# FINAL DRAINAGE REPORT
# FOR
# STERLING RANCH EAST FILING NO. 6

CCES Responses

Prepared for:
**CLASSIC SRJ LAND, LLC**
2138 FLYING HORSE CLUB DRIVE
COLORADO SPRINGS CO 80921
(719) 592-9333

Prepared by:
**CLASSIC CONSULTING**
619 N. CASCADE AVE SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job No. 1183.60

PCD Project No. SF26xx

**FINAL DRAINAGE REPORT FOR**
**STERLING RANCH EAST FILING NO. 6**

**ENGINEER'S STATEMENT:**
The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Marc A. Whorton Colorado P.E. #37155 Date

**OWNER'S/DEVELOPER'S STATEMENT:**
I, the owner/developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: CLASSIC SRJ LAND, LLC

By: _____

Title: _____

Address: 2138 Flying Horse Club Drive

Colorado Springs, CO 80921

**EL PASO COUNTY:**
Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Joshua J. Palmer, P.E. Date
County Engineer, / ECM Administrator

Conditions:

**FINAL DRAINAGE REPORT FOR**
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F.E.M.A. MAP

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Add this divider in appendix

Added

Add "Reference Materials" to list

# FINAL DRAINAGE REPORT FOR
# STERLING RANCH EAST FILING NO. 6

## PURPOSE

The purpose of this Final Drainage Report is to address on-site and off-site drainage patterns and identify specific drainage improvements and facilities required to minimize impacts to the adjacent properties.

## GENERAL DESCRIPTION

The Sterling ranch East Filing No. 6 Final Plat is 62.50-acre site located in portions sections 27 and 34, township 12 south, range 65 west of the sixth principal meridian. 198 urban residential lots are planned. The Preliminary Plan (SP244) for this project had a total acreage of 56.13 ac. The difference in acreage for this proposed Final Plat is the inclusion of the adjacent Sterling Ranch Road ROW that was originally shown in the Sterling Ranch East Phase 1 Preliminary Plan and included as portion of the Filing 4 area. The intent is to develop this proposed Filing 6 before Filing 4 and thus, now including this portion of Sterling Ranch Road with the Filing 6 Final Plat.

The site is bounded on the north and east by unplatted, future Sterling Ranch residential development, to the south by proposed Briargate Parkway extension and to the west by existing and proposed public ROW (Sterling Ranch Road). The site is in the upper portion of the Sand Creek East Fork Drainage Basin. Urban single family residential is proposed in this Filing that is consistent with the latest approved Sterling Ranch Sketch Plan Amendment and the Sterling Ranch East Filing No. 6 Preliminary Plan. The overall area for this property includes Tract H, which is proposed to be Pond FSD-16. This facility is described in the most recent drainage report for this area ("Final Drainage Report for Sterling Ranch East Filing No. 2 & Sterling Ranch East Filing No. 8", dated Sept. 2025 – SF2526) and handles nearly this entire development along with multiple other surrounding filings along with 100+ acres of future Sterling Ranch residential development to the north.

The average soil condition reflects Hydrologic Group "A" (Columbine gravelly sandy loam) as determined by the "Web Soil Survey of El Paso County Area," prepared by the Natural Resources Conservation Service (see map in Appendix). Type A soils were used to determine the pre-

development conditions however, a mix a both Type A and Type B soils are utilized for developed site conditions as some import is anticipated for this development.

**EXISTING DRAINAGE CONDITIONS**

The Sterling Ranch East Filing No. 6 property is located in the upper portion of the Sand Creek East Fork Drainage Basin. The southern portion of the site along with a gravel access roads traversing the site are the areas of the property that are currently disturbed. Pond FSD-16 was previously graded under the Early GEC Plan approved for the Villages site to the south (SP226). This area currently acts as a TSB until formal development along with this final plat. The rest of the site is covered with native grasses with no trees or other vegetation.

This site has been previously studied in the "MDDP Amendment for Sterling Ranch", prepared by JR Engineering, LLC, dated September 2022 and "Sterling Ranch MDDP Amendment No. 2 & Preliminary Drainage Report for Sterling Ranch East Preliminary Plan 1", prepared by Classic Consulting, dated January 2023. The latter report analyzed the pre-development conditions for the flows off-site to the south. The entire site currently drains as sheet flow in a southerly direction within the previously studied pre-development basins EX-9, EX-10, EX-10A and EX-11. These are referenced in the Appendix. However, the most recent reports covering this property are "Final Drainage Report for Sterling Ranch East Filing No. 2 & Sterling Ranch East Filing No. 8" – SF2526 and "Preliminary Drainage Report for Sterling Ranch East Filing No. 6 Preliminary Plan and Final Drainage Report for Early Grading" – SP244.

