

A Bay-Friendly Rated Landscape: A Case Study

OHLONE COLLEGE NEWARK CENTER FOR HEALTH SCIENCES & TECHNOLOGY

Bay-Friendly Rated Campus Teaches Environmental Stewardship



The San Francisco Bay Area's newest community college campus has been receiving a steady stream of accolades for its leadership in sustainable landscaping and green building practices. Ohlone College Newark Center for Health Sciences and

Technology is the largest landscape to date—and the first college campus—to be designated a Bay-Friendly Rated Landscape.

It is also the first college campus in the world to achieve Platinum certification, the highest level of recognition offered by the LEED green building rating system. The Newark Center's grounds, which include native plants and a stormwater management system that functions as a seasonal wetland preserve, contributed to the school's top LEED rating.

The grounds were designed to teach environmental stewardship through responsible, sustainable practices, including soil and watershed conservation, the use of native and climate-appropriate plant species and creation of wildlife habitat. StopWaste.Org provided a \$110,000 grant to fund some of the Bay-Friendly Landscape and green building features.

The Bay-Friendly Rating was an outgrowth of the College's determination to "create a healthy and innovative learning space for students," said Leta Stagnaro, the Newark Center's associate vice president. And with the campus located close to the San Francisco Bay, "Ohlone wanted to make sure we did our part as a college and as a community leader" to be a responsible steward of the watershed, she said.



FAST FACTS

COST

\$117.5 million (total project cost including land acquisition, buildings, landscaping, roads, parking, furnishings, equipment)

LOCATION

39399 Cherry Street
Newark, California

PARCEL SIZE

81 acres

BUILDING SIZE

135,000 sq. ft.

LANDSCAPE SIZE

31 acres

BUILDING TYPE

Community college campus

COMPLETION DATE

January 2008

OWNER/DEVELOPER

Ohlone Community College
District, Fremont, California

LANDSCAPE ARCHITECT

Conger Moss Guillard
San Francisco, California

LANDSCAPE CONSTRUCTION**CONTRACTOR**

ValleyCrest Landscape
Development
Pleasanton, California

BUILDING ARCHITECT

Perkins+Will
San Francisco, California

GENERAL CONTRACTOR

Turner Construction
San Jose, California

CONTACT FOR MORE INFO

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The first phase of the Newark Center, which opened in January 2008, consists of a 135,000-square-foot building on an 81-acre site. Built to accommodate 3,500 students, the Center offers general education as well as vocational programs including biotechnology, nursing, physical therapist assistant, respiratory therapy and a new environmental studies program.

Landscape architects Conger Moss Guillard designed the grounds and participated in the master planning process for the campus. Although designed to accommodate future expansion, the landscape feels complete today, with sunny and sheltered seating areas, shade trees and a gently sloping amphitheater. Walkways lead from formal lawns through areas of native sedges and grasslands and alongside a newly constructed seasonal wetland that cleanses stormwater runoff before it flows into the Bay.

Having learned so much about Bay-Friendly Landscaping at the Newark Center, the College will be looking at ways to introduce these practices to their much larger Fremont campus, said Stagnaro.

*B*AY-FRIENDLY LANDSCAPING PRACTICES

Protect Water Quality: Contributing to a Healthier San Francisco Estuary

The Newark Center's Bay-Friendly landscape has been designed to help improve the health and function of the San Francisco Estuary, the largest estuary in western North America. This extraordinary resource encompasses the San Francisco Bay and Delta and a range of tidal flats, marshes, lagoons, salt ponds and grasslands.

The campus is near the southeastern periphery of the Bay, in a transitional area between urban development and the Estuary's wetlands. Those wetlands help recharge groundwater supplies, reduce the destructiveness of floods, and absorb and filter pollutants. Over the past 200 years, however, human



BAY-FRIENDLY AT A GLANCE

Bay-Friendly Rated

Landscape score:

★ 83 ★

LANDSCAPE LOCALLY

- Site analysis completed to maximize benefits of Bay-Friendly Landscape practices
- Soil analysis provided recommendations for organic soil amendments and fertilizers

LANDSCAPE FOR LESS TO THE LANDFILL

- Plant species installed will not require shearing and will grow to mature size within space allotted; overplanting was avoided
- No invasive species were planted
- Soil surface under tree and shrub canopies will be used as repository for fallen leaves
- Onsite composting uses plant debris from the landscape and serves as an educational opportunity
- 100% of compost and mulch used was produced from urban plant waste
- 91% (957 tons) of construction and demolition debris was diverted from landfills
- Plant debris is taken to a facility that produces compost and mulch

