reduced the amount of lawn.

Xeriscape planting (Source: www.allianceforwaterefficiency.org)

## INSTALL AN EFFICIENT IRRIGATION SYSTEM

New irrigation systems in Watsonville must be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non- irrigated areas, sidewalks, roadways, or structures. Wasting water is a violation of Watsonville's Model Water Efficient Landscape Ordinance (MWELO) and Watsonville Municipal Code Section 6-3.432. These highlights from MWELO give excellent guidelines for designing efficient irrigation systems:

- Narrow and/or irregularly shaped areas, including turf, less than eight-feet wide in any direction must be irrigated with subsurface irrigation or a low volume irrigation system.
- Sprinklers must be set back at least 2 feet from any non-permeable surface (driveways, sidewalks, etc.).
- Irrigation on slopes of 25% or greater shall have a precipitation rate not to exceed 0.75 inches per hour. Lawns are not permitted on slopes of more than 25%.
- Each valve shall irrigate a hydrozone with similar site, slope, sun exposure, soil conditions, and plant materials with similar water use.

More informati on about irrigation design requirements of MWELO can be found at: htt p:// www.water.ca.gov/wateruseeffi ciency/landscapeordinance/.

The most efficient irrigation systems use low-volume, or drip irrigation methods that apply water directly to the plant root zone, rather than spraying water into the air where it can evaporate before reaching the soil, or can end up as run-off in the street.

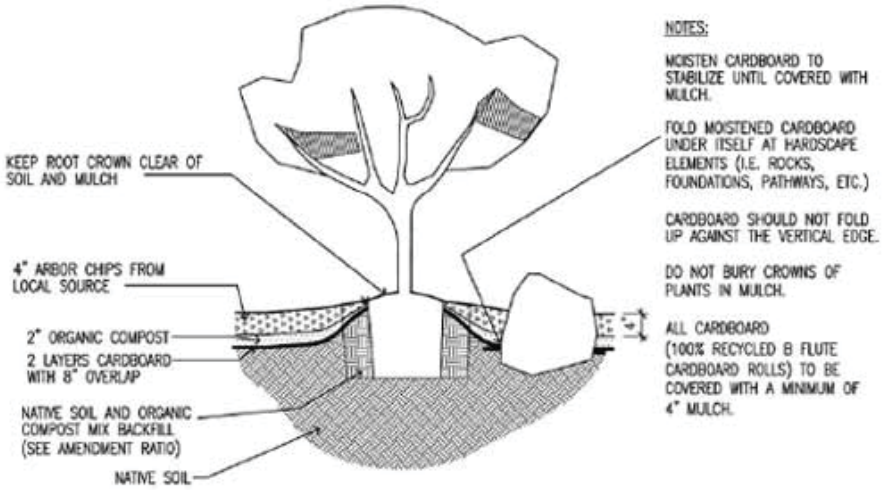
A weather-based irrigation controller, or an automatic controller equipped with multiple start times and a rain or soil moisture sensor, will assist the irrigation manager to apply water only when irrigation is needed.

## INTEGRATE RAIN WATER AND GRAY WATER IRRIGATION

Rain water from roofs can be collected in rain barrels or cisterns and stored for irrigation during dry months. Even a small rain barrel can be useful for watering plants in pots. Graywater is waste water from laundry machines, showers, bathtubs and bathroom sinks that can be reused for subsurface landscape irrigation. Graywater irrigation has specific design guidelines to protect public and environmental health, and is best used to water high and medium water use plants (excluding lawns and root vegetables). More information about designing a low-maintenance, code-compliant greywater irrigation system can be found at the Central Coast Greywater Alliance page at www.ecoact.org.

UC Verde Buffalo Grass is used as an alternative to conventional lawn SOURCE: New Requirements for Landscape and Irrigation, City of Santa Monica


This Santa Monica home switched from a traditional to a xeriscape planting alternative. SOURCE: New Requirements for Landscape and Irrigation, City of Santa Monica




Sheet mulching diagram. Source: Sentient Landscapes, Inc., www.stopwaste.org.