The following descriptions represent the pre-development basins for the property:

**Basin EX-9 ($Q_5$ = 9 cfs, $Q_{100}$ = 61 cfs)** consists of approximately 65.3 acres of property that sheet flows in a southerly direction through the westerly portion of the proposed site. This basin is similar to the original MDDP with the northern portion of the west basin line defining the westerly edge of the East Fork basin. The flows seem to remain as sheet flows as they travel through the site towards the existing Pond FSD-16 acting as a TSB (designed under Foursquare at Sterling Ranch Filing No. 1 development due west of this project – SF2236 and SF2526). The facility will

remain a TSB until the development of either Sterling Ranch East Filing No. 2, Foursquare at Sterling Ranch Filing No. 1 or the proposed Sterling Ranch East Filing No. 6, whichever comes first. At that time the proposed pond structures (concrete forebays, trickle channels, outlet structure and emergency overflow spillway) will be installed based on the pond design plans approved originally with Sterling Ranch East Filing 8 and now modified with the proposed Sterling Ranch East Filing No. 6 Final Plat. (See Detention/SWQ Facilities section of this report below) **Design Point EX-1 ($Q_5$ = 9 cfs, $Q_{100}$ = 61 cfs)** represents these total pre-developed flows tributary to the existing Pond FSD-16.

**Basin EX-10A ($Q_5$ = 4 cfs, $Q_{100}$ = 25 cfs)** consists of approximately 17.8 acres of property that sheet flows in a southerly direction through the eastern half of the proposed site. **Design Point EX-2 ($Q_5$ = 4 cfs, $Q_{100}$ = 25 cfs)** represents the total pre-developed flows that currently continue to travel in a southerly direction towards the extension of Briargate Parkway.

**Basin EX-10 ($Q_5$ = 105 cfs, $Q_{100}$ = 222 cfs)** consists of approximately 265.9 acres of property at the extreme top of the Sand Creek East Fork Basin. The off-site northern portion of this basin is within the Black Forest, heavily treed area. The off-site eastern portion of the basin contains existing 5 ac. lot development (Indian Wells Subd. Filing 1). The flows from this large basin sheet flow in a southerly direction across the northern portion of the Sterling Ranch property and enter Basin EX-11. **Basin EX-11 ($Q_5$ = 1 cfs, $Q_{100}$ = 7 cfs)** consists of approximately 3.9 acres of property that sheet flows across the northeastern corner of the proposed property. **Design Point EX-3 ($Q_5$ = 105 cfs, $Q_{100}$ = 222 cfs)** represents the total combined pre-developed flows from basins EX-10 and EX-11 that currently continue to travel in a southerly direction through Sterling Ranch property east of all the currently approved development taking place.

**PROPOSED DRAINAGE CONDITIONS**

As described in the General Description of the report, this proposed Final Plat contains 62.50 acres of urban residential lots including Tract H containing Pond FSD-16. This report describes how this facility has been redesigned, yet still designed to handle all the anticipated future

developed flows as previously planned. Thus, this report remains consistent with the recently approved Preliminary Drainage Report for Sterling Ranch East Filing No. 6 and Final Drainage Report for Sterling Ranch East Filing No. 8.

Per the El Paso County ECM, Section I.7.1.B, all urban lots are required to provide Water Quality Capture Volume (WQCV). Thus, the proposed FSD-16 facility within this development will provide WQCV along with an Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume with an outlet control device. Frequent and infrequent inflows are released at rates approximating undeveloped conditions. This concept provides some mitigation of increased runoff volume by releasing a portion of the increased runoff at a low rate over an extended period of time, up to 72 hours. This means that frequent storms, smaller than the 2-year event, will be reduced to very low flows near or below the sediment carrying threshold value for downstream drainage ways. Also, by incorporating an outlet structure that limits the 100-year runoff to the undeveloped condition rate, the discharge hydrograph for storms between the 2 year and the 100-year event will approximate the hydrograph for the undeveloped conditions and will help effectively mitigate the effects of development. WQCV will be provided for all proposed roads and urban lots. (See Appendix for SWQ map)

The following developed basin descriptions will start at the north end of the project and move south and describe how this development proposes to handle both the off-site and on-site drainage conditions both from an interim standpoint based on adjacent construction phasing and the ultimate buildout scenario. This report will also include the adjusted Pond FSD-16 final design.

