Sustainable Landscape Design

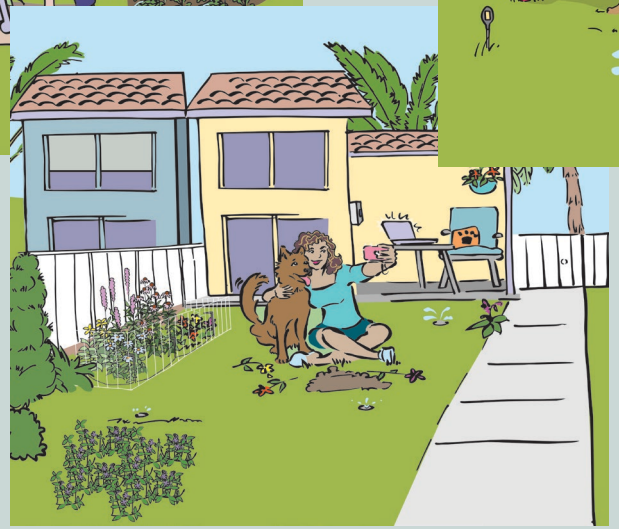
Transitioning Your Outdoor Spaces

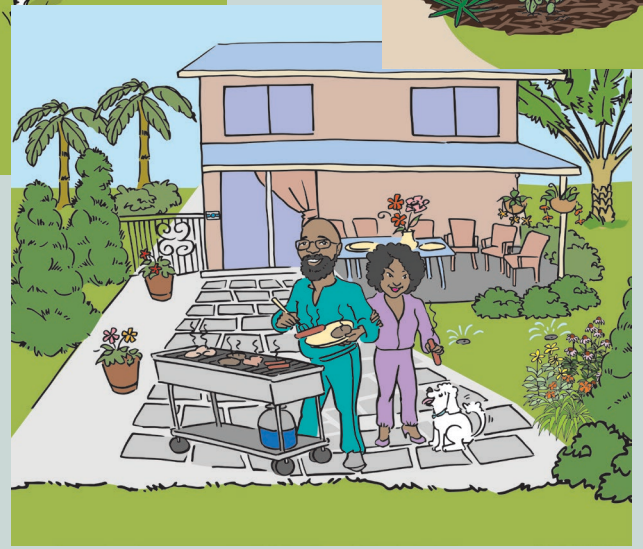
NM STATE
BE BOLD. Shape the Future.
College of Agricultural, Consumer and Environmental Sciences
Extension Master Gardener

LOS ALAMOS
Department of Public Utilities
Conservation

PEEC
Pajarito Environmental Education Center

Does your space look like this? Do you want it to?





Session Focus

- What do you have to work with?
- Designing for you…and others?
- Getting the earth ready for your dreams.
- Picking out your plants
- Watering
- The dreaded yard work
- Resources to get you going


A Homeowner's Guide to a Water Efficient Landscape
New Mexico's
Enchanted Xeriscape Guide
Office of the State Engineer
nm
Interstate Stream Commission

SUSTAINABLE LANDSCPE DESIGN

Design solutions are unique to each landscape. Start with a plan.

1. Functional

Reflect on the activities that will occur in the landscape. Consider which areas are for relaxation, vegetable/fruit gardening, and entertaining. Include a service area (shed, tools, waste bins) in the plans. Determine what hardscape (walks, walls, sheds, fences) will enhance the landscape. Incorporate irrigation requirements in the initial planning.

2. Maintainable

Determine what maintenance the landscape will need and reduce the need for inputs such as fertilizers, pesticides, equipment, and water. Some examples to consider

- Sidewalks the correct width for snow removal
- Turf areas wide enough for mowing and edging that will not interfere with mowing
- Stone paths that will not impede easy movement of wheelbarrows or collect leaves.

3. Environmentally Sound

Assess the landscape's environmental and ecological challenges and provide solutions. In New Mexico, a major emphasis is on water conservation. Water catchment areas might ease the need for extensive irrigation. Integrate sufficient mulches to reduce water loss. Provide protection for susceptible plants and trees from wind damage in winter and spring. The proper hardscaping and the design of plants greatly affect the quality of that landscape over its entire life. Use the idea of "right plant right place" as well as "right plant, right purpose."