NURTURE THE SOIL

- Soil was not worked when wet
- A stormwater pollution prevention plan was prepared for the site
- Valuable trees, shrubs and sensitive habitat were protected with fencing during construction
- Compacted soil was aerated prior to planting in all landscaped areas
- Long-term maintenance for turf includes topdressing with finely screened quality compost after aeration
- Compost was used to amend soil

BAY-FRIENDLY AT A GLANCE

CONSERVE WATER

- All soil is protected with 2-inch layer of recycled mulch
- 1 inch of compost was tilled into all planting areas
- Over 75% of all plants are California native or Mediterranean species that require little or no summer water
- Sod is a water-conserving dwarf tall fescue
- No more than 10% of total landscape area is turf
- High efficiency irrigation system includes a smart irrigation controller; irrigation system reduces potable water consumption by 55.6% compared to conventional irrigation
- Dedicated landscape water meter was installed; water use is reported according to regular schedule
- Maintenance specifications require checking soil moisture content with soil probes before watering, adjusting the watering schedule based on weather conditions and immediately replacing broken irrigation equipment

CONSERVE ENERGY

- Deciduous trees shade some of west-facing building walls and windows
- Full cut-off exterior light fixtures reduce light pollution
- Site lighting does not cast direct beam illumination onto adjacent properties

PROTECT WATER & AIR QUALITY

- 20% of installed plants are listed by Cornflower Farms as attracting beneficial insects
- Integrated pest management (IPM) will be used during maintenance
- Maintenance practices require that oil leaks be repaired immediately and off site
- 100% of average annual runoff is treated in bioswales, stormwater garden and detention basin/seasonal wetland
- At least one member of staff is a Bay-Friendly Qualified Landscape Professional

CREATE WILDLIFE HABITAT

- More than 30 distinct species were planted to increase biodiversity
- 955,927 s.f. of the site area (roughly 56% of the non-building area) has been planted with native or climate-adaptive species
- A mosquito abatement plan was developed for the bioretention areas

BE INNOVATIVE

- A Bay-Friendly maintenance manual was developed as a basis for training maintenance contractors
- Educational signage was installed to describe the property's Bay-Friendly Landscape features



activities have resulted in the loss of more than 90 percent of the original wetlands in the Estuary, severely impairing their ability to provide vital ecological functions.

The campus's 81-acre site is nearly flat, with tight clay soils that impede the downward movement of water. If there were no system in place to manage stormwater runoff, some of the rain falling on the site would carry sediment, road oil and other pollutants into nearby Mowry Slough, ultimately reaching the salt ponds and tidal flats fringing the Bay.

"We had the opportunity to do the site planning from the outset and think about how to move stormwater across the site sustainably," said Chris Guillard, a principal with Conger Moss Guillard. Instead of "hard-piping" runoff to a discharge point, the team designed a low impact system that directs runoff from impervious surfaces such as roofs, parking lots and walkways into a series of onsite bioretention areas.

Runoff from the site hardscape drains to landscaped areas, where the soil naturally filters suspended solids and removes much of the dissolved organics and phosphorous; area drains then collect the treated runoff. Meanwhile, runoff from the roof, which is relatively free of pollutants, is directed from downspouts to area drains. The runoff from both the landscaped areas and the roof is then piped underground to a large depression dubbed the "stormwater garden" that is planted with native grasses and other vegetation. As the water percolates into the stormwater garden's soil, it is further filtered and cleansed.



From the stormwater garden, runoff is then conveyed through a bioswale to a constructed seasonal wetland, a large detention basin designed to detain water for at least 24 hours. This fully planted basin provides additional biological filtration, further reducing dissolved toxins and chemicals such as nitrogen and phosphorous that have the potential to cause eutrophication in local streams and the Bay. The cleansed runoff then flows into another channel that directs it to the slough and ultimately the Bay.

The sequence of stormwater management elements “creates this linear link to the horizon and to the Bay,” said Guillard. “Those areas were seeded with native plants and wetland species to start the process of habitat creation,” including many species “common to transitional grasslands that would have been on the site historically,” he said.

Along the periphery of the campus, a separate storm drainage system was installed to handle the potentially higher levels of suspended solids and toxins in runoff from the parking lots, landscape islands and drive aisles.

A three-level treatment system, including bioswales, two hydrodynamic separators, and two sedimentation ponds, cleanse the runoff before it spills into the constructed wetland.

Designed to be a visible part of the landscape, the stormwater management system serves as a teaching tool for students and visitors. Students in the Environmental Studies department study the native and exotic plants in the bioretention areas, collect bugs and leaves, and test the water, said Stagnaro. Detailed interpretive signs in front of the stormwater garden promote awareness about how the campus’s Bay-Friendly features are contributing to a healthier Estuary.

