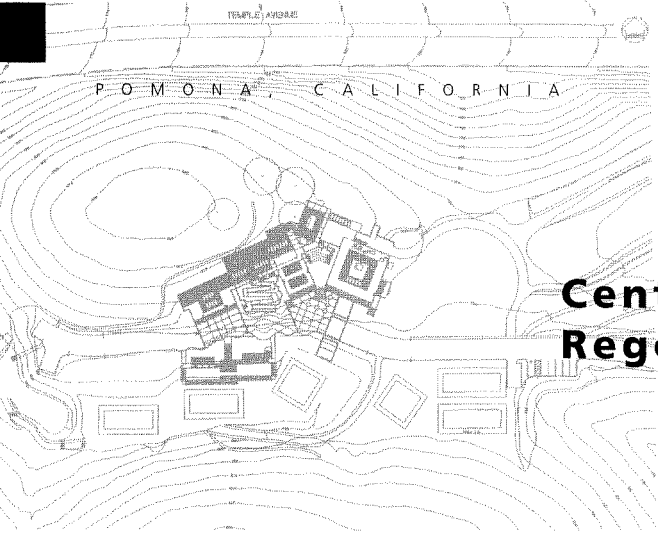



# Center for Regenerative Studies

*Todd W. Bressi*

Center for Regenerative Studies, plan.

Almost twenty years ago, landscape architecture professor John T. Lyle asked his students to imagine what a community might look like if it depended only on the energy, food and water available on its site. Now they are building such a place at the edge of California Polytechnic Institute, Pomona, campus, where Lyle teaches.

The mission of this place, called the Center for Regenerative Studies, is to study and demonstrate how human settlements can be more sustainable by using "regenerative" technologies — those that turn both self-renewing resources (such as sunlight, wind and rain) and wastes into usable food, water and energy.

So far, three buildings (the core of a "village") and some gardens are complete. Ultimately the center will have dorm space for 90 students; faculty accommodations; living, meeting and teaching areas; and laboratories and offices. Eighteen students live there now and others can take classes (an undergraduate major and master's program are in the works); students are working in "lab sessions" to build ponds, terraces and planters that will produce food for the village.

Lyle won university support for building the center while he was part of a team studying how to reuse a landfill that is adjacent to Cal Poly and will one day be annexed to the campus. He convened an interdisciplinary design team that included not only architects and landscape architects but also specialists in agricultural economics, agronomy, anthropology, aquaculture, hydrology and solar engineering. The team spent two years developing a detailed program and design proposal. First it studied the way resources — energy, water, nutrients — and wastes would flow through the settlement. Then it designed physical forms (buildings, ponds, agricultural areas) to fit those patterns. "It was a little difficult because everyone speaks a different language. The design members played strong roles in guiding the thinking into channels that would fit together," Lyle said.

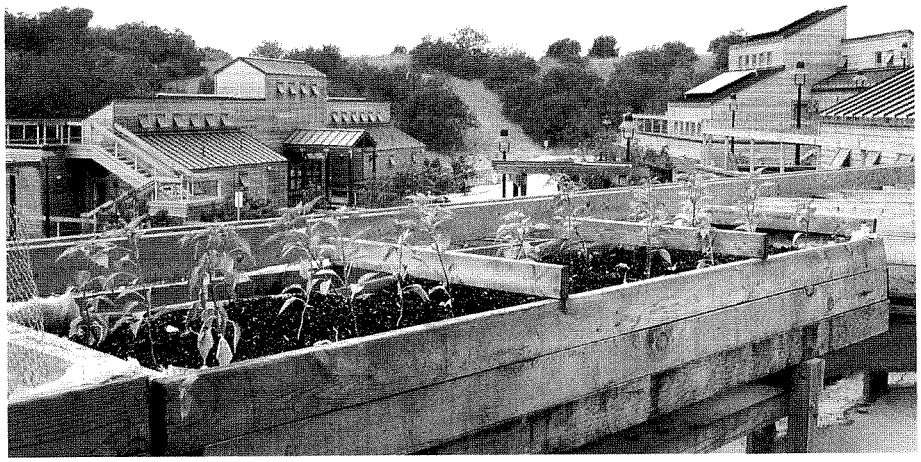
Using design to give visual form to the center's approach and values was important, Lyle said. Much of that expression follows from functional concerns rather than an aesthetic style. Buildings are located on a hillside, since hilltops (open to the sun and wind) will be used for solar energy collectors and wind-driven turbines and the valley (through which water drains) is the best place for aquaculture. Buildings are oriented east-west so their broad facades face south, towards sunlight. The buildings are surrounded by deciduous vegetation, which capture sunlight during the day (cooling the buildings) and release heat at night (warming the buildings).

