Welcome to the Lyle Center

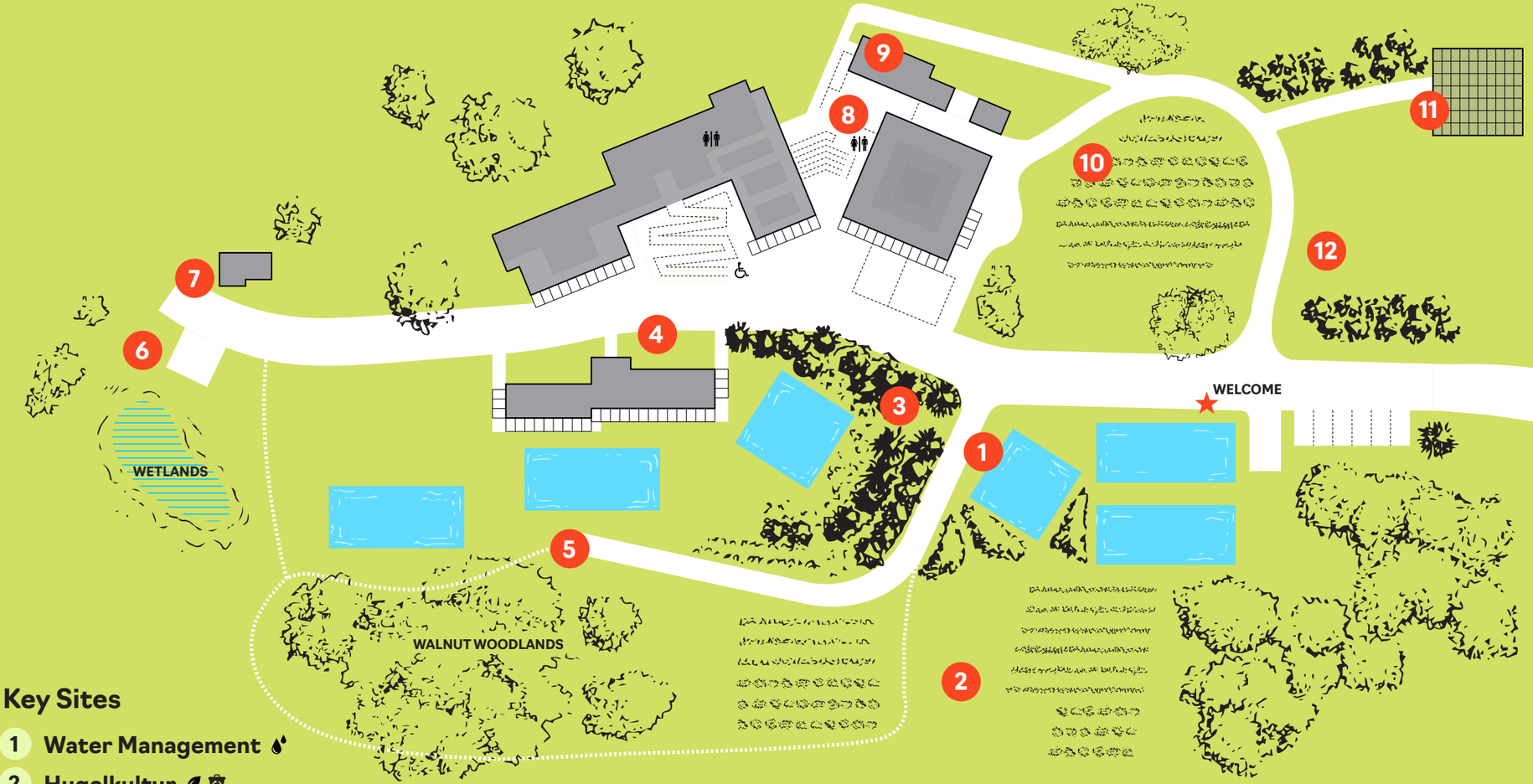
Introduction

Welcome to the John T. Lyle Center for Regenerative Studies at Cal Poly Pomona — a living laboratory for education, research, demonstration, and outreach, focusing on one of the most important issues of our time: climate change. The mission of the Lyle Center is to advance the principles of environmentally sustainable living. Our students, faculty, and community work to design and implement interdisciplinary solutions that regenerate natural systems while integrating the needs and capacity of the community. We believe the Lyle Center is a useful model for understanding how to design and live within systems that can regenerate our world.