## Preserve and Create Habitat

Preserving and creating landscapes that support a range of plant and animal species brings beauty and interest to the landscape, supports the life of the regional ecology, and can reduce the need for pesticides. Watsonville is blessed with the rich natural habitat of the sloughs, the river, and the Pajaro hills to the east of the city. As these habitats are preserved and restored, their habitat value will increase. Residential and commercial landscapes play an important role in preserving and increasing biodiversity in the Watsonville region and complementing these natural areas. Private landscapes adjacent to the natural habitat areas are especially important to improving the greenways and habitat corridors that stretch from the Monterey Bay through Watsonville to the hillsides and beyond.

### PLANT DIVERSITY

A diverse landscape of perennials, annuals and biennials with a range of blooming seasons, colors, shapes, fruit types, and sizes can support a wide range of animal species. Including California native plants in the landscape will support local fauna that are naturally adapted to them. Landscapes preserve and become habitat when plants native to the surrounding Watsonville wetlands, creeks, Pajaro River, coastal grasslands and other plant communties are incorporated into the landscape.

### AVOID INVASIVE SPECIES

Invasive species out-compete natives and other plants and reduce biodiversity. Planting invasives must be avoided, especially near natural areas. Refer to lists of invasive species published by established research organizations such as the California Invasive Plants Council (CAL-IPC). California Horticultural Invasive Prevention (Cal-HIP). The California Native Plant Society (CNPS) maintains a useful comprehensive list of online resources.

- “Plant Right, Keep Invasive Plants in Check” (www.cal-ips.org/ip/inventory/index.php)
- www.plantright.org
- www.cnps.org

### REDUCE PESTICIDE AND HERBICIDE USE

Pesticides and herbicides kill not only undesirable plants and animals, but they also harm or kill desirable and beneficial species, such as birds, butterflies and bees that pollinate many of Watsonville’s crops. Integrated Pest Management (IPM) is an approach to managing insects, plant diseases, weeds and other pests through environmentally-sound strategies that avoid the use of pesticides and herbicides. IPM seeks to prevent pests by fostering a healthy environment in which plants have the strength to resist disease and insect infestations and to out-compete weeds. If a pest problem is identified, IPM then considers a range of solutions before turning to pesticides. Some principles of IPM are as follows:



Rainwater funneled from the roof to a bioretention planting area at the Redwood Shores Library, Redwood City, CA

- Choose species that are well suited to the site.
- Select resistant plant varieties and species that attract beneficial insects.
- Give plants room for adequate air circulation and to reach their natural size and shape, so that they are not stressed. Avoid over-planting, which creates crowded environments for plants.
- Add compost to the soil, to encourage beneficial organisms that live in healthy soils and suppress disease-causing organisms.
- Use slow-release, organic fertilizers and avoid using synthetic fast-release fertilizers that have the potential to run-off and cause pollution in our waterways.
- Maintain at least 2” of mulch on the soil at all times to prevent weeds.
- Prune no more than 1/3 of vegetation to prevent stressing plants and minimize an overabundance of new growth that is vulnerable to pests and diseases.
- Control weeds by applying water only where it is needed. Use drip irrigation to water only desired plants.
- Eliminate noxious weeds before they go to seed.
- Understand that landscapes can tolerate certain levels of pests without causing significant or even noticeable damage.
- Control pests first with physical and mechanical controls, such as hoeing or pulling established weeds, spraying aphids with a strong jet of water and using sticky traps around tree trunks to keep ants and other insects away.
- Use biological controls to control pests. Attract beneficial insects to the landscape by planting a variety of native and annual plants that flower throughout the year. Introduce natural predators, parasites and beneficial microbes.
- Use safe, naturally occurring chemicals such as soaps and horticultural vinegar before resorting to synthetic chemicals.
- If pesticides or herbicides are necessary as a last resort, use the least toxic products available. Naturally occurring pesticides include soaps and oils, sulfur, corn gluten, horticultural vinegar (acetic acid). Take the necessray safety precautions, even when using natural pesticides.

Integrated Pest Management (IPM) discourages undesirable plants and insects (pests) while encouraging beneficial organisms, such as bees that pollinate fruit trees.

## Conserve Energy, Protect Air Quality and Reduce Global Warming

### PLANT FOR PASSIVE SOLAR HEATING AND SHADING

The proper placement of trees around buildings can significantly reduce energy use (and energy bills) for heating in the winter and cooling in the summer. The following general rules should guide tree planting around buildings. (Local microclimatic factors might imply modifications to these guidelines.)