4. Cost Effective

Landscapes should be functional, maintainable and environmentally sound regardless of budget. The installation cost of a sustainable landscape may be less than an expensive landscape and certainly the ongoing maintenance costs of a functional, maintainable, and environmentally sound landscape will be lower.

5. Visually Pleasing

Imagine your landscape from several views. Consider where permanent objects will be placed first. Determine key trees, plants and open spaces as a second step in the plan, remembering to allow plenty of space for plant and tree growth. Reflect on how the changing seasons will impact the landscape. Whether formal or informal, a sustainable landscape that is responsive to the environment will provide enjoyment for many years.

None of these steps are mutually exclusive. Each step should be reviewed several times in relation to the others before the best plan is reached.

Step 1: What do you have to work with?

Step 2: Designing for you...and others.

- Xeriscaping vs. Zeroscaping

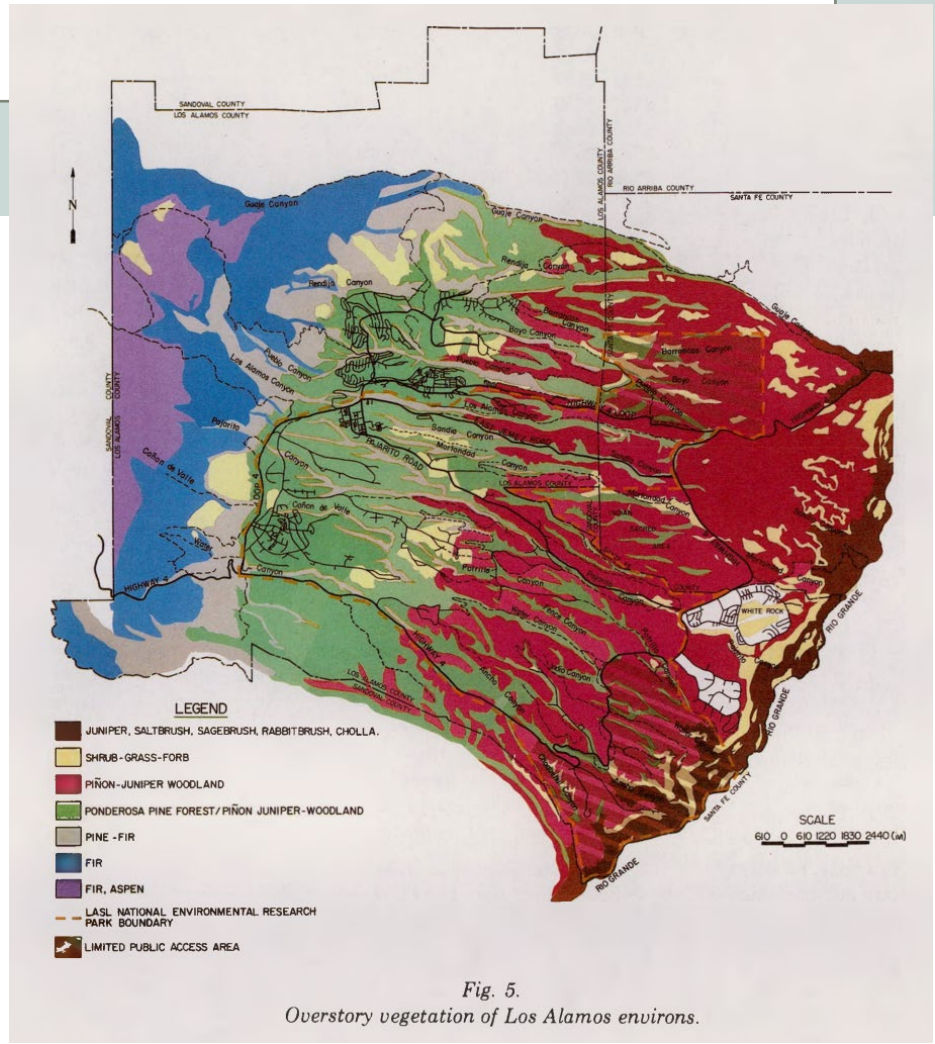
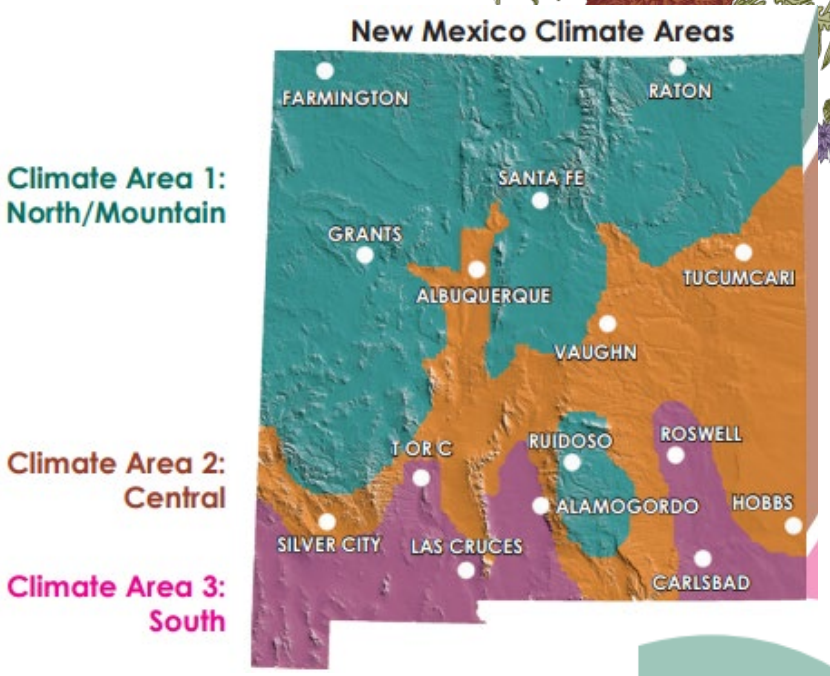