<u>Design Points 1-23 represent both the Interim and Ultimate Condition:</u>

**Design Point 1 ($Q_5$ = 4 cfs, $Q_{100}$ = 11 cfs)** represents developed flows from Basin A (3.6 ac.) that is tributary to the proposed at-grade inlet at this location. A 10' Type R at-grade inlet will collect $Q_5$ = 3.9 cfs, $Q_{100}$ = 7.4 cfs with flow-by of $Q_5$ = 0.1 cfs, $Q_{100}$ = 3.6 cfs. This flow-by will then travel towards the sump condition at Design Point 2. The collected flows will be routed

downstream via a public 24" RCP within the ROW. **Pipe Run 1 ($Q_5$ = 4 cfs, $Q_{100}$ = 7 cfs)** represents the total flow in the public storm system at this point.

**Design Point 2 ($Q_5$ = 6 cfs, $Q_{100}$ = 20 cfs)** represents developed flows from Basins B (1.2 ac.), C (4.5 ac.) and flow-by from DP-1 that are tributary to the proposed sump condition at Design Point 2. At this location, a 10' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A 24" public RCP within the ROW will convey these developed flows further downstream.

**Design Point 3 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin D (1.5 ac.) that are tributary to Design Point 3. At this location, a 5' Type R sump inlet is installed to completely collect both the 5-yr. and 100-yr. developed flows. A 30" public RCP storm system within the ROW will convey the collected flows further downstream. **Pipe Run 4 ($Q_5$ = 12 cfs, $Q_{100}$ = 31 cfs)** represents the total flow in the public storm system at this point.

**Design Point 4 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin E (1.6 ac.) that are tributary to the proposed at-grade condition at Design Point 4. At this location, a 10' Type R at-grade inlet will be installed to collect $Q_5$ = 2.0 cfs, $Q_{100}$ = 4.7 cfs with flow-by of $Q_5$ = 0.0 cfs, $Q_{100}$ = 0.3 cfs. This minimal 100-yr. flow-by will then travel further downstream towards Design Point 17. The collected flows will be routed downstream via a public 18" RCP within the ROW. **Pipe Run 6 ($Q_5$ = 14 cfs, $Q_{100}$ = 35 cfs)** represents the total flow in the public storm system at this point.

**Design Point 5 ($Q_5$ = 4 cfs, $Q_{100}$ = 11 cfs)** represents developed flows from Basin F (3.5 ac.) that are tributary to the proposed sump condition at Design Point 5. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 24" RCP within the ROW will convey these developed flows further downstream.

**Design Point 6 ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs)** represents developed flows from Basin G (1.1 ac.) that are tributary to the proposed sump condition at Design Point 6. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 9 ($Q_5$ = 6 cfs, $Q_{100}$ = 14 cfs)** represents the total flow in the public storm system just downstream of this sump condition. **Pipe Run 10 ($Q_5$ = 19 cfs, $Q_{100}$ = 48 cfs)** represents the total flow in the public storm system once combined with the upstream flows from PR-6.

**Design Point 7 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin H (1.7 ac.) that are tributary to the proposed sump condition at Design Point 7. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 8 ($Q_5$ = 0.3 cfs, $Q_{100}$ = 0.8 cfs)** represents developed flows from Basin I (0.22 ac.) that are tributary to the proposed sump condition at Design Point 8. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 13 ($Q_5$ = 22 cfs, $Q_{100}$ = 53 cfs)** represents the total flow in the public storm system just downstream of this sump condition.