Site History

Cal Poly Pomona professor and landscape architect John T. Lyle (1934–1998) challenged his students to envision a world where daily activities were based on the value of living within the limits of renewable resources without damaging the environment. Based on his vision, the Lyle Center was designed to demonstrate a greener future where all people live with dignity in safe, healthy, and environmentally-sustainable environments.

The land you are standing on was used as cattle grazing land for many years, but just two decades ago this site was also the location of the Spadra Landfill. The land has since been restored into a thriving ecosystem supporting many plant and animal communities across our 16-acre site. The project broke ground in 1992, and the Center welcomed our first batch of residents in 1994.



Key Sites

1. **Water Management**
2. **Hugelkultur**
3. **Permaculture**
4. **Living Buildings**
5. **Walnut Woodland + Wildlife Habitat**
6. **Constructed Wetlands**
7. **Tijuana House**
8. **Test Cells**
9. **Straw-Bale Building**
10. **Regenerative Agriculture**
11. **Photovoltaic Cells**
12. **Compost**

Regenerative Strategies

- Letting Nature Do the Work
- Considering Nature as both model and context
- Aggregating, not isolating
- Seeking optimum levels for multiple functions
- Matching technology to need
- Using Information to Replace Power
- Providing Multiple Pathways
- Seeking Common Solutions to Disparate Problems
- Managing storage as a key to sustainability
- Shaping form to guide flow
- Shaping form to manifest process
- Prioritizing for Sustainability

Regenerative Systems

John Lyle developed a system of regenerative strategies which continue to guide the work here today. Throughout our grounds, you'll find demonstrations of sustainable living principles that engage the interconnected Energy, Water, Shelter, Food, and Waste systems. We invite you to explore the Lyle Center and discover ways that you can incorporate regenerative strategies into your life.

ENERGY **WATER** **SHELTER** **FOOD + PLANTS** **WASTE**

To learn more, visit env.cpp.edu/rs.

1 Water Management

In the semi-arid southern California climate, water is often the most limiting factor for supporting life. Water management is one of the most central issues that the Lyle Center's site design addresses. The hillsides have been carefully shaped using landform techniques to capture and direct rainwater and minimize erosion. The vast majority of our landscape is irrigated with reclaimed water via drip irrigation, which maximizes efficiency and drastically reduces losses to runoff and evaporation.

2 Hugelkultur

Hugelkultur is a soil-building technique that uses decaying wood as a revitalizing resource. Fallen tree branches, logs, and other waste wood are collected, stacked into mounds, and covered with soil. As the wood slowly decomposes, it becomes a spongy, dark, and crumbly planting medium which absorbs water, promotes plant growth, and encourages a thriving soil ecosystem. In this way, waste wood that would otherwise be landfilled becomes a means of regenerating soils.

3 Permaculture

Permaculture is a land management philosophy focused on working with, rather than against, nature, in order to produce landscapes that provide for people's needs while maintaining the health and resiliency of natural ecosystems. Our permaculture garden features a "Food Forest"— a diverse interplanting of edible crops designed to mimic a forest ecosystem. Fruit trees act as the canopy layer, herb and berry bushes provide an understory, and low-growing crops such as mint provide ground-cover. By taking advantage of natural ecosystem interrelationships, a food forest creates a productive landscape in which nature does a large portion of the work for us.

4 Living Buildings

The Lyle Center is an active academic facility with classrooms, laboratories, and offices. Using passive design strategies, the buildings here are designed to minimize the amount of energy required for heating and cooling of the interior spaces, reducing building carbon emissions. The architecture works with the natural patterns of the sun and air to passively regulate the internal temperatures of the buildings.

