

A Bay-Friendly Rated Landscape: A Case Study

DOYLE HOLLIS PARK

A New Park in Emeryville That's Good for the Community and the Bay



merville residents and workers have been flocking to the City's newest park since it opened in September 2009. Built on a block-long site bordered by commercial buildings and live/work lofts, Doyle Hollis Park offers this densely developed neighborhood a

beautiful outdoor setting for play, relaxation and exercise.

From the time the City of Emeryville bought the property and cleared it of an existing warehouse and concrete parking lot, the vision was to make the park as community-friendly and Bay-Friendly as possible. Community members played an active role in deciding how best to transform the former industrial property

into a public green space, said Todd Young of Gates & Associates, the landscape architecture firm that designed the park. Neighbors brought to the table issues ranging from the new park's impact on street parking to design ideas for the play area and restroom building.

Since opening day, Doyle Hollis Park has been eagerly embraced by people living and working in the area. "I think the community didn't know there was such demand for a space like this until it was actually built," Young said. "As soon as the park opened, the play area had hordes of users. There are kids playing soccer in the field after school and on evenings and adults playing soccer on weekends. There are birthday parties there almost every weekend." In addition to the open lawn and children's play area, the park features a half basketball court, an amphitheater, a public art fountain designed by artist Masayuki Nagase, and plenty of picnic areas and benches.



FAST FACTS

TOTAL LANDSCAPE COST
\$1.2 million

LOCATION
1327 62nd Street (between Doyle and Hollis Streets)
Emeryville, California

PARCEL SIZE
1.5 acres

PROJECT TYPE
Public park

COMPLETION DATE
September 2009

OWNER/DEVELOPER
City of Emeryville, California

LANDSCAPE ARCHITECT
Gates & Associates
San Ramon, California

ARCHITECT/CIVIL ENGINEER
Endres Ware
Berkeley, California

BAY-FRIENDLY LANDSCAPE RATER
Design, Community & Environment
Berkeley, California

LANDSCAPE CONSTRUCTION CONTRACTOR
Suarez & Muñoz Construction
Hayward, California

CONTACT FOR MORE INFO
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AY-FRIENDLY LANDSCAPING PRACTICES

Less to the Landfill

When a new park is built, it takes leadership by the project owner and due diligence by the landscape construction contractor to make sure that construction and demolition debris gets reused or recycled instead of winding up in a landfill. Before construction of Doyle Hollis Park began, the City needed to remove a large warehouse and a concrete slab that covered the 1.5-acre site. The concrete, which was “one-to-two-feet thick on the west



end near Hollis Street,” said Schultze-Allen, was all recycled, as was most of the old building.

All the new concrete used in the park and to build the restroom facility contains recycled flyash. Flyash is residue left after burning coal to generate electricity. In the concrete mix used for Doyle Hollis park, the flyash displaced 50 percent of the Portland cement typically used in concrete.

Other recycled-content

materials in the park include attractive, easy to maintain benches and tables made from a composite material that blends recycled plastic and wood. The floor surface in the play area contains some recycled rubber, and the mulch on top of the soil and the compost mixed into the soil were made from urban plant debris.

Protecting Water Quality

Much of the rainwater that falls on urban areas never has an opportunity to percolate into the soil. Instead it flows straight off of buildings, sidewalks and streets into storm drains, carrying road oil and other pollutants into the storm sewer system and eventually into local waterways. To address stormwater runoff, five areas of Doyle Hollis Park have shallow vegetated depressions called rain gardens. These have been designed to capture and naturally filter more than 85 percent of stormwater runoff that might otherwise have flowed from the park into storm drains.

BAY-FRIENDLY AT A GLANCE

Bay-Friendly Rated
Landscape score:

★ 108 ★

LANDSCAPE LOCALLY

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

LANDSCAPE FOR LESS TO THE LANDFILL

- To reduce labor costs and plant waste, plant species installed will not require shearing and will grow to mature size within space allotted; overplanting was avoided
- No invasive species were planted
- Long-term maintenance contract includes grasscycling
- Site furniture and rubber playground surface are made with recycled-content plastic
- Recycled flyash displaces 50% of cement in all exterior concrete
- 100% of compost and mulch was produced from urban plant waste
- Nearly 100% of construction and demolition debris was diverted from landfills, including asphalt, concrete and landscape debris
- Plant debris was taken to a facility that produces compost and mulch

