



Green Infrastructure & Stormwater Management CASE STUDY

Winery, Brewery, and Food Science Facility (WBF)

Location: UC-Davis, Davis, CA

Client: University of California at Davis

Design Firm(s): Landscape Architect:
The HLA Group, Landscape Architects
and Planners Inc.

Landscape architect/Project contact:

David Campbell / The HLA Group

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ASLA Chapter: No

Project Specifications

Project Description: The Brewery, Winery, and Food Pilot Facility is a key research facility for the Viticulture and Enology Program, and a demonstration of the best practices in sustainable design and process in the industry. With a mandate to demonstrate the best and most sustainable practices from the UC Board of Regents and having secured additional funding from private donors, the HLA Group designed a rainwater/stormwater harvesting demonstration project that supplies all water for exterior landscape irrigation and all interior sewage conveyance. This first-of-kind demonstration in the semi-arid central valley will provide ongoing research opportunities into rainwater quality, stormwater quality, as well as storage and treatment processes.

Project Type:

Institutional/education

Part of a new development

Design features: Bioretention facility, cistern, porous pavers, curb cuts, and harvesting system to collect and store rainwater/stormwater from a watershed of approximately 2.75ac. The water

UC Davis Winery, Brewery, and Food Science Laboratory

images



Landscape surrounding the building connects to the existing Robert Mondavi Institute behind.

is then used for landscape irrigation (.5 ac) and interior sewage conveyance. The storage volume is calculated based on a water balance estimate, taking into account ongoing (monthly) average supply and demand. Approximately 282,000 gallons of rainwater/stormwater are used annually by the project instead of dumped to storm drainage systems.

This project was designed to meet the following specific requirements or mandates:

Developer/client preference, The project was designed to provide a net-zero water use landscape in the semi-arid central valley climate, as originally envisioned by the University of California Board of Regents.



The project terminates views across the vineyard, as originally envisioned (inset).

UC Davis Winery, Brewery, and Food Science Laboratory

Impervious area managed: 1 acre to 5 acres

Amount of existing green space/open space conserved or preserved for managing stormwater on site: 5,000 sq/ft to 1 acre. Roughly 1 acre of landscape was provided on-site, including native grass areas, formal plantings, and a bioretention basin. All stormwater (up to 2-year intensity) is dispersed to this area.

The regulatory environment and regulator was supportive of the project.

Did the client request that other factors be considered, such as energy savings, usable green space, or property value enhancements? These factors were all considered during project development.

Cost & Jobs Analysis

Estimated Cost of Stormwater Project: \$100,000-\$500,000 (Public funding: None)

Related Information: Of the overall project cost of approximately \$14,000,000, the stormwater/rainwater harvesting system accounted for roughly \$404,000, as follows (estimated):

- Design Support: \$40,000
- Piping & Controls = \$42,000
- Ozone System = \$70,000
- Lift Station = \$32,000

- Storage Tanks and Booster Pump = \$180,000
- Electrical = \$10,000
- Detention Basin \$20,000
- General Contracting Overhead (insurance, bonding, management, etc.) = \$10,000

Was a green vs. grey cost analysis performed? No. The grey approach to stormwater treatment did not meet the project goals and was not considered.

Cost impact of conserving green/open space to the overall costs of the site design/development project: Conserving open space greatly reduced the overall landscape costs, as this area would have otherwise been active use or formal planting area.

Cost impact of conserving green/open space for stormwater management over traditional site design/site development approaches (grey infrastructure)? Did not influence costs.

Number of jobs created: New facility was constructed to replace outdated facilities. May lead to new jobs as a result of increased enrollment.

Job hours devoted to project:

Planning and Design: 280 (estimate of stormwater treatment/harvest system only)

Construction: 800 (estimate of stormwater treatment/harvest system only)

Annual Maintenance: 30 (estimate of stormwater treatment/harvest system only)

Performance Measures

Stormwater reduction performance analysis:

100% of all 2-year storm intensities are treated: based on the water balance estimate, the lift station would be pumping to the outlet box only after flows have exceeded a 2-yr storm intensity peak flow, i.e. everything gets treated if flows are 2-year frequency or less and 90% or more gets treated when peak flow exceeds 2-year return frequency. Moreover, any water that does get discharged to the to the UCD collection system from the south campus is treated on campus (though not on-site) for sediment and phosphate removal in the arboretum portion of Putah Creek.

Community & economic benefits that have resulted from the project: The project is a demonstration and model of the highest and best practices of sustainability for research facilities, and enhances the reputation of the University. In addition, the project provides the opportunity for ongoing research furthering the practice of stormwater and rainwater use.

Project Recognition

ENR - Award of Merit; R&D Magazine - High Honors; USGBC - Certified LEED NC Platinum

Additional Information

Links to images: Project Narrative and Images:

<https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0B9rM33nJKUMdZGVmZWMzY2MtN2lwMi00Y2I5LTkzNjgtZmUzZGY0MDc3ZDNj&authkey=CMiWp2c&hl=en>

Rainwater System Narrative:

<https://docs.google.com/viewer?a=v&pid=explorer&chrome=true&srcid=0B9rM33nJKUMdZDEwNzlhZWVtYmFkYi00MGJmLWJjZGUtYmQyNmQwNTQzZDc5&hl=en&authkey=CN7C7fkN>

http://california.construction.com/california_construction_projects/2010/1201_ScienceFacility.aspx

<http://www.rdmag.com/Lab-Design-News/News/2011/03/Design-Agricultural-Lab-Takes-High-Honors/>