Fig. 5.
Overstory vegetation of Los Alamos environs.

Ground Cover Temperatures

Time	Material	Temp (air)	Temp (material-therm camera)	Time	Material	Temp (air)	Temp (material-therm camera)
10:10a	Weedy sandstone gravel – sun	78	103	10:40a	Red paver – Shade	80	66
	Traditional sidewalk – sun	78	94		Gravel – med. sized – shade	80	67
	Red colored sidewalk – sun	78	97		Gravel – med. sized – sun	80	113
10:20a	Fine gravel – sun	78	93		Gravel – pea sized – sun	80	116
	Turf – sun	80	82		Ground cover plant – sun	80	85
	Pavers, sandstone colored – sun	80	97		Red paver – retaining wall	80	105
	Large river rock, lighter colored – sun	80	116		Apache plume – sun	80	84
10:40a	Plants (lilies, peony)	80	75		Bark mulch – sun	80	99
	Mulch – shade	80	60		Irrigation piping – sun	80	84
	Mulch – Sun	80	90		Peach tree – shade	80	80

Step 2 Continued



Climate Area 1: North/Mountain

Climate Area 2: Central

Climate Area 3: South

Xeriscape Zone 1 Arid: Drought-tolerant plants (water only rarely)

Xeriscape Zone 2 Transition: Water-efficient plants (water infrequently)

