REGISTRATION NO. D20

FLOW

A PROPOSAL FOR STORMWATER DESIGN ON THE UNIVERSITY OF NEW MEXICO CAMPUS

WATER TREATMENT

Water surface mycofiltration techniques, developed by UNM student research, will reduce E. coli concentrations in the duck pond by 98%.

RAISING AWARENESS

Where the new siphon pipe enters the pond, a section of the pipe will be made visible. Educational elements are included at that location to make visitors aware of how the pond and flow system are working to improve stormwater conditions on campus.

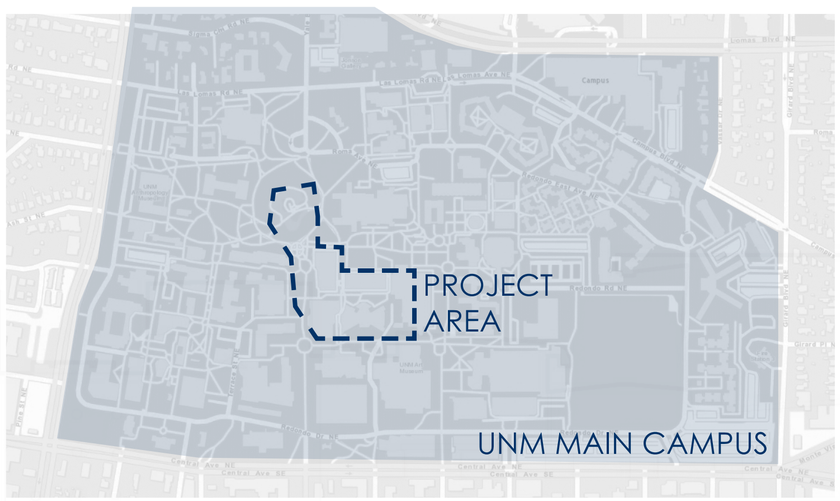
A SIMPLE REDIRECTION

Existing 18" storm drain has been recommended for upsizing by university consultants. Our solution is to insert a siphon line into the 18" storm drain, diverting 13% of the design event to the duck pond for temporary storage and bioremediation.

HEALTHIER TREES HEALTHIER WALKS

Impermeable space around trees in these areas is insufficient for healthy growth. By expanding the impermeable space and improving conditions around the trees, growth is supported, canopy expanded, passive stormwater infiltration increased, urban heat island effect reduced, and pedestrian experience improved.

The site is located centrally within the Main UNM campus as a 7.15 acre section beginning at the west side of the Student Union Building and loading dock, heading west between the Humanities Building and Woodward Hall, moving north through Yale Mall, and ending at a popular relaxation area known locally as the Duck Pond. The decision to choose this location was made after several meetings with UNM Campus Facilities where areas that posed significant problems were described. UNM's topography is classified as moderately flat (< 5% slope), so stormwater runoff tends to accumulate in puddles. The current drainage system involves a network of storm sewer pipes which are frequently overwhelmed due to high intensity storms. High percentages of impermeable land cover and untreated rooftop areas increase stormwater runoff and prevent percolation of runoff into the ground. For this project, the design storm is a storm with 0.425 inches of excess precipitation over a 6-hour period, the equivalent of the 2-year storm event.



LID PRACTICES IN THE DESERT GARDEN

Due to legal requirements (Rio Grande Compact), there are limitations on stormwater storage. This system provides for permissible cisterning and large scale temporary storage (detention) of all other stormwater runoff generated on site, permitting infiltration over time.

DETENTION EFFICIENCY
50% of SUB Roof Runoff
35% of Woodward Hall Roof Runoff
31% of Humanities Building Roof Runoff

Runoff of balcony and overland surfaces is permitted to collect and infiltrate in rehabilitated rain gardens.

SYSTEM OVERLOAD

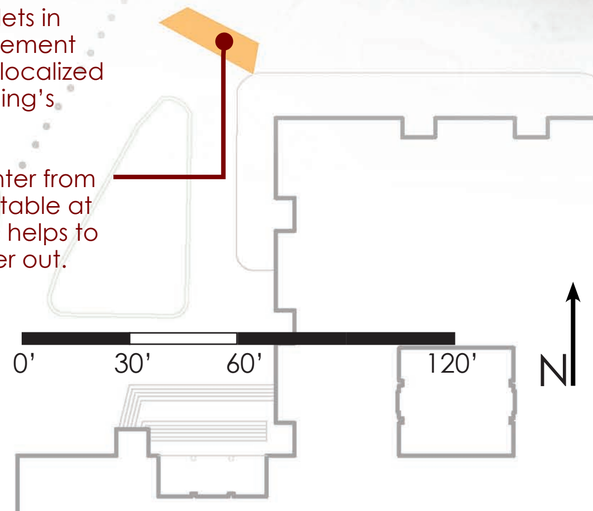
The existing 12" line is frequently overcapacity. Instead of costly pipe replacement, increasing permeable space and rain garden runoff storage capacity in unused nearby areas reduces strain on the system.

FLOODING AT THE HEART OF CAMPUS

Elevations south of this area contribute to storm water flooding of SUB loading dock.

Backwater in the 12" pipe overflows at inlets in Woodward Hall basement entrances, causing localized flooding in the building's basement.

Some SUB waters enter from the ramp. A raised table at the top of the ramp helps to keep overland water out.



PERFORMANCE SUMMARY