Mason Regional Park and UC Irvine Watershed Improvement Project

UCI Samueli School of Engineering | Department of Civil and Environmental Engineering

Team W4
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OCparks | Olaunu | PACE Advanced Water Engineering

Task 1 - F15P11 Diversion & Schematic Design

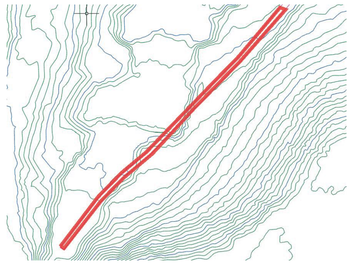
The goal of Task 1 is to develop an optimal design for the F15P11 channel diversion, and estimate the annual water volume captured.

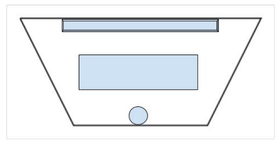
Completed Tasks:

- Determined the optimal path of the channel to incorporate gravity flow
- Determined optimal channel dimensions.
- Determined flow rates for the 85th Percentile storm event.

To be Completed:

- Design a diversion structure that transports water to the Biofiltration, Wetlands, and the Lake depending on flow rates of the channel .





Above: Rough estimate of diversion structure.

Left: Optimal channel diversion path indicated in red.

Task 2 - Sand Canyon Diversion

The goal of Task 2 is to identify alternatives for a diversion from Sand Canyon channel to Mason Park and discern the volume of water captured annually by the diversion.

Completed Tasks:

- Considered five alternatives for the Sand Canyon diversion

Above: Yellow path is most feasible - allows for a hydraulically controlled diversion, while minimizing length.

- Decided that a hydraulically controlled diversion is feasible
- Calculated that the pipe from the Mason Park lake to Mesa Court field will need a pump

To be Completed:

- Sizing the Sand Canyon diversion
- Determining the volume of water that can be captured by Sand Canyon diversion and diverted into the lake

Project Description:

The Mason Regional Park and UC Irvine Watershed Improvement Project consists of a stormwater and dry-weather runoff capture that integrates natural treatment systems. This will provide treated runoff water, rather than recycled water, to Mason Park Lake, which will benefit regional water quality and Newport Bay.

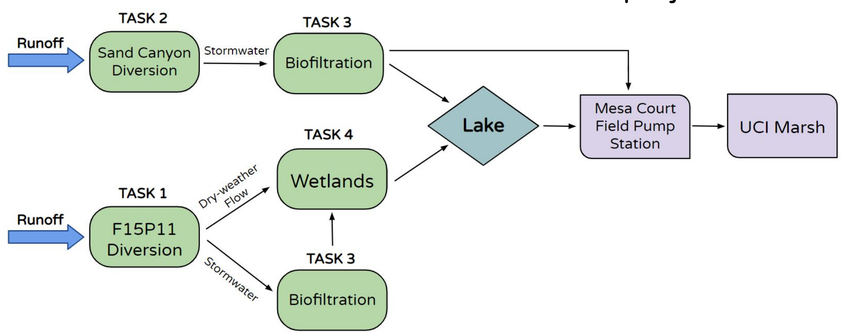
Key Project Benefits:

- Treat stormwater and dry-weather runoff
- Improve water quality at Mason Park Lake
- Provide water to UCI Marsh
- Educate the public by allowing visitors to walk through or around structural BMPs

Right: Overview of Mason Regional Park with sections for each task highlighted to illustrate the interdependence of each task on the others.

Flowchart:

Represents water flow between sections of the project.



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Task 3 - Biofiltration Areas

The goal of Task 3 is to create a schematic design plan of biofiltration areas for stormwater runoff from the F15P11 and Sand Canyon Channels upstream of the constructed wetlands for Mason Park Lake.

Left: Biofiltration area for Sand Canyon Channel
Right: Biofiltration area for F15P11 Channel and connecting to wetlands.

Completed Tasks:

- Field check for utilities and physical constraints
- Location, sizing, and thickness of each layer for each area
- Plan view of biofiltration areas

To be Completed:

- Elevations and design of channels and wetlands connections
- Cost estimate

Task 4 - Constructed Treatment Wetland

The goal of Task 4 is to create a schematic plan of the plan view and cross sections of the constructed wetland for stormwater runoff from the F15P11 and Sand Canyon Channel adjacent to Mason Park Lake.

Completed Tasks:

- Calculated the area of the constructed wetland needed to be around 1.15 acres.
- Location and sizing of the wetland.
- Plan view of the wetland area.
- Divide the wetland into different zones.

To be Completed:

- Flow inlet and outlet that will allow water to only take one path.
- The grading of the wetland, including the berms and side slopes.

Right: Different zones of the constructed areas with elevations and water flow direction.