- Deciduous trees should be used in south- and west-facing areas around buildings to provide solar access during winter months and shade in summer months.
- Plant evergreen trees on the north side of buildings to block winter winds.
- Use shrubs or small trees to shade air-conditioning units.

### REDUCE THE USE OF GAS-POWERED MAINTENANCE EQUIPMENT

Lawn-mowers, leaf-blowers, hedge clippers and chainsaws produce extremely dirty exhaust. Their use should be minimized to protect air quality. These machines also contribute to noise pollution. Landscapes can be designed to require less lawn-mowing. leaf-blowing and hedging. Turf aeras can be minimized, planted with no-mow species, or mowed with electric mowers. Leaves can be raked by hand, or, if possible, left where they fall to provide mulch and nutrients to the landscape. Planting evergreen trees in paved areas such as parking lots will reduce the need to manage leaf litter. Hedges could be pruned naturally and informally rather than sheared. Designing landscapes to minimize the use of gas-powered maintenance equipment will also reduce the long-term maintenance cost to the owner.


Diagram describing appropriate placement of trees to promote energy savings (Source: PGE Guide to Power-wise Tree Planting)

## Conserve Materials

### MINIMIZE GREEN WASTE TO THE LANDFILL

Plant debris from yard trimmings is the second largest waste product found in landfills in the United States. The following techniques reduce waste and support a more sustainable and lower maintenance landscape.

- Scale: Understand the plants' mature size and plan accordingly so that the plants can grow to mature size in the space alotted and not require trimming and hedging.
- Placement: Select plants which are appropriate for the sun exposure, moisture and soil type on the site to avoid having to replace the plant later.
- Plant Communities: Consider groups of plants which have adapted overtime to the local climate and geography so they need minimal, seasonal pruning.
- Mulch: Reuse leaves and plant debris produced by the landscape as mulch to nurture growth of future plants. Use locally produced wood chip mulch made from recycled yard waste or tree-trimming companies. See www.omexchange for sources.
- Grasscycling: Leave clippings on the lawn after mowing so they decompose and release their nutrients into the soil.
- Fertilizing: Avoid using fertilizers that push vegetative growth that must be mowed or pruned.

### REDUCE YARD WASTE BY COMPOSTING

Compost is fully decomposed organic matter used to amend the soil. Some benefits of composting include:

- Provides a natural fertilizer and pesticide for soil
- Reduces waste in landfills
- Saves money on garbage bills
- No need for imported fertilizers
- Keeps pests and rodents out of garbage cans

The process of composting can be as easy as alternating brown (carbon-rich) and green (nitrogen-rich) materials in a covered pile or composting bin and waiting for the materials to break down until the original materials resemble dark brown, crumbly, sweet-smelling soil. This process can take 3 to 6 months or more. Turning the compost to incorporate air will speed the process and eliminate undesirable odors.

The City of Watsonville provides compost bins to residents. Bins help keep compost tidy in small yards. To order a free compost bin call the City of Watsonville Customer Service Division at 768-3133 and schedule a delivery appointment.

Free compost bin provided by the city of Watsonville (Source: www.watsonvilleutilities.org)

# Design Guidelines

The following planting design guidelines are intended to enhance Watsonville's outdoor environment for the city's human inhabitants. They address four main goals: reinforce a sense of place; make Watsonville more beautiful and livable; improve safety; and protect buildings and infrastructure.

## Reinforce a Sense of Place

Watsonville already has a strong sense of place due to its unique characteristics, including its architecture and urban form, street network, natural and agricultural surroundings and eclectic mix of urban plants. Watsonville is generally well cared-for by its residents who take pride in the city. This sense of place can be enhanced through planting design by preserving and building on the city's strengths.

### DESIGN THEMES

Watsonville's landscapes context is created by its cultural history, agricultural surroundings, and natural systems. Planting design should be influenced by these themes to reinforce Wastonville's unique character. These influences are described briefly below.