Xeriscape Zone 3 Mini-Oasis: Regular supplemental water

Step 3: Getting the earth ready

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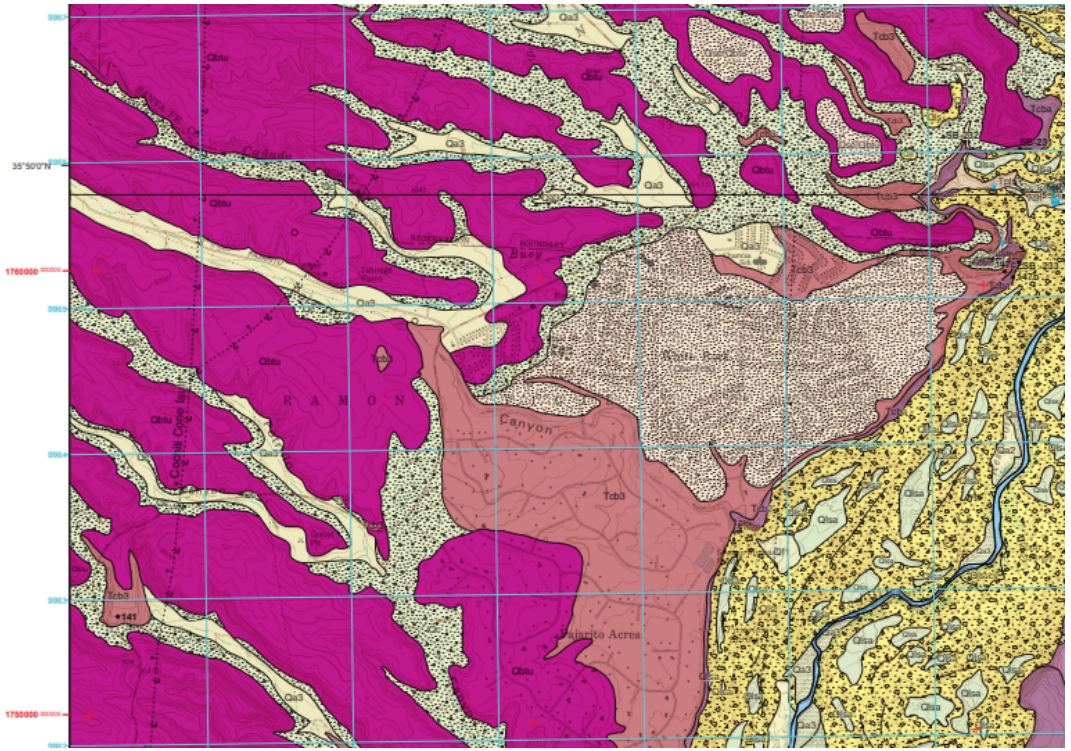

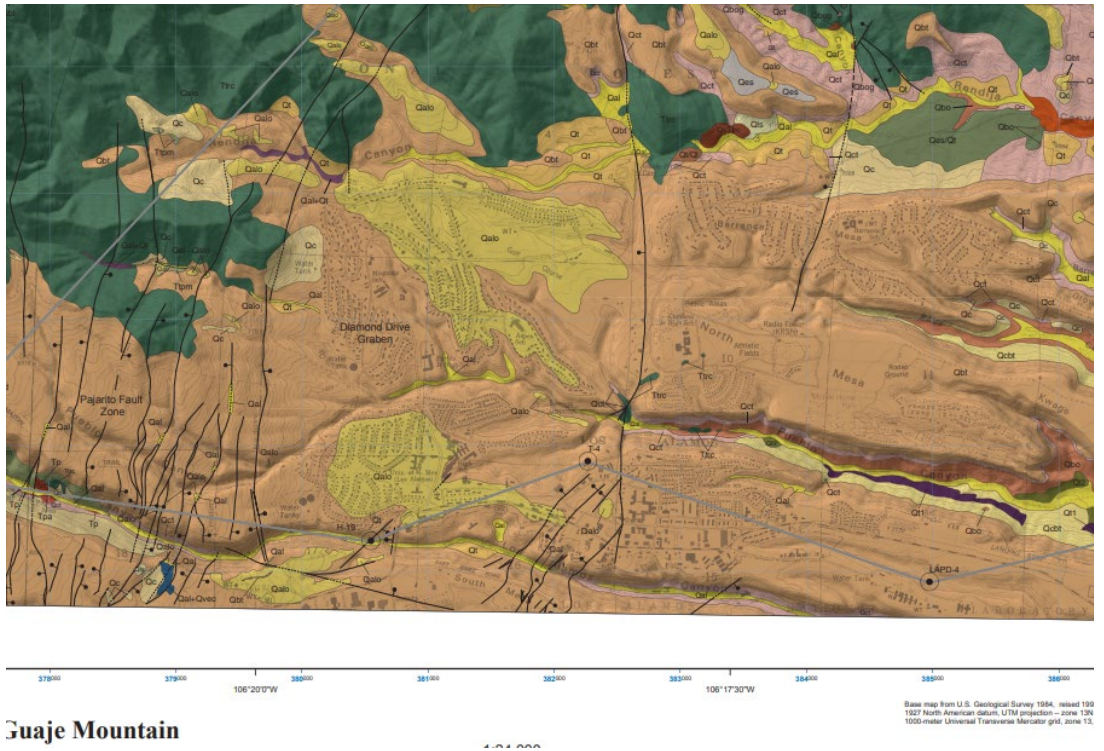

Compost (and soil amendments)

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Compost Certification Letter

What is compost? A Biological way to speed up the decay process of organic material under the right conditions of oxygen, water, carbon and nitrogen.

