



March 21, 2013

Mr. Sean Condry
Public Works Director, Town of San Anselmo
525 San Anselmo Avenue
San Anselmo, CA 94960

Subject: Hydrologic review of San Francisco Theological Seminary, Design Hydrology Report dated 2/13/2013

Dear Mr. Condry,

I have reviewed the response to the design review application and hydrology report. The project involves the demolition of some old buildings and the construction of 9 new buildings. In order to mitigate the increased impervious areas and to comply with current storm water management regulations the project has incorporate a series storm water detention basins that are designed to slow runoff, increase infiltration and reduce non-point source pollutants. The system of basins has a combined volume of 8,025 cubic feet of storage. Current Marin County Storm Water Pollution Prevention Program (MCSTOPPP) guidelines mandate a minimum area of 1,700 square feet. The volume of detention needed is based on the runoff rates and amount of reduction sought.

In regards to the previous evaluation of the plan I had comments regarding the timing of peak flows and the performance of the basin in empty and full conditions. The most recent hydrology report (2/12/13) has supplied the answers:

1. The hydrology calculations were revised to utilize a rational methodology within an AutoCAD format. These programs have the ability to track hydrographs and predict the effect of detention storage. The report calculates the peak discharge hydrographs and examines both empty and full detention basin scenarios. The calculations show the project has enough storage capacity but the triangular hydrograph method generates conservative volumes of runoff so their modeling likely underestimates the effect of the basins on detaining and reducing flows. The results show that that detention basins trap initial runoff and fill but once they fill they have only minor reductions in peak flows immediately downstream. This means that basins will not significantly impact existing flood conditions downstream of the project. They will aid slightly in reducing peak flows.
2. One of the previous comments made the point there is no description of how these basins will fill, discharge, or drain. The new report states:

"To that effect, no low flow release (either by gravity or pump) is being proposed. Instead, the ponds will be allowed to percolate into the soil or evaporate, with the desire to achieve the maximum hydromodification, and allow detained water to dissipate as naturally as possible. Outfall for the ponds is conveyed by overflow (a roughly eight foot wide weir, six inches below the top of the pond), and by drain inlet and pipes, also roughly six inches below the top of the pond."

It should be noted that the revised hydrology report provides no calculations and or soil testing to show that percolation of retained water would occur in a reasonable amount of time. There is significant variability in soils types in the area of the basins, however the likelihood of slow soil permeability is significant. The ponds should be designed with sort of drainage system that drains the basin within 48 hours of filling. Without some type of drainage basin could remain wet for long periods of time, and create an unsightly muddy pond. The basin could experience water quality problems and vector control issues (mosquitoes). The modeling of the system showed that the effect of the basin is not significantly compromised if they are full at the start of a storm event. This then would negate the potential issues surrounding a pump drainage system failure. At this point we would recommend some type of drainage system for the facilities.

In regards to the 100-year floodplain fill comment:

3. The previous detention basin designs added fill amounts to the existing 100 year floodplain of San Anselmo Creek. The site plans have been revised to eliminate this fill and thus the basin should not impact the 100-year floodplain.

In conclusion, I believe that the detention basin concept on the site has been shown to be appropriate and feasible. The only minor adjustment to plan I would recommend, is to ensure that basins drain properly and do not cause a visual and/or vector control issue.

If you have questions regarding this review please do not hesitate to call me at (510) 236-6114 ext. 220 or email at stemple@questaec.com.

Sincerely,



Sydney Temple, P.E.

Questa Engineering Corporation