**Neighborhood/Urban Cultural**

Watsonville's neighborhoods are characterized by a lively and eclectic plant palette that includes a range of species from many parts of the world. Watsonville's climate is ideal for this eclectic mix, which includes temperate-climate plants and desert plants. Shade trees share space with palm trees, succulents can be found next to herbaceous perennials and shrubs, and rock gardens can be seen next to exuberant flower gardens.

**Agricultural Influence / Urban Agriculture**

Watsonville is first and foremost an agricultural community, supported by the agricultural industries that surround it. The city's historic development pattern and current planning policies have given Watsonville a clear edge, where residential and industrial parts of the city abut the adjacent farmlands in a striking way. This agricultural influence can be brought into the city by incorporating edible crops including fruit trees and vegetable gardens into its gardens and civic and commercial landscapes.

Examples of eclectic planting found in Watsonville

**Natural Ecosystem Influence**

Watsonville's wetlands are one of its most distinctive urban landscape features. As the wetlands are protected, restored and celebrated as an amenity, they can also become a guiding influence for designed landscapes that are near them. As discussed in the Sustainability section of this document, incorporating native wetland and riparian plants into the landscapes near the wetlands can enhance their habitat value. This plant palette can also enhance the design character of the city.

The Pajaro River and Salsipuedes Creek are less apparent contributors to the city's character. Designed landscapes adjacent to these waterways should could use riparian themes to establish physical and psychological connections to these resources.

## DESIGN CONSIDERATIONS

**Formal vs. Eclectic**

As mentioned above, Watsonville's unique character is due largely to its eclectic mix of plant species. Generally, this mix should be continued as the city's main planting theme. Many recent housing developments have done an excellent job of providing ample planting areas and street trees, however, they often exhibit a generic "any-town" plant palette. Watsonville's sense of place would be enhanced with more varied plant palettes. Formal plantings, such as consistent street trees and large swaths of individual groundcover and shrub species, should be limited to major public corridors and open spaces.

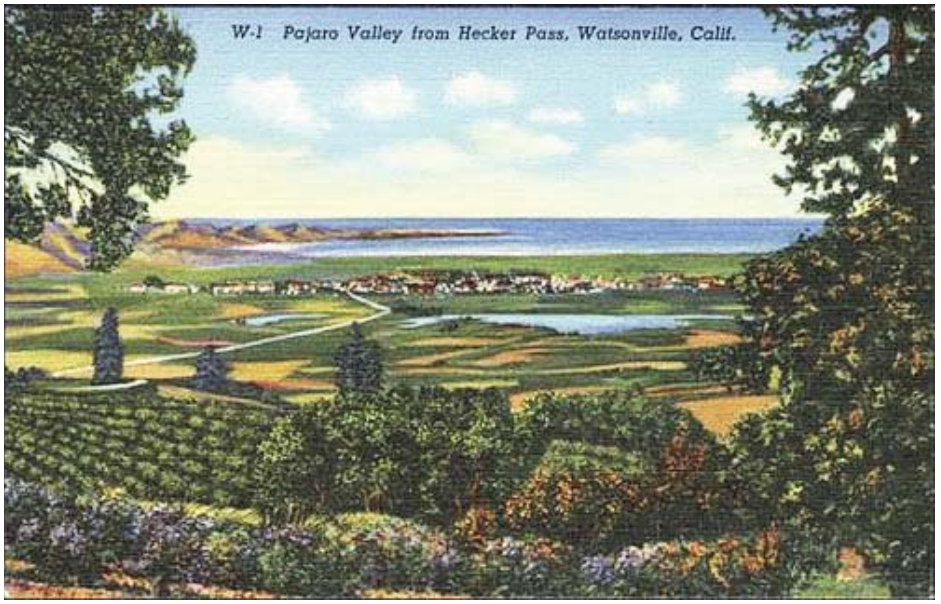
**Cultural preferences**

Watsonville is a culturally diverse community with varying styles of landscape design exhibited in its neighborhoods. Cultural differences should be respected and celebrated as they contribute to Watsonville's character. Increased urban greening and sustainable landscape design and maintenance practices should be encouraged within this context of exuberant cultural variety.

