

Per El Paso County guidelines, the detention pond downstream emergency overflow conveyance can utilize a portion of the detention pond storage in order to determine the total emergency overflow conveyance needed downstream of the pond. This does not apply to sizing of the emergency spillway which has to be sized to discharge the fully developed undetained inflows. The peak conveyance flow is calculated through routing (Hydraflow model), assuming that the outlet structure is totally plugged and the pond water surface begins at the lowest orifice plate hole depth and ends one foot below the lowest natural grade at the downstream side of the pond (in effect, a one-foot freeboard assuming the above-grade embankment does not exist. Notwithstanding these allowances, the required capacity of the downstream conveyance shall be no less than the equivalent pre-development 100-year flow for the contributing area [REDACTED]. Once the ponds are built, the existing conditions emergency overflow conveyance will be accommodated by the storm sewer system in Fontaine Boulevard. See Appendix F for calculations.

Pond C1 (downstream overflow conveyance)

One foot below natural grade is at elevation 5752.00 and the corresponding storage volume of the pond is 10.34 acre-ft. The incoming 100-year developed design inflow hydrograph has a total volume of 10.194ac-ft from the full spectrum worksheets. The flow rate from the pond is negligible and pre-developed flows must be designed for at Design Point 3f. See Design Point 3f for flow analysis.

Pond C2.1 (downstream overflow conveyance)

One foot below natural grade is at elevation 5771.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 120cfs. This flow must be directed downstream to Pond C2.3 and not be directed to Fontaine Boulevard.

Pond C2.3 (downstream overflow conveyance)

One foot below natural grade is at elevation 5752.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 86cfs which flows to Design Point 3f. The Pond C2.3 conveyance structure consists of a 20' Type R Inlet with an 18" throat opening and a concrete channel up to the emergency spillway of the pond. A 42" RCP storm sewer flows north and connects to a 54" storm sewer in Fontaine Boulevard. See Design Point 3f for flow analysis and discussion of the overflow conveyance at Fontaine Boulevard and pre-developed conditions.

Pond C4 (downstream overflow conveyance)

One foot below natural grade is at elevation 5772.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 85cfs. This flow must be directed downstream to Pond C3.

Pond C3 (downstream overflow conveyance)

One foot below natural grade is at elevation 5762.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 7cfs. This flow must be directed downstream to Pond C2.2 where pre-developed conditions must be met at Fontaine Boulevard.

Pond C2.2 (downstream overflow conveyance)

One foot below natural grade is at elevation 5752.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 114cfs which flows to Design Point 3f. The Pond C2.2 conveyance structure consists of a 25' Type R Inlet with an 18" throat opening and a concrete channel up to the emergency spillway of the pond. A 48"

RCP storm sewer flows south and connects to a 54" storm sewer in Fontaine Boulevard. See Design Point 3f for flow analysis and discussion of the overflow conveyance necessary at Fontaine Boulevard and pre-developed conditions.

Design Point 3f (downstream overflow conveyance)

Design Point 3f is located on Fontaine Boulevard and is the total conveyance necessary to convey all the upstream overflows west to the East Tributary of Jimmy Camp Creek from Ponds C2.2 and Pond C2.3. The flows from ponds and pre-developed conditions will be conveyed in an oversized storm sewer pipe located in Fontaine Boulevard. The total pre-developed flow is 286cfs for the 200 acres tributary. In the Phase 1 conditions before any ponds are constructed under the powerlines the pre-developed flows must be conveyed in a storm sewer pipe downstream to the East Tributary for the 286cfs. It may be necessary to construct temporary ponds along Fontaine Boulevard between the powerline easement and Lamprey Drive. This condition must be examined at the final construction plan phase for construction of Fontaine Boulevard. After the ponds and overflow conveyance inlets are built and conveyance flows will be contained in the storm sewer in Fontaine.

Per the Hydraflow model and assuming full developed upstream conditions, the total flow from the upstream detention ponds is 200cfs at Design Point 3f which is required to be routed in storm sewer located in Fontaine Boulevard downstream to the East Tributary. There are two emergency overflow structures, one on the north side of Fontaine located adjacent/downstream of the overflow spillway for Ponds C2.2 and one on the south side of Fontaine located adjacent/downstream of the overflow spillway for Pond C2.3 that connect to the storm sewer in Fontaine. The two Type R structures will discharge into storm sewer in Fontaine Boulevard which is required to be sized for a minimum of 200cfs of flow. The storm sewer downstream to the west on Fontaine Boulevard will be required to increase in size/capacity to accommodate for adjacent development flows and the baseflow 200cfs of overflow conveyance. The preliminary drainage reports for future filings will design the downstream storm sewer. The preliminary size of the stormsewer on Fontaine Boulevard is 54" RCP.

Pond E1 (downstream overflow conveyance) at Design Point 12a

One foot below natural grade is at elevation 5736.00. Using the hydraulic pond model the corresponding downstream conveyance needs to be 57cfs. The pre-developed flow is 102cfs from the full spectrum worksheets for Pond E1. This flow must be conveyed from Design Point 12a to downstream infrastructure to Pond E2.

7.0 CONCLUSIONS

This drainage report has been prepared in accordance with the City of Colorado Springs/El Paso County Drainage Criteria Manual. The proposed development and drainage infrastructure will not cause adverse impacts to adjacent properties or properties located downstream. Several key aspects of the development discussed above are summarized as follows:

- Developed runoff will be conveyed via curb/gutter and storm sewer facilities
- Detention is provided to reduce runoff to existing conditions at outfall points
- Conveyance for Emergency Overflow routing has been provided
- Water Quality Capture Volume will be provided in all ponds