NURTURE THE SOIL

- Area was designated for staging materials during construction
- Soil was not worked when wet
- A stormwater pollution prevention plan was prepared and implemented for the site
- Valuable trees were protected with fencing during construction
- Compacted soil was aerated prior to planting in all landscaped areas

BAY-FRIENDLY AT A GLANCE

- Long-term maintenance for turf includes topdressing with finely screened quality compost after aeration
- Compost was used to amend soil in all landscaped areas
- Fertilizers prohibited by Organic Materials Research Institute were not used

CONSERVE WATER

- All soil is protected with 2-inch layer of recycled mulch
- 2 inches of compost was tilled into all planting areas
- 89% of total plants are California native or Mediterranean species that require little or no summer water
- All turf installed serves a recreational function
- Dual-pipe irrigation system is capable of delivering recycled and potable water
- High efficiency irrigation system includes a smart irrigation controller
- Dedicated landscape water meter installed; water use reported according to regular schedule
- Irrigation plans were reviewed by an Irrigation Association trained irrigation specialist
- 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

- 33% of paved area will be shaded by trees within 15 years

- Site lighting does not cast direct beam illumination onto adjacent properties

PROTECT WATER & AIR QUALITY

- Integrated pest management (IPM) was used during construction and will be used during maintenance
- Low or zero VOC paints, adhesives and sealants were used in the restrooms
- Maintenance practices require that oil leaks will be repaired immediately and off site
- 85% of average annual runoff is treated on site in rainwater gardens

CREATE WILDLIFE HABITAT

- More than 40 distinct species were planted to increase biodiversity on site
- Landscape design includes water source and shelter for wildlife
- The park increases open space compared to its previous use

BE INNOVATIVE

- A Bay-Friendly maintenance manual was developed as a basis for training maintenance contractors
- Educational signage describes the park's Bay-Friendly Landscape design, construction and maintenance practices
- 20% of street trees planted adjacent to Silva Cells; 23% of street trees planted adjacent to structural soil
- Stormwater runoff from adjacent street is treated in park's rain garden

In addition to harvesting runoff from the park, two curb cuts direct stormwater runoff from the street on the park's north side into the rain gardens. Designing landscapes to take drainage off streets is part of a "green streets" movement gaining traction in the stormwater management field.

"We are going to be doing more of these green street retrofits around the City," said Schultze-Allen.



Conserving Water

Many experts predict California's fresh water supplies to grow increasingly scarce as the State's population grows and as global warming shrinks the mountain glaciers that store so much of the State's water. To help conserve water supplies well into the future, the City of Emeryville made water-wise landscaping a priority at Doyle Hollis Park.

The park's high efficiency irrigation system has a smart controller that adjusts irrigation volume and frequency based on the weather rather than on a fixed schedule. In addition, the irrigation system is dual plumbed, with separate pipes installed to supply potable water and recycled municipal wastewater that has been treated and disinfected. Currently the park's irrigation system receives only potable water but it is slated to receive recycled water in the future as the East Bay Municipal Utility District's recycled water system expands.

The park's open lawn requires regular summer irrigation but the amphitheater area has been planted with California meadow sedge (*Carex pansa*), a native plant that requires much less mowing or summer water than conventional turf grass. The rest of the park, including the rain gardens, is planted with an unusually wide diversity of plants that don't require a lot of irrigation, most of which are California native species. The plants are grouped according to water needs—a strategy called hydrozoning—to help ensure they aren't over- or underwatered.

Innovation

In urban areas, large street trees do much more than look beautiful and provide wildlife habitat. They also shade buildings and streets, making people more comfortable and reducing the use of air conditioning energy. They absorb carbon dioxide and air pollutants, helping rein in global warming and improving air quality. And the canopy and root systems of mature trees retain significant amounts of rainfall, helping control stormwater runoff.

Unfortunately, many street trees die long before they are big enough to provide much benefit. For trees to grow large and remain healthy, their



Large tree wells improve health of street trees.

roots must be able to access sizeable volumes of uncompacted soil. But most street trees are planted in small pits filled with minimal soil, and their root growth is impeded by foundations of adjacent buildings and by compacted soil under sidewalks and streets.

Recognizing that a large population of mature, healthy trees is an important characteristic of a green city, the City of Emeryville instituted an urban forestry ordinance that has led to “pretty extensive requirements for street tree plantings,” said Schultze-Allen, including requirements that developers provide a

much larger volume of soil than a typical tree pit holds.