**Drought Tolerance and Plant Aesthetics**

Drought-tolerant landscape aesthetics are becoming more of the culturally accepted norm for landscape aesthetics. Increasing water-conserving landscapes and phasing out water-consumptive landscapes may require a shift in cultural expectations. For example, lush, green lawns cannot sustainably continue to be a symbol of a cared-for landscape. Luckily, many of the culturally accepted landscape types already found in Watsonville are drought tolerant. There are many examples of beautiful succulent, native and Mediterranean-influenced landscapes around the city that can serve as models of drought-tolerant landscape design.

Wastonville street mural depicting replica of agricultural crate labels from the 1900's



Historic postcard of Wastonville (Source: Santa Cruz Public Librareis)

## PLANT SELECTION

The following lists of drought-tolerant shrubs and groundcovers represent each of the city's character influence zones. These are representative species that can be used a basis for developing plant palettes for specific projects. (For trees selections see Citywide Street Tree Program.)

**Neighborhood/Urban Cultural**

Artichoke Agave – *Agave paryii var. huachucensis*
Canyon Prince Wild Rye – *Leymus condensatus*
Dwarf Maindenhair Grass – *Miscanthus sinensus* 'Adagio'
Dwarf New Zealand Flax – *Phormium tenax* 'Jack Spratt'
Foxtail Agave – *Agave attenuata*
Inferno Mirror Bush – *Coprosma* 'Inferno'
Juniper Species – *Juniperus* species
Kleinia – *Senecio mandraliscae*
Lantana – *Lantana* species
Pheasant Grass – *Anemanthele lessoniana*
Tree Aloe – *Aloe bansii*

**Agricultural Influence / Urban Agriculture**

Beargrass – *Nolina parryi*
California Grape – *Vitus californica*
English Lavender – *Lavandula 'angustifolia* 'Hidecote'
Beavertial cactus – *Opuntia basilaris*
Pineapple Guava – *Acca sellowiana*
Pomegranite – *Punica granatum* 'Nana'
Rosemary – *Rosmarinus officinalis* 'Lockwood de Forest'
Wild Rose – *Rosa californica*

Orchard groundcover planting options may also be found under Lawn Alternatives in the Conserve Water section of the Sustainability Guidelines.

**Natural Ecosystem**

Cape Mendocino Reedgrass – *Calamagrostis filosa*
California Buckwheat – *Erigonum species*
California Fuschia – *Epilobium canum*
California Gray Rush – *Juncus patens*
Coyote Mint – *Monardella villosa*
Deer Grass – *Muhlenbergia rigens*

A great example of an established front yard oak tree on Tuttle Avenue, Wastonville, CA

Dwarf Coffeeberry – *Rhamnus californica* 'Eves Case'
Dwarf Coyote Brush – *Baccharis pilularis* 'Pigeon Point'
Dwarf Manzanita – *Manzanita* species
Prostrate Flannel Bush – *Fremontodendron* 'Ken Taylor'

### TREE PRESERVATION AND MITIGATION

Established trees in good health should be preserved for the visual, cultural and ecological benefits the tree provided. Watsonville should develop specific criteria and review process for the removal of existing trees. Policies from other cities typically reference the species, potential invasiveness, assessed condition, location on public or private property, habitat value, and size.

Existing trees in areas of change require special consideration to either require their preservation, mitigate their loss, and or maintain their health during construction. Mature trees bring value to a property and can provide immediate effect when incorporated into new construction. If removal is approved, the loss of the existing trees should be mitigated by planting new trees. Where tree mitigation goals can't be achieved through allowed tree mitigation methods, cash mitigation to the City tree fund may be an option.

Even though a tree may be designated to remain, active monitoring and protection during construction is essential. The following points should inform policy for Watsonville:

1. A field construction meeting should be held prior to construction where existing conditions are documented and preservation practices are discussed.
2. A protective fence should be placed at the dripline of the existing trees during the entire construction period. No work should occur within the dripline except under the direct supervision of a certified arborist approved by the City.
3. Soil compaction and grading should be avoided within the dripline of the trees. Maintain a positive drainage away from the tree trunk. Irrigation should be avoided under native oak trees.
4. Tree branches interfering with construction equipment should be properly pruned prior to commencement of construction. Pruning should be as approved by the City and should comply with City approved practices.
5. No storage of materials or equipment should occur within 25 feet of the dripline of trees.
6. All roots 1" or larger that must be severed should be cut manually to produce a clean cut and treated with a tree sealant. Boring, rather than trenching, should be required where it is unavoidable for piping to cross though the dripline of a tree.