5 Walnut Woodland + Wildlife Habitat

The Lyle Center and adjacent areas were once part of what was likely one of the largest walnut woodlands in North America. Sadly, much of this habitat has been degraded over the years by grazing and construction. Our restoration efforts over the years have allowed these walnut trees to survive and flourish on our site. Today, this is one of the largest walnut woodlands in the area and is home to a diverse array of wildlife including long-tailed weasels, California quail, and Cooper's hawks.

6 Constructed Wetlands

Wetlands are an important but vanishing ecosystem in California and are vital to many species of migratory water bird. Our human-made wetland consists of a large depression situated at the lowest point of our site, where water naturally collects. Several of our stormwater channels on site also empty into this area, carrying excess rainwater and runoff. This creates a natural pond during the rainy season, which provides much-needed habitat for water birds and other species. During warmer months, the water slowly soaks into the ground where it can help to replenish groundwater reserves. Our wetland allows us to address multiple problems (rainwater capture, urban runoff, habitat creation) with a single solution.

7 Tijuana House

The Tijuana House was developed by Cal Poly students and faculty, in partnership with the nonprofit organization Corazon, as a potential solution to the low-cost housing needs in Mexico. This housing prototype uses affordable and sustainable low-carbon design strategies which can be replicated in impoverished areas. The structure uses recycled materials, such as wooden pallets and used tires. The walls are constructed out of Papercrete, a mixture of waste paper and cement, which can be formed into blocks or poured like concrete. This material is affordable, lightweight, durable, easy to make and build with, and provides a high insulation value to keep the building comfortable in both hot and cold weather. In addition to its use as a prototype, the Tijuana House has become a site for numerous student and faculty research projects.

8 Test Cells

The Test Cells are used by Cal Poly faculty and students to experiment with passive heating and cooling systems in the particular climate of Southern California. These test cells provide an opportunity to do advanced applied research, which can eventually be implemented in real buildings. For example, living roofs can be combined with water systems to cool buildings, reducing both energy consumption and the urban heat island effect.

9 Straw Bale Building

The Straw Bale Building uses agricultural waste products as a resource to create an all-natural building material that is affordable, fire-resistant, and well-insulated. Straw bales can be made from by-products of wheat, oats, rye, barley, and rice. The thick, tightly-packed bales create a structure that is more fire-resistant than traditional stick-framed homes, and also provide insulation from the summer heat and winter cold. The straw bale building is used to host data logging equipment for the test cells and to design and build innovative construction systems.

10 Regenerative Agriculture

Food production is a core feature of the Lyle Center, and takes place both in dedicated garden areas and as an integrated part of the general landscape. Our regenerative agriculture strategies focus on producing edible crops while simultaneously improving (rather than degrading) the health of the whole system including soil, water, and biodiversity. One of the key aims is to maximize the capture and sequestration of carbon in the forms of soil organic matter and aboveground biomass. This carbon capture produces many benefits, including enhanced soil fertility, improved water infiltration, increased biodiversity, and reversal of the atmospheric CO_2 accumulations that lead to climate change.

11 Photovoltaic Cells

Solar energy is one of the most powerful and important forms of renewable energy. A photovoltaic (or PV) cell uses semiconductor materials (such as silicon) to create a voltage differential, which makes it possible to convert sunlight into electricity. The two arrays of PV cells here are designed to generate 210,000 kWh of renewable energy a year — displacing 85 metric tons of greenhouse gases. The solar systems here would meet the Center's energy demands without generating greenhouse gas emissions. The Center is designed to be a net zero or "carbon neutral" facility. This scale of technology is appropriate for communities with large energy demand and the resources to routinely provide maintenance.

12 Compost

Composting is a natural process of recycling organic material, such as leaves and vegetable scraps, into a rich soil amendment. At the Center, we collect and compost virtually all of the green waste produced on site, keeping carbon on the ground. This saves the waste from the landfill, where it would become a source of methane emissions. The finished compost from our large-scale piles and small-scale worm bin are returned to our landscapes as a soil amendment, eliminating the need for synthetic fertilizers and keeping the carbon embodied in the plant material and out of the atmosphere.

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Visitor Guide