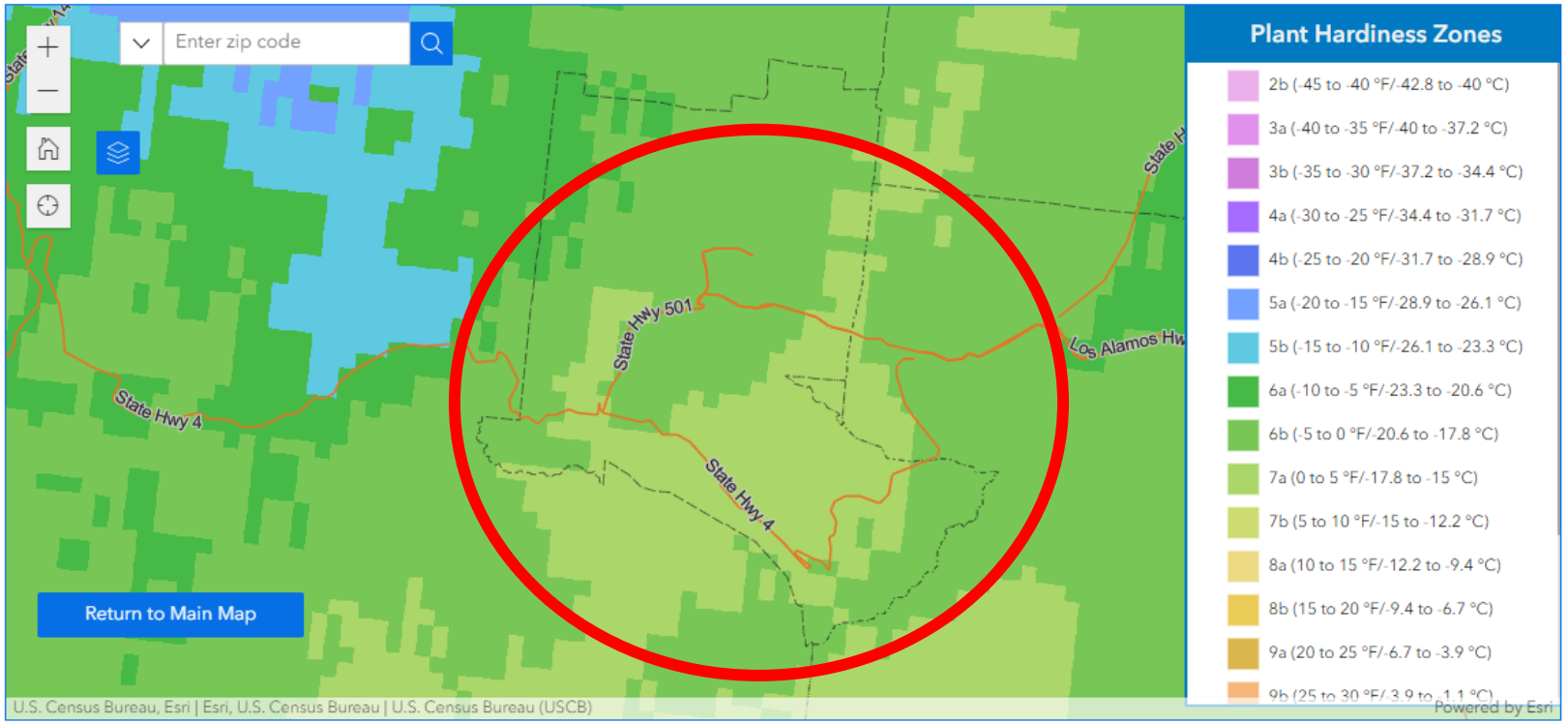
How is compost made? A mixture of materials (feedstock) is piled up into 7 feet tall windrows and turned every other day to aerate and mix. Microorganisms consume digestible carbon and generate heat, carbon is converted to long-chain carbohydrates (sugars & Starches) to stabilized humic acid.

Why use compost? Provides N (nitrogen) and other micro nutrients plus copper, iron, manganese, zinc and other nutrients for healthy plants. Slows down the release of nutrients when used with fertilizers. Soil benefits of compost; holds water lowers water bills, holds micronutrients, and improves soil aggregation (erosion).