These requirements, which are being phased in over time, set minimum volumes of rootable soil for street tree plantings. The volume depends on

Rain Garden Plant List

These plants were chosen for the rain gardens for their aesthetic appeal as well as their ability to survive occasional inundations in the winter, while receiving only modest irrigation during the dry season.

Shrubs

Spice bush (*Calycanthus occidentalis*)
Rush (*Chondropetalum tectorum*)
Red osier dogwood (*Cornus stolonifera*)

Perennials

Sedge (*Carex buchananii Red Rooster*)
Berkeley sedge (*Carex tumulicola*)
California gray rush (*Juncus patens*)
Polemonium (*Polemonium Brise d'Anjou*)

Groundcovers

Fiber optics plant (*Scirpus cernuus*)

The Bay-Friendly Process

While enjoying the park, visitors will likely notice a number of signs pointing out its Bay-Friendly features, from recycled mulch that helps retain soil moisture to California native plants that provide wildlife habitat. The signs encourage people to think about the park’s relationship to the San Francisco Bay watershed and the benefits of Bay-Friendly landscaping and gardening.

StopWaste.Org provided a \$25,000 grant to fund some of Doyle Hollis Park’s Bay-Friendly features. Teresa Eade, senior program manager with StopWaste.Org’s Bay-Friendly Landscape program,

credits the City of Emeryville, the community and the design team with making the vision for a sustainable green space a reality. “Instead of paving paradise and putting in a parking lot, they took out

an old warehouse and parking lot and put in a park,” she said.

To ensure that Bay-Friendly practices are integrated into the park’s maintenance routine, the City provided the landscape maintenance contractor with a Bay-Friendly maintenance manual, said Peter Schultze-Allen, an environmental analyst with Emeryville’s Public Works Department.





Silva cells being installed under sidewalk to benefit street trees.

the tree's size at maturity. A large tree such as London plane (sycamore) must have at least twice as much soil as small trees such as crape myrtle. The requirements can be met using regular planting soil, structural soil (a specially engineered mix of soil and aggregate that still allows roots to grow through it even if it becomes compacted), or a new category of products called structural cells.

At Doyle Hollis Park, the Public Works Department decided to "walk the talk" by testing the use of structural cells for the street tree plantings around the park.

Structural cells, which are best known by the brand name of Silva Cells, are designed to increase the volume of uncompacted soil around a tree's roots and grow larger, healthier trees. "This is the first installation in the City of Silva Cells," said Schultze-Allen. "It's a relatively new idea."

Silva Cells are modular box-like components made of steel-reinforced plastic frames and decks. These boxes or "cells" have large openings for water drainage and root penetration. When a new street tree is planted, the ground adjacent to the planting area is excavated and a framework of these cells, stacked one to three deep, is installed and filled with soil. The framework is then capped with a structural deck, and covered with a geotextile, aggregate and paving. Structural cells are strong enough to prevent soil compaction and support traffic loads, and can be used in parking lots, sidewalks and plazas.

Ten trees at Doyle Hollis Park are planted adjacent to Silva Cells, accounting for about 20 percent of the park's new street trees. Twelve other street trees are planted adjacent to structural soil. Structural soil "is better than

Recycling's Role in Reducing Emissions

Clearing the Doyle Hollis Park site to prepare it for construction generated 22 tons of plant debris – that is enough to fill more than 20 large pick up trucks. By recycling that material instead of taking it to the landfill, the equivalent of 4.4 metric tons of greenhouse gas emissions were avoided. When plants and other organic material decompose in landfills, they produce methane, a greenhouse gas that is 21 times more potent than carbon dioxide. Recycling that plant waste instead of landfilling it plays an important role in reducing a project's carbon footprint.

The project's demolition phase also produced 317 tons of concrete debris, all of which was recycled instead of landfilled, saving the equivalent of 2.2 metric tons of greenhouse gas emissions. Recycling concrete decreases emissions by reducing the amount of energy used to extract new resources and produce new products.

Together the greenhouse gas emissions avoided by recycling the plant material and concrete at Doyle Hollis Park add up to the annual emissions from one passenger car.

normal compacted soil under a sidewalk," said Schultze-Allen, "but is still mostly rock that provides void space for the roots to grow in." Silva Cells are "theoretically even better because it's all soil—uncompacted regular planting soil." At Doyle Hollis Park, the Silva Cells and structural soil serve as bridges for the roots of street trees, preventing compaction and improving drainage under the sidewalks so that the tree roots can reach the soil in the adjacent landscaped areas of the park.



Carex pansa, a California native meadow sedge is planted in the amphitheatre and is low water using and does not require mowing.



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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