

Onsite drainage analysis included the 5-year storm (minor event) and 100-year storm (major event). Runoff is calculated per EPCDCM Chapter 5 – Storm Runoff Method of Analysis.

d. Hydraulic Criteria

Hydraulic criteria for channel analysis are obtained from EPCDCM Chapter 10 - Open Channels and Structures.

III. Drainage Facility Design

a. General Concept

For the site south of Pinehurst Circle, stormwater is collected via roadside swales and conveyed to Type D inlets. Captured stormwater will be piped to Pond 1. Pond 1 provides water quality & detention will for Basins A-I. The site north of Pinehurst Circle is collected via roadside swales and discharge to the existing Rain Garden C12 for water quality. 5-year and 100-year stormwater discharges from the site have been reduced to below historic levels for both site areas. All proposed storm sewer and appurtenances will be privately owned and maintained.

Hydraulic calculations for swales, storm sewer, riprap sizing, etc. will be provided with the Final Drainage Report.

b. Water Quality & Detention

Water quality and detention for Basins A-I is provided in Pond 1. Pond 1 is an onsite, private, full spectrum detention pond located adjacent to Highway 83. A total of 25.25 acres at 23.6% composite imperviousness will be detained. The WQCV is 0.273 ac-ft, the EURV is 0.327 ac-ft, and the 100-year volume is 0.859 ac-ft. The WQCV, EURV and 100-year storms are released in 40, 59 and 55 hours, respectively. Concrete forebays are located at the piped outfalls into the pond. A riprap rundown and forebay are located at the overland outfall to the pond. A 2.0' concrete trickle channel conveys flow towards the private outlet structure. A 10' access and maintenance road is provided to the bottom of the pond from Pinehurst Circle. A 20' emergency overflow spillway is provided that conveys the developed, peak 100-yr flow rate with 1.0' of freeboard towards Sand Creek. The pond outlet structure discharges into private 24" RCP storm sewer that discharges to the site's existing outfall, a 24" CMP culvert under Highway 83. Pond design calculations are presented in Appendix D.

Rain Garden C12 was designed and constructed with the Walden Preserve 2 Filing 5 project. Rain Garden C12 captured and detained Basins C10 – C12 for a total area of 29.26 acres at 18.1% impervious. Proposed Basins K-M are located within the original limits of Basins C10 – C12. However, the imperviousness of Basin K-M has been increased to 20.1% for their corresponding area of 4.02 acres. The total area discharging to C12 is unchanged. Accounting for the impervious increase of Basins K-M, the revised composite impervious Rain Garden C12 is 18.37% for the total area of 29.26 acres. The revised Rain Garden C12 UD-BMP spreadsheet confirms the existing underdrains and orifice diameter (2-3/16") is adequate for the increased WQCV. A proposed riprap rundown and low tail water basin will be constructed in Rain Garden C12 for the discharge at DP11. Otherwise, Rain Garden C12 will remain in its existing condition. An updated UD-BMP is provided in Appendix D to verify Rain Garden C12 can accommodate the additional impervious.

what about for the larger storms?