Rate to Purchase

Free to anyone (does not have to be a Los Alamos County resident) with a $3.00 per cubic yard loading fee

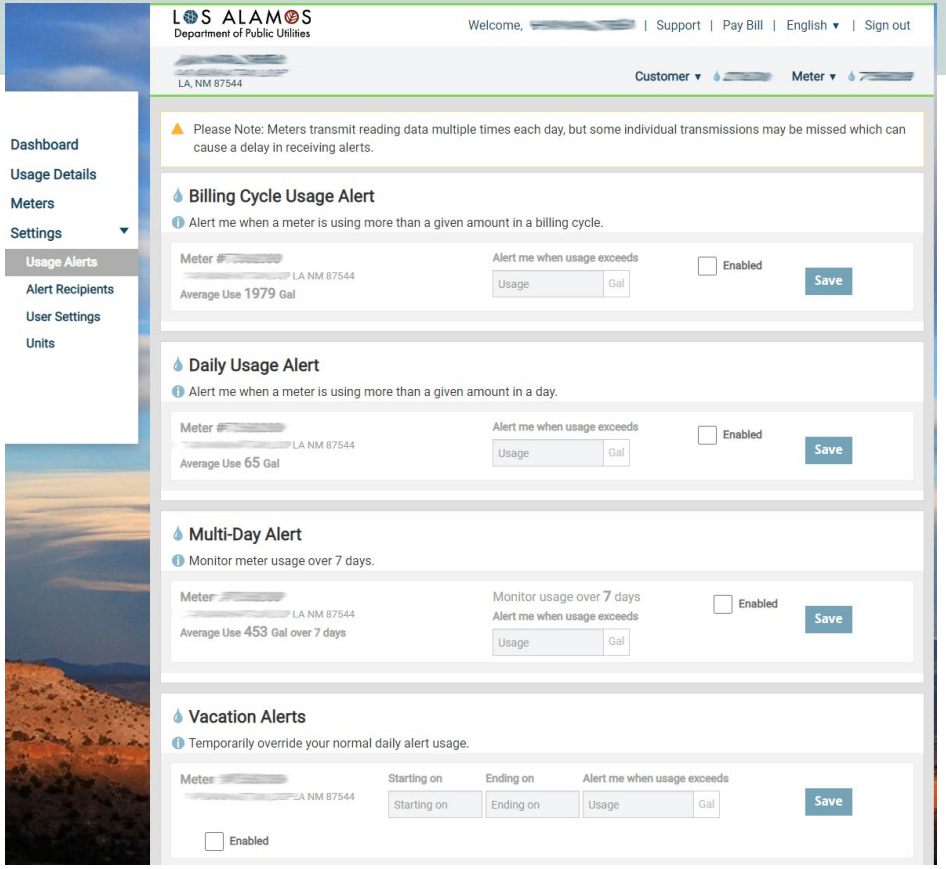
USDA Plant Hardiness Zone Map



> “If you are not killing plants, you are not really stretching yourself as a gardener.”
>
> JC Raulston

Step 5: Watering

- Hand watering
- Sprinkler systems
- Drip irrigation
- Grid drip irrigation/soaker hose
- Water harvesting measures



