Aldrich Park Stream Restoration

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Project Engineers: Cristen Alvarez, Ivy Lu, Grant Magnanelli, Chelsea Yuen
Team E3

Project Description

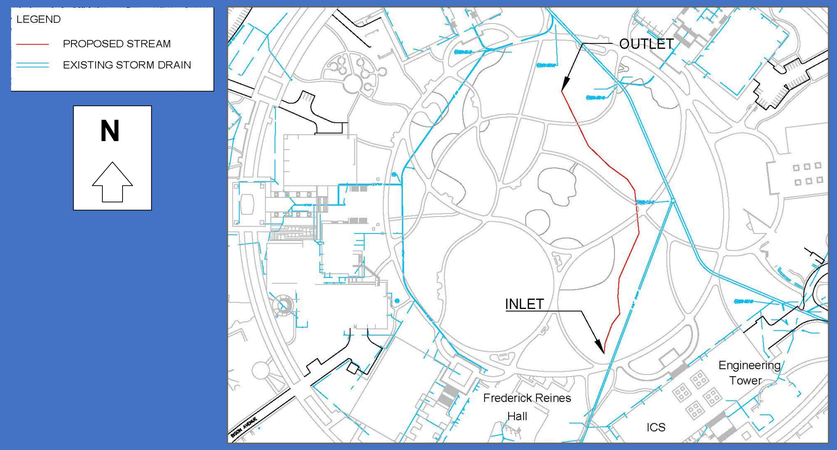
Aldrich Park Stream Restoration Project will assist UCI Department of Environmental Planning and Sustainability in updating the Stormwater Management Plan for UCI. Prior to UCI's construction, a stream ran through Aldrich Park and was put into a pipe underground with the creation of the park. The purpose of the project is to re-naturalize the stream as an amenity of the park. Not only will the stream be apart of the Riparian habitat but will also serve as water quality control for urban runoff collected from parts of University Hills and campus.

Design Approach

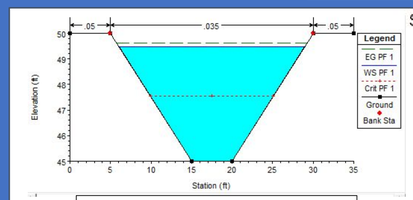
The proposed stream line follows the gradient to mitigate erosion and match the original stream path. 100-year storm flow data is analyzed to determine channel sizing to contain maximum possible flow. Mjölnir Solutions currently is developing a HEC-RAS model to size the channel and analyze the stream hydraulics. Additionally, a plant palette is being developed to reduce erosion potential, and improve water quality. Design goals of the project include complementing Aldrich Park's aesthetic, maximizing pedestrian safety, attenuating flooding, and diminishing pollutants in SD Creek.

Design Constraints

- Stream velocity
  - Minimize for subcritical flow
  - Minimize for erosion control
- Topography
  - Determines stream location
- Stream dimensions
  - Optimize for safety
- Clay Soil
  - Low infiltration capability
  - Impacts water quality
  - Very cohesive; less erodible
  - Affects plant selection



Plan View of Proposed Stream Relative to Aldrich Park



Cross Section of Proposed Stream Restoration

Length of Stream	860 LF
Bottom Width	5 ft
Top Width	25 ft
Height	5 ft
Side Slope	2:1
Volumetric Design Flow Rate	190 cfs

HEC-RAS 3D Hydraulic Profile of Proposed Stream Restoration

California Sagebrush

Mule's Fat

Pacific Willow

Several Species From Proposed Plant Palette

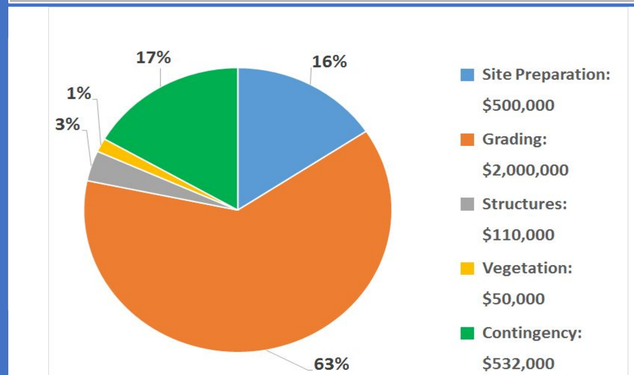
Continental Truss Bridge

Bridge for Proposed Structures

Environmental Documentation

Permits	Purpose
SWPPP (Stormwater Pollution Prevention Plan)	Construction-related permit to reduce pollutant loads into natural channels.
Streambed Alteration Agreement Section 1602	An agreement that mitigates substantial diversion of river flow or change to a river bed.
Clean Water Act Sections 401 & 404	Permit and program to regulate the discharge of dredged or fill material into the waters of the United States.

Cost



Total: $3,200,000

Team Organization

- Dustin Lee - Permitting & Funding
- Grant Magnanelli - Hydrology & Water Quality
- Cristen Alvarez- HEC-RAS Modeling
- Chelsea Yuen - Plant Palette
- Ivy Lu - Land Use & Topography

Client: Matt Deines, RLA LEED AP, Senior Planner; UCI
Consultant: David Jaffe, Ph.D, PE, D.WRE; PSOMAS