Create Wildlife Habitat: Establishing Native Grasslands

Areas of the Newark Center’s landscape that are designed for fairly intensive use, such as the amphitheater, have been planted with a tall fescue grass that requires less water than conventional turf grass. In other areas, the lawns give way to wilder zones that take their cue from the native grasslands that once edged the Bay.

“The design attempted to acknowledge the relationship with the Bay and with the indigenous California landscape to try to bring areas where there would be some habitat creation right into campus,” said Guillard.



Some of these areas have been planted with *Carex pansa*, a native sedge that needs relatively little irrigation and no mowing. Other areas have been seeded with cool-season native grasses and forbs that grow through the winter and early spring and then go dormant during the dry season. The sedges and grasses provide wildlife habitat and create a transition between the more formal

landscaping close to the building and the wetland preserve and open space in the outlying areas of the site.

The native grasses initially established reasonably well, Guillard said, but because weed abatement strategies were not used prior to construction, over time weeds have become a problem in some areas. Also, budget shortfalls have made it difficult to devote landscape maintenance time to weed control, said Manmohan Gill, the College's building and grounds supervisor. The College is currently evaluating options for the grasslands, such as overseeding them with nonnative annual grasses that can outcompete the undesirable broadleaf weeds.

To guide ongoing landscape maintenance practices at the site, the College developed a landscape maintenance manual based on Bay-Friendly techniques, said Gill, who is a Bay-Friendly Qualified Landscape Professional. Landscape waste is currently collected and composted at a nearby site, he said, and onsite composting will become standard practice after completion of a student project to build a three-bin composting system large enough to handle a truckload of material.



The Newark Center's LEED Platinum Building

Achieving the Platinum level of LEED certification required Ohlone College to make an extraordinary commitment to sustainable design and construction practices. The building has an innovative heating, ventilation and air conditioning system designed to use less energy than conventional HVAC systems.

A geothermal system heats and cools the building, circulating water through 26 miles of closed-loop pipes buried 12 feet under the landscaping. The water absorbs heat from the earth to warm the air in the building on cool days, and it rejects heat to the earth to cool the building on warm days.

Two enthalpy wheels (also known as heat wheels or rotary air-to-air heat exchangers) further reduce the amount of energy required for heating and cooling by transferring energy between the HVAC system's outgoing air and incoming air. This energy recovery system allows significant amounts of fresh air to be introduced into the building without expending extra energy to heat or cool it. More fresh air results in better indoor air quality and a healthier environment for the students, staff and faculty. The enthalpy wheels can be seen through a glass window inside the building, allowing them to serve as a teaching tool.

A 480 kilowatt solar electric system covering 38,000 square feet of the building's roof meets roughly 40 percent of the building's electrical demand. Other green building features include abundant interior daylight, high efficiency lighting, high performance windows, water-conserving fixtures, low VOC interior paint, Forest Stewardship Council-certified wood in the elevator lobbies, recycled cotton insulation, recycled-content carpet tiles, and furniture designed for easy disassembly and recycling. A remarkable 91.8 percent (957 tons) of the waste generated onsite during construction was diverted from landfills.

STOPWASTE.ORG

Reducing the Waste Stream for Alameda County

1537 Webster Street, Oakland, CA 94612

Ask about our FREE resources:

Available online at www.Bay-Friendly.Org:

- *Bay-Friendly Civic & Commercial Landscape Scorecard*
- *Bay-Friendly Landscape Guidelines: Sustainable Practices for the Landscape Professional*
- *A Bay-Friendly Landscaping Guide to Mulch: Save Money, Control Weeds, and Create Healthy Landscapes* (Available in English and Spanish)
- *A Bay-Friendly Landscaping Guide to Grasscycling: Save Time, Save Money and Create Beautiful Lawns* (Available in English and Spanish)
- *A Bay-Friendly Landscaping Guide to Recycled-Content and Salvaged Materials: Add Value, Reduce Greenhouse Gas Emissions and Create Attractive Landscapes*
- *Fact Sheet on Recycled Content Park & Recreation Products in Alameda County*
- *Bay-Friendly Model Landscape Maintenance Specifications*

Also check our website for information on the Bay-Friendly Landscape Professional Qualification and Training for both landscape design and maintenance professionals at www.bayfriendly.org/bf-qualified.

This case study was written by StopWaste.Org as part of its Bay-Friendly Landscaping program. For information about waste reduction, recycling and sustainable landscaping, visit www.BayFriendly.org

About the Agency

The Alameda County Waste Management Authority & the Alameda County Source Reduction and Recycling Board is an integrated public agency whose mission is to provide the most environmentally sound waste management program for the people of Alameda County. The authority and the Recycling Board produced this case study to aid developers in creating and building sustainable landscapes



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