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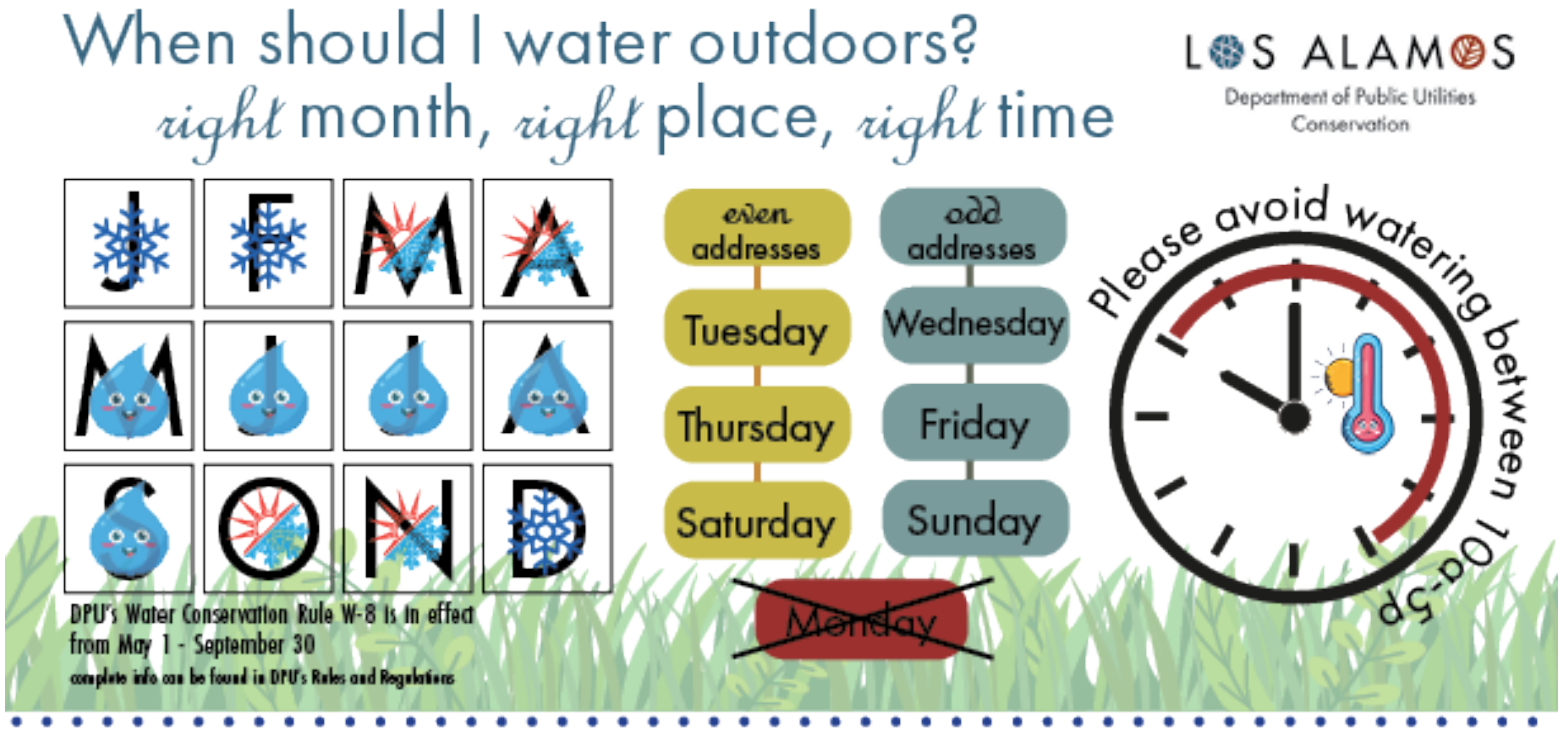
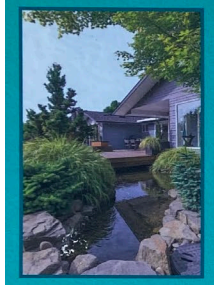


Water conservation tips from the demo garden

WATER CONSERVATION



Location: Examine your property with access to water in mind. Plan a landscape that requires lower water usage on higher ground or farther away from water sources, in the transition zone. Plan an oasis zone closer to water sources or natural water flow. Augment your water supply by harvesting water. The easiest way to turn excess water into a usable source is by locating rain barrels where water runs off a roof.

Plant Selection: Plant selection is key to water conservation. Know the average precipitation for your area and how much water you are willing to supplement. Select plants that need the amount of water and sunlight available throughout your yard. Then group plants in locations that meet their shared water and sunlight needs.

Soil Structure: Healthy soil will absorb and retain water better than poor soil. Poor soil is heavily compacted, which causes water runoff. It contains little organic material and may be primarily clay or sand. Healthy soil is well aerated and contains organic material. It promotes a strong, healthy root system

Water Retention: Mulch will aid in retaining the water applied to your garden. It reduces evaporation of water from the soil, creates a barrier to lower weed growth, and helps to regulate surface temperatures. Mulches may be organic (straw, bark), inorganic (rock), or synthetic (plastic, woven weed barrier). Good mulch will improve soil structure and promote healthy roots.