Tree protecton fencing at a construction site

7. Contractor should be responsible for providing comparable replacement trees, as well as a dollar fine per inch of tree trunk diameter (at breast height) for any existing trees that are found by the City to be irreparably damaged due to construction activity. Fines vary by jurisdiction. One example is $3,000 for trees less than 12" caliper diameter; $8,000 for 12" to 18" diameter, and $1,000 for each additional inch over 18".

## Make Watsonville More Beautiful and Livable

### VISUAL SCREENING

Screen unsightly elements and incompatible adjacent uses: storage areas, trash enclosures, parking areas, public utilities, and other similar elements which do not contribute to the visual enhancement of surrounding areas.

### VISUAL RELIEF

Avoid large expanses of continuous asphalt and concrete surfaces by planting trees, and creating shrub areas. Flexible paving such as decomposed granite and permeable unit pavers can also help to add visual interest and provide mitigation to heat build up.

### STREET TREES

The following are example street tree planting standards that have been adopted by other cities, and can be considered by the City of Watsonville as policy options.

- Minimum one 24" box tree for every 30 lineal feet of street frontage for commercial and muti-family residential projects. Minimum of one 15-gallon tree for every 30 lineal feet of frontage, or fraction thereof, for all single-family residential projects.
- One tree for every 20 lineal feet of building frontage, to be planted either in sidewalk or building setback.
- One tree for every 200 square feet of landscaped area.
- One shrub for every 25 square feet.
- 70 percent of all landscaped areas shall be underplanted with groundcover, with the remaining areas to incorporate a minimum two-inch layer of mulch.
- It may be stipulated that if a building owner cannot meet the required tree quantities, the owner can pay an in-lieu fee per tree into a dedicated tree-planting fund that the city can use to plant trees elsewhere in the city.

### PARKING AREAS

Where parking areas face a major public street, they shall be screened from view using decorative earth berms, dense shrub planting, low walls, trees, or a combination thereof. Planting is required around the perimeter of parking areas adjacent to property lines.

Effective planting in parking area, Napa, CA

The following example parking lot tree-planting requirements have been adopted by other cities, and can be considered by the City of Watsonville as policy options.

- 1 tree per 5 parking stalls
- 1 tree per 8 spaces
- 1 tree for every 10 single-row parking stalls or every 20 double-row parking stalls
- 1 tree for every 2,800 sf of paved surface
- Within parking areas of greater than 20 parking spaces, an island a minimum width of 4' and length equal to the adjacent parking stall shall be provided for every 10 cars.
- 180 sf of planting area for each tree. 3' clear from trunk, minimum.
- 10% of total parking lot area shall be devoted to planting area.

## Improve Safety

### TRAFFIC CALMING

Statistics show that streets with broad tree canopies have lower vehicle speeds than identical streets with no or few trees. Traffic calming, paired with other positive effects of street trees, is beneficial to residential areas and arterials alike where speed can be a concern.

### TRAFFIC SAFETY – SIGHT DISTANCES, ETC.

Planting can become an obstruction to good visibility at intersections, crosswalks, traffic signals, and other areas where conflicts can occur. Shrub and groundcover planting should be low growing by nature rather than require constant trimming. Trees should be pruned up to maintain visibility under the canopy. At some locations such as crosswalks, additional lighting should be considered that is placed below the tree canopy to reduce shadows. Sight obstructions such as above ground signal boxes and telecom switch boxes are common at intersections. These should be located back from the intersection or placed below ground. Tree trunks at intersections are no more a concern than signal poles if single trunked. Trees also have other calming benefits described herein.

### SAFETY FROM CRIME

Good visibility is also an important factor to create a safe public environment. The planting principles applied to driver visibility also apply here. A clear zone between 3' and 8' of height should be encouraged within 20' of sidewalks and public walkways.