Cal Poly hired Dougherty + Dougherty architects and Peridian Group landscape architects to prepare the final design, which differs from the team's vision in several ways.

For example, the original concept called for a series of buildings whose long, flat, interconnected roofs served as planting areas and were terraced to reflect the slope of the land. But the finished buildings "stick up in the air much more than we had intended," Lyle said; they are fragmented into discrete structures and their roofs have more pronounced slopes.

Those changes occurred for practical reasons, architect Betsey Dougherty explained: Buildings had been proposed on a utility easement, the flat roofs prevented designs that allow the buildings to be ventilated through convection, and the project had to be designed so it could be built in phases, rather than all at once.

The center will also have to surmount regulatory and funding hurdles to realize its vision of minimizing the use of energy and materials imported from off the site. "It will be a matter of time before we can determine just how well we can treat water, and we are working with regulatory agencies to determine how much we can use reclaimed waste water in lieu of potable water," Dougherty noted. A bio-mass heat-storage facility and



(Left) First phase of village. (Milroy/McAleer)

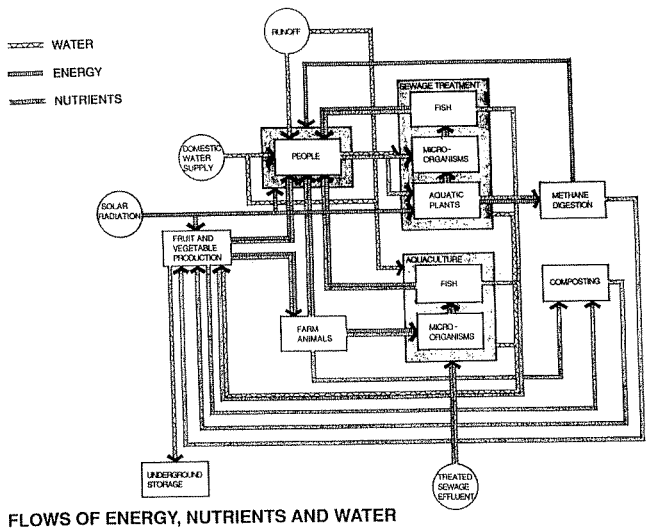
(Below) Conceptual diagram of energy, water and nutrient flows through the center.

(Bottom) Conceptual site plan showing water flows through the center.

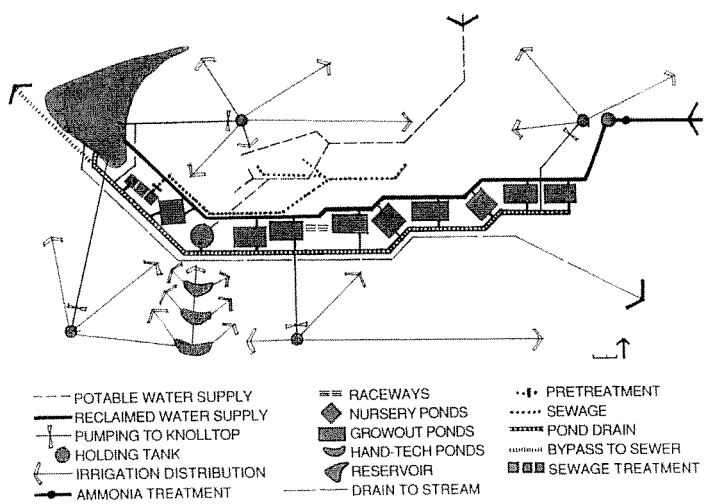
(Illustrations courtesy Dougherty + Dougherty)

methane cogeneration plant have yet to be built.

The center will certainly be a unique place, a living, breathing laboratory for demonstrating sustainable practices. The challenge, of course, is to find ways to transfer technology and influence the design and operation of other communities. The process of designing and building the center will be most instructive: Using designers to coordinate teams of environmental scientists, basing architectural and landscape design on an understanding of resource flows, negotiating through design and construction standards that might not meet goals of sustainability, and building in an incremental, flexible manner are lessons that should have as wide an application and impact as the research the center undertakes.




FLOWS OF ENERGY, NUTRIENTS AND WATER




WATER FLOW PLAN

## Project Credits

Cal Poly Design Team: John T. Lyle (project director), Gregg D. Ander, Barry A. Costa-Pierce, C. Dean Freudenberger, Arthur W. Jokela, Denise L. Lawrence, Jeffrey K. Olson, Barry L. Wasserman, Victor A. Wegrzyn, James M. Weidman.

Architect: Dougherty + Dougherty

Landscape Architect: Peridian Group