Application of Water: Much of the water applied to a landscape is wasted by poor application practices. Apply water in the early morning to reduce evaporation. Deep watering promotes healthy roots and is more effective than more frequent surface watering. Additionally, use methods that keep water closer to the ground, such as soaker hoses, rather than spraying water into the air and onto sidewalks.

Step 6: The dreaded yard work

> “There are no gardening mistakes, only experiments.”
>
> Janet Kilburn Phillips

FIRE DEFENSIBLE SPACE

High Priority Items for the Home Ignition Zone – up to 10' surrounding your home

- Remove all flammable material from your rain gutters and roof.
- For trees taller than 30 feet, limbs and branches should be at least 8 feet above ground level.
- Tree limbs and branches should be at least 10 feet from the roof.
- Tree limbs and branches should be at least 15 feet from chimney.
- Clear all dead fuels, combustible debris, and other potentially flammable vegetation.
- Vegetation remaining in the area should be of fire resistant species and spaced & sized to disrupt the ladder fuels.
- Remove all firewood and combustible debris from porches, decks, and crawl spaces. Place as far away from the house as applicable.
- Remove selected trees in dangerous proximity to the structure.
- Inspect and clean your chimney every year. Install a spark arrester with ¼ inch or smaller mesh.

Defensible Space Zone – Beyond 10' and up to 30' from your home

- Vegetation remaining should be spaced and sized to disrupt the ladder fuels
- Firewood and combustible debris should be removed from porches, decks, and crawl spaces and placed away from the house structure outside of the Home Ignition Zone.
- If your home is on a slope, increase the distance up to 100 feet depending on the steepness of the slope and types of vegetation.

Construction and landscape of this casita demonstrates Fire Defensible guidelines

- Grass and other low growing plants within 10'
- Gravel paths around the structure
- No trees Conifer within 30'
- Stucco Siding
- Metal roof

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College of Agricultural, Consumer and Environmental Sciences

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where discoveries are made

The following measures are for the Wildland Fuel Reduction Zone (Beyond 30 feet around your home)

- Remove all dead vegetation (dead shrubs, dried grass, fallen branches, pine needles, etc.)
- Thin out thick shrubs and trees to create separation between them
- Remove ladder fuels by removing low tree braches, removing or pruning the shrubs under the trees.

**Note: Due to space constraints, the Demonstration Garden's Defensible space practices are scaled to one fifth of what is required for your home.*

Plants for a Fire Wise Landscape

Plants that are more resistant to wildfire have one or more of the following characteristics:

- They grow without accumulating large amounts of combustible dead branches, needles, or leaves (ex: Aspen tree).
- They have open, loose branches with a low volume of total vegetation (ex: currant and mountain mahogany).
- They have low sap or resin content (ex: many deciduous species)
- They have high moisture content (ex: succulents and some herbaceous species).
- They grow slowly and need little maintenance (do not need frequent pruning).
- They are short and grow close to the ground (ex: wildflowers and groundcovers).
- They can re-sprout following fire, thus reducing re-landscaping costs (ex: Aspen)

Resources

- Fire Defensible Space Poster
- www.firewise.org
- New Mexico Xeriscape Guide https://www.ose.state.nm.us/WUC/LearningXeriscape/XeriscapeGuide_ScreenResolution.pdf
- Nyhan, J W, Hacker, L W, Calhoun, T E, and Young, D L. Soil survey of Los Alamos County, New Mexico. United States: N. p., 1978. Web. doi:10.2172/6479214.
- Enchanted Xeriscape Brochure https://www.ose.state.nm.us/WUC/Brochures/EnchantedXeriscape2004.pdf
- Compost Certification Letter https://www.losalamosnm.us/cms/One.aspx?portalId=6435810&pageId=6969051
- 811 Call Before You Dig https://call811.com/

What's Next

- #2: Site Inventory and Assessment
  Sept 28 · 6p
  Mesa Public Library
- #3: Landscape Design Basics
  Oct 12 · 6p
  Mesa Public Library
- #4: Soil Preparation
  Oct 19 · 6p
  Mesa Public Library
- #5: Plant Selection
  Oct 26 · 6p
  White Rock Branch Library
- #6: Irrigation
  Nov 2 · 6p
  White Rock Branch Library
- #7: Maintenance
  Nov 9 · 6p
  White Rock Branch Library

Thank you

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