Example of a tree planted at an intersection. Davis, CA

## Protect Buildings and Infrastructure

Care should be taken in the placement of trees to protect the tree from future impacts. Guidelines should be carefully developed with room for judgment and flexibility to provide adequate protection without overly restricting the placement of trees (there are unfortunate instances in urban street environments where no trees could be planted due to inflexible restrictions). General guidelines for locating trees suggest trees be planted a minimum of five feet from sewer, water, gas, cable, and electrical lateral services; seven feet from utility boxes; and fifteen feet from light poles. Locating trees in street conditions often requires unique application of guidelines and due to the common placement of utilities under the sidewalk and curb areas. For street renovation, consideration should be given to the relocation of select utilities in order to designate an appropriate planting zone for street trees.

Impacts by tree roots to paving can be avoided with good planning and implementation techniques. The cost of repair of pavement should be considered in the context of other benefits including increased property value, traffic calming, habitat, and cooling.

- Suitable planting areas for trees should be planned in the early stages of a project in order to avoid utility conflicts that result in damage, loss of trees, and reduced benefits.
- Each tree should be provided as large a non-compacted soil area as possible. James Urban, an expert on urban forestry recommends a minimum of 200 cubic feet of soil for larger trees. This equates to a 8’ x 8’ x 3’ deep planting area.
- Tree planters in sidewalks where space restriction due to accessibility, utilities, passing vehicles and buildings present challenges to an appropriately sized area of planting soil. These instances may require special treatments such as structural soil, structural cells, and cantilevered paving. Structural soil can be useful to guide tree roots under a walkway to access an adjacent rooting zone such as a front yard or park.
- The zone of root taper for most large trees requires planters of 4’ minimum width.

Overhead power lines require special species selection to prevent tree canopies reaching overhead power lines. While typical tree trimming practices under power lines is detrimental to tree health and aesthetically undesirable, there are practices such as “directional trimming” which can be encouraged or implemented by a city. See PG&E’s Guide to Power-Wise Tree Planting for good species selection under power lines.

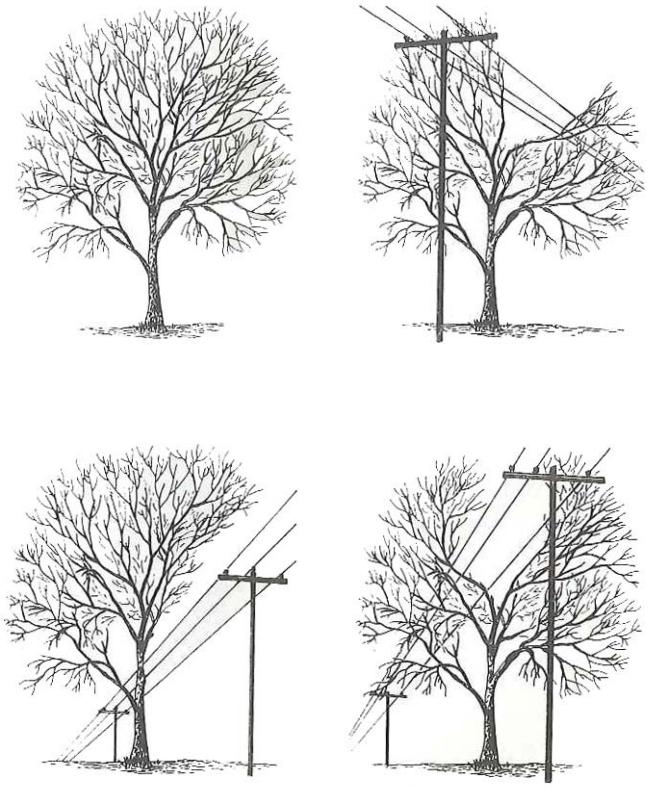


Illustration adapted from **Aboriculture** by Richard W. Harris

# Conclusion and Next Steps

This Landscape Guidelines and Policy document describes a framework to guide Watsonville's landscape and planting designs in order to achieve the city's goals related to sustainability, place-making, and livability. This document can be used by property owners, developers, residents and landscape professionals to guide landscape design and maintenance.

This document can also be used during development-review. The City's design-review ordinance could be amended to refer specifically to these guidelines as the basis for landscape design review. In order for the quantifiable parts of these guidelines (e.g., required number of trees) to serve as criteria in the building entitlement and permitting process, the City may develop them into a landscaping ordinance. Where policy options are presented in this document, the City would need to define a specific policy.