**Design Point 9 ($Q_5$ = 2 cfs, $Q_{100}$ = 6 cfs)** represents developed flows from Basin J (1.9 ac.) that are tributary to the proposed sump condition at Design Point 9. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 10 ($Q_5$ = 1.1 cfs, $Q_{100}$ = 2.6 cfs)** represents developed flows from Basin K (0.73 ac.) that are tributary to the proposed sump condition at Design Point 10. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe**

**Run 16 ($Q_5$ = 3 cfs, $Q_{100}$ = 8 cfs)** represents the total flow in the public storm system just downstream of this sump condition. **Pipe Run 17 ($Q_5$ = 24 cfs, $Q_{100}$ = 60 cfs)** represents the total flow in the public storm system once combined with the upstream flows from PR-13.

**Design Point 11 ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs)** represents developed flows from Basin L (2.2 ac.) that are tributary to the proposed sump condition at Design Point 11. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 12 ($Q_5$ = 0.8 cfs, $Q_{100}$ = 2.0 cfs)** represents developed flows from Basin M (0.57 ac.) that are tributary to the proposed sump condition at Design Point 12. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 20 ($Q_5$ = 3 cfs, $Q_{100}$ = 8 cfs)** represents the total flow in the public storm system just downstream of this sump condition.

**Design Point 13 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin N (1.7 ac.) that are tributary to the proposed sump condition at Design Point 13. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 14 ($Q_5$ = 0.7 cfs, $Q_{100}$ = 1.8 cfs)** represents developed flows from Basin O (0.49 ac.) that are tributary to the proposed sump condition at Design Point 14. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 23 ($Q_5$ = 6 cfs, $Q_{100}$ = 15 cfs)** represents the total flow in the public storm system just downstream of this sump condition. **Pipe Run 24 ($Q_5$ = 30 cfs, $Q_{100}$ = 73 cfs)** represents the total flow in the public storm system once combined with the upstream flows from PR-17.

**Design Point 15 ($Q_5$ = 0.6 cfs, $Q_{100}$ = 1.5 cfs)** represents developed flows from Basin P (0.40 ac.) that are tributary to the proposed sump condition at Design Point 15. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 16 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin Q (1.7 ac.) that are tributary to the proposed sump condition at Design Point 16. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 27 ($Q_5$ = 32 cfs, $Q_{100}$ = 79 cfs)** represents the total flow in the public storm system just downstream of this sump condition.

**Design Point 17 ($Q_5$ = 2 cfs, $Q_{100}$ = 9 cfs)** represents developed flows from Basin R (2.7 ac.) and Flow-by from DP-4 that are tributary to the proposed at-grade condition at Design Point 17. At this location, a 10' Type R at-grade inlet will be installed to collect $Q_5$ = 2.0 cfs, $Q_{100}$ = 6.4 cfs with flow-by of $Q_5$ = 0.0 cfs, $Q_{100}$ = 2.0 cfs. This 100-yr. flow-by will then travel further downstream into Basin U. The collected flows will be routed downstream via a public 18" RCP within the ROW.

**Design Point 18 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin S (1.6 ac.) that are tributary to the proposed sump condition at Design Point 18. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

**Design Point 19 ($Q_5$ = 0.7 cfs, $Q_{100}$ = 1.8 cfs)** represents developed flows from Basin T (0.49 ac.) that are tributary to the proposed sump condition at Design Point 19. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream. **Pipe**

**Run 31 ($Q_5$ = 6 cfs, $Q_{100}$ = 13 cfs)** represents the total flow in the public storm system just downstream of this sump condition. **Pipe Run 32 ($Q_5$ = 37 cfs, $Q_{100}$ = 90 cfs)** also known as **Design Point 20**, represents the total flow in the public storm system once combined with the upstream flows from PR-27. This total flow enters Pond FSD-16 at the east end of the facility where a concrete forebay, associated rip-rap and concrete trickle channel will be installed. A total of 33.4 acres is tributary to this outfall with a 51.1% Imperviousness.

**Design Point 21 ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs)** represents developed flows from Basin V (2.7 ac.) At this location, a 6' County std. crosspan will be installed to convey these flows further downstream.

**Design Point 22 ($Q_5$ = 6 cfs, $Q_{100}$ = 16 cfs)** represents developed flows from Basin W (0.79 ac.), Basin X (2.0 ac.) and DP-21, that are all tributary to the proposed sump condition at Design Point 22. At this location, a 10' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 24" RCP within the ROW will convey these developed flows further downstream.

**Design Point 23 ($Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs)** represents developed flows from Basin Y (3.2 ac.) that are tributary to the proposed sump condition at Design Point 23. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 30" RCP within a public drainage easement between lots 42 and 43 will convey these developed flows further downstream. **Pipe Run 34 ($Q_5$ = 10 cfs, $Q_{100}$ = 25 cfs)** represents the total flow in the public storm system just downstream of this sump condition.

The following Design Points are proposed to collect anticipated future or already planned residential development to the north and west of Sterling Ranch Road that are tributary to Pond FSD-16. The P1-F1, CC and DD basins are anticipated areas for future development within Sterling Ranch to the north and the F4 basins represent the Sterling Ranch East Filing No. 4 areas as planned and consistent with the approved "Sterling Ranch East Phase 1 Preliminary Plan - Filings 1-4" (SP224). The F2 and F8 basins represent the Sterling Ranch East Filing No. 2 (SF2237) and Filing No. 8 (SF2236 and SF2526) subdivisions as planned and recently reviewed/approved.

Ultimate & Interim Condition:

**Design Point 24 ($Q_5$ = 5 cfs, $Q_{100}$ = 16 cfs)** represents the anticipated ultimate condition and future development flows from the undeveloped property to the north within Basin CC (5.8 ac.) that is tributary to a future sump condition. Type R sump inlets will be sized in a future Final Drainage Report. However, in the interim condition, a temporary sediment basin will be installed just north of Sterling Ranch Road (Design Point 26) to collect off-site undeveloped flows from basin P INT (25.8 ac.). The outfall for this basin will be downstream towards the proposed sump condition in Sterling Ranch Road. Two public 42" RCP stubs will be provided at the north end of the Sterling Ranch Road extension to handle the anticipated future development within the off-site basin P1-F1 (60.6 ac.) to the north. **Pipe Run 35 ($Q_5$ = 30 cfs, $Q_{100}$ = 72 cfs)** represents an anticipated 50% of this off-site basin with **Pipe Run 3** **$Q_{100}$ = 84 cfs)** representing the other half of the basin along with basins CC and D ultimate condition.

Labeled wrong on routing sheet. Now corrected. 5' is correct size and inlet sizing now included.

Surface routing spreadsheet has 10' inlet. Calculation for inlet size is missing. Please provide design and verify inlet size

Ultimate Condition:

**Design Point 25 ($Q_5$ = 2 cfs, $Q_{100}$ = 5 cfs)** represents developed flows from Basin EE (1.3 ac.) that are tributary to the proposed sump condition at Design Point 25. At this location, a 5' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 18" RCP within the ROW will convey these developed flows further downstream.

Labeled wrong on routing sheet. Now corrected. 10' is correct size and inlet sizing now included.

Surface routing spreadsheet has 5' inlet. Calculation for inlet size is missing. Please provide design and verify inlet size

Ultimate Condition:

**Design Point 26 ($Q_5$ = 5 cfs,** ents developed flows from Basin DD (4.4 ac.) that are tributary to the proposed sump condition at Design Point 26. At this location, a 10' Type R sump inlet will be installed to completely collect both the 5-yr. and 100-yr. developed flows. A public 24" RCP within the ROW will convey these developed flows further downstream. **Pipe Run 39 ($Q_5$ = 7 cfs, $Q_{100}$ = 18 cfs)** represents the total flow in the public storm system just downstream of this sump condition.

Design Points 27-36 represent the Ultimate Condition with Sterling Ranch East 4 being built:

**Design Point 27 ($Q_5$ = 10 cfs, $Q_{100}$ = 26 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-1 (9.0 ac.) that are tributary to the proposed sump condition at Design Point 27. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 28 ($Q_5$ = 3 cfs, $Q_{100}$ = 7 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-2 (2.2 ac.) that are tributary to the proposed sump condition at Design Point 28. At this location, a Type R sump inlet will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A private storm system within a drainage esmt. and tract will convey these developed flows further downstream. Sizing of this facility will be provided in a future FDR.

**Design Point 29 ($Q_5$ = 4 cfs, $Q_{100}$ = 9 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-3 (3.2 ac.) that are tributary to Design Point 29. At this location, an anticipated Type R at-grade inlet will be sized to collect developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 30 ($Q_5$ = 8 cfs, $Q_{100}$ = 25 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-4 (9.8 ac.) that are tributary to the proposed sump condition at Design Point 30. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 31 ($Q_5$ = 2 cfs, $Q_{100}$ = 6 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-5 (1.7 ac.) that are tributary to the proposed sump condition at Design Point 31. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows along with the collected flows from the Design Points described above further downstream towards the large diameter storm system within Sterling Ranch Road. Sizing of these facilities and the storm system outfall will be provided in a future FDR.

**Design Point 32 ($Q_5$ = 4 cfs, $Q_{100}$ = 13 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-6 (3.5 ac.) along with some flow-by from the anticipated upstream Type R at-grade inlet that is tributary to the proposed sump condition at Design Point 32. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 33 ($Q_5$ = 8 cfs, $Q_{100}$ = 20 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-7 (6.9 ac.) that are tributary to the proposed sump condition at Design Point 33. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public

storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 34 ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-8 (1.1 ac.) that are tributary to the proposed sump condition at Design Point 34. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 35 ($Q_5$ = 6 cfs, $Q_{100}$ = 14 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-9 (4.9 ac.) that are tributary to the proposed sump condition at Design Point 35. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 36 ($Q_5$ = 10 cfs, $Q_{100}$ = 24 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 4 residential use within Basin F4-10 (8.5 ac.) that are tributary to the proposed sump condition at Design Point 34. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A private storm system within a tract will convey these developed flows further downstream towards the large diameter public storm system along Sterling Ranch Road. Sizing of these facilities will be provided in a future FDR.

Design Points 37 & 38 represent both the Interim and Ultimate Conditions:

**Design Point 37 ($Q_5$ = 5 cfs, $Q_{100}$ = 10 cfs)** represents anticipated developed flows from Basin GG (2.5 ac.) along the north side of Sterling Ranch Road that are tributary to Design Point 37. A 15' Type R at-grade inlet is proposed at this location that will completely collect the 5-yr. developed flows with some minimal flow-by of the 100-yr. flows. A public storm system within the ROW will convey the collected flows towards the public storm system within Sterling Ranch Road. This remains consistent with *Design Point 13 ($Q_5$ = 5.4 cfs, $Q_{100}$ = 15.1 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

**Design Point 38 ($Q_5$ = 5 cfs, $Q_{100}$ = 9 cfs)** represents anticipated developed flows from Basin HH (2.0 ac.) along the south side of Sterling Ranch Road that are tributary to Design Point 38. A 15' Type R at-grade inlet is proposed at this location that will completely collect the 5-yr. developed flows with some minimal flow-by of the 100-yr. flows. A public storm system within the ROW will convey the collected flows towards the public storm system within Sterling Ranch Road. This remains consistent with *Design Point 14 ($Q_5$ = 4.0 cfs, $Q_{100}$ = 11.2 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

Ultimate Condition:

**Design Point 39 ($Q_5$ = 123 cfs, $Q_{100}$ = 307 cfs)** represents the total collected developed flows during the ultimate condition with basins P1-F1, CC, DD, EE, GG, HH, V, W, X and Y being tributary to this **northwest storm system outfall into Pond FSD-16**. Sizing of this storm outfall and the proposed concrete forebay/impact structure is based on the ultimate condition. This remains fairly consistent with *Design Point 4 ($Q_5$ = 218 cfs, $Q_{100}$ = 379 cfs)* as described in the approved *Sterling Ranch MDDP Amendment No. 2 and PDR for Sterling Ranch East Preliminary Plan No.1 (SP224).* The hydrologic calculation method difference between this report using rational method and the MDDP/PDR using SWWM 5.1 proves challenging for exact flow comparison. However, the future final drainage report(s) for these various proposed developments will provide the final determination of the interim and ultimate developed flow conditions.

Design Points 40-48 represent the Ultimate Condition with Sterling Ranch East Filings 2 and 8 being built:

**Design Point 40 ($Q_5$ = 4 cfs, $Q_{100}$ = 10 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 8 residential use within Basin F8-1 (3.3 ac.) that are tributary to the proposed sump condition at Design Point 40. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 41 ($Q_5$ = 1.2 cfs, $Q_{100}$ = 3 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 8 residential use within Basin F8-2 (1.0 ac.) that are tributary to the proposed sump condition at Design Point 41. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 42 ($Q_5$ = 5 cfs, $Q_{100}$ = 10 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 8 residential use within Basin F8-3 (3.0 ac.) that are tributary to Design Point 42. At this location, an anticipated Type R at-grade inlet will be sized to collect developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 43 ($Q_5$ = 7 cfs, $Q_{100}$ = 15 cfs)** represents the anticipated developed flows from the planned Sterling Ranch East Filing No. 8 residential use within Basin F8-4 (5.0 ac.) that are tributary to Design Point 43. At this location, an anticipated Type R at-grade inlet will be sized to collect developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

**Design Point 44 ($Q_5$ = 7 cfs, $Q_{100}$ = 16 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 8 residential use within Basin F8-7 (4.9 ac.) that are tributary to the proposed sump condition at Design Point 44. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these develope nstream. Sizing of these facilities will be provided in a future FDR.

Labeled wrong on routing sheet. Now corrected. 10' is correct size and inlet sizing now included.

Verify inlet size, 5' or 10'.

**Design Point 45 ($Q_5$ = 4 cfs, $Q_{100}$ = 10 cfs)** r ated developed flows from the Sterling Ranch East Filing No. 2 residential use within Basin F2-A (2.9 ac.) that are tributary to the proposed sump condition at Design Point 45. At this location, a 10' Type R sump inlet has already been designed to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. This remains consistent with *Design Point 2 ($Q_5$ = 4.5 cfs, $Q_{100}$ = 11.1 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

**Design Point 46 ($Q_5$ = 6 cfs, $Q_{100}$ = 16 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 2 residential use within Basin F2-B (5.0 ac.) that are tributary to the proposed sump condition at Design Point 46. At this location, a 10' Type R sump inlet has already been designed to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. This remains consistent with *Design Point 1 ($Q_5$ = 6.6 cfs, $Q_{100}$ = 16.0 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

**Design Point 47 ($Q_5$ = 4 cfs, $Q_{100}$ = 8 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 2 residential use within Basin F8-5 (2.5 ac.) that are tributary to the proposed sump condition at Design Point 47. At this location, a 15' Type R at-grade inlet has already been designed to collect the majority of the developed flows with a minimal flow-by of ($Q_5$ = 0.0 cfs, $Q_{100}$ = 0.2 cfs). A public storm system within the ROW will convey these developed flows further downstream. This remains consistent with *Design Point 11 Flow by ($Q_5$*

*= 0.0 cfs, $Q_{100}$ = 0.0 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

**Design Point 48 ($Q_5$ = 4 cfs, $Q_{100}$ = 10 cfs)** represents the anticipated developed flows from the Sterling Ranch East Filing No. 8 residential use within Basin F8-6 (3.5 ac.) that are tributary to the proposed sump condition at Design Point 48. At this location, Type R sump inlets will be sized to completely collect both the 5-yr. and 100-yr. developed flows. A public storm system within the ROW will convey these developed flows further downstream. Sizing of these facilities will be provided in a future FDR.

Design Points 49 & 50 represent both the Interim and Ultimate Conditions:

**Design Point 49 ($Q_5$ = 3 cfs, $Q_{100}$ = 8 cfs)** represents developed flows from Basin SR-1 (1.2 ac.) and the minimal flow-by from DP-37 along the north side of Sterling Ranch Road that are tributary to Design Point 49. A 15' Type R at-grade inlet has already been designed to collect the majority of the developed flows with a minimal flow-by of ($Q_5$ = 0.0 cfs, $Q_{100}$ = 0.1 cfs). A public storm system within the ROW will convey these developed flows further downstream. This remains consistent with *Design Point 15 Flow by ($Q_5$ = 0.0 cfs, $Q_{100}$ = 1.2 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

**Design Point 50 ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs)** represents anticipated developed flows from Basin SR-2 (0.65 ac.) and Basin Z (0.30) along the south side of Sterling Ranch Road that are tributary to Design Point 50. A 15' Type R at-grade inlet has already been designed to collect the majority of the developed flows with a minimal flow-by of ($Q_5$ = 0.0 cfs, $Q_{100}$ = 0.0 cfs). A public storm system within the ROW will convey these developed flows further downstream. This remains consistent with *Design Point 16 Flow by ($Q_5$ = 0.0 cfs, $Q_{100}$ = 0.4 cfs)* as described in the approved FDR for *Foursquare at Sterling Ranch East Filing No. 1 (SF2236).*

Design Point 51 represents both the Interim and Ultimate Conditions with Sterling Ranch East Filing No. 8 and Sterling Ranch East Filing No. 2 being built:

**Design Point 51 ($Q_5$ = 38 cfs, $Q_{100}$ = 90 cfs)** represents the **total developed flows at the southwest forebay** from all the designed residential development tributary to this outfall location into Pond FSD-16. This remains fairly consistent with *Design Point 17 ($Q_5$ = 48 cfs, $Q_{100}$ = 112 cfs)* as described in the approved FDR for *Sterling Ranch East Filing No. 8 (SF2526).*

Already included in calcs. but now added to text.

and flow-by from DP-47

Design Points 52-54 represents both the Interim and Ultimate Conditions:

**Design Point 52 ($Q_5$ = 12.2 cfs, $Q_{100}$ = 25.2 cfs)** consists of developed flows from Basin F2-C, P1-A2 and F8-8. Basin F2-C is 0.72 acres and Basin F8-8 is 1.3 acres of open space tracts adjacent to Briargate Parkway. Basin P1-A2 is 4.2 acres of the north half of Briargate Parkway. These basins combine flows that travel as curb and gutter flow along the north flowline of Briargate Parkway. These flows are intercepted by an existing 15' Type R at-grade inlet recently constructed in Briargate Parkway. This at-grade inlet intercepts ($Q_5$= 10.4 cfs, $Q_{100}$= 15.2 cfs) with a flow-by of ($Q_5$= 1.8 cfs, $Q_{100}$= 10.0 cfs) that travels in the north curb line of Briargate Parkway towards Design Point 53. Intercepted flows are conveyed by a public 24" RCP storm sewer within Briargate Parkway. These flows are then routed further downstream towards the existing Pond FSD-14A recently constructed along the Sterling Ranch East Filing No. 1 (SF2235)

This basin was originally studied in the "Drainage Letter for Sterling Ranch Road and Briargate Parkway Interim Plan", prepared by JR Engineering, approved 7/25/23 (CDR221) as Basin A2 and Design Point 2 ($Q_5$= 10.5 cfs, $Q_{100}$= 21.4 cfs). These off-site flows remain fairly consistent with what was previously planned and anticipated and the downstream facilities will continue to adequately handle these flows.

and flow-by from DP-52

**Design Point 53 ($Q_5$ = 7.5 cfs, $Q_{100}$ = 23.7 cfs)** consis

Already included in calcs. but now added to text.

from Basin F8-9 and off-site Basin P1-A3. Basin F8-9 is 1.6 acres of open sp

riargate Parkway. Basin P1-A3 is 1.2 acres of the north half of Briargate Parkway. These basins combine flows that travel as curb and gutter flow along the north flowline of Briargate Parkway. These flows are

intercepted by an existing 15' Type R at-grade inlet recently constructed in Briargate Parkway just west of the intersection with Sterling Ranch Road. This at-grade inlet intercepts ($Q_5$= 7.2 cfs, $Q_{100}$= 14.2 cfs) with a flow-by of ($Q_5$= 0.1 cfs, $Q_{100}$= 7.6 cfs) that travels in the north half of Briargate Parkway towards Design Point 54. Intercepted flows are conveyed by a public 24" RCP storm sewer within Briargate Parkway. These flows are then routed further downstream towards the existing Pond FSD-14A recently constructed along the Sterling Ranch East Filing No. 1 (SF2235)

This basin was originally studied in the "Drainage Letter for Sterling Ranch Road and Briargate Parkway Interim Plan", prepared by JR Engineering, approved 7/25/23 (CDR221) as Basin A3 and Design Point 5 ($Q_5$= 5.1 cfs, $Q_{100}$= 13.2 cfs). Again, these off-site flows [illegible]ent with what was pre[illegible] and anticipated and the downstream [illegible] to adequately handle these flows.

Already included in calcs. but now added to text.

No Flow-by from DP-50

and Basin U

and DP-50?

**Design Point 54 ($Q_5$ = 11.2 cfs, $Q_{100}$ = 32.4 cfs)** consists of developed flows from Basin BG-1 and flow-by from Design Points 17, 49 & 53. Basin BG-1 is 4.2 acres of Sterling Ranch Road, open space tract adjacent to Briargate Parkway and the proposed Briargate Parkway extension to the east. These flows travel as curb and gutter flow within Briargate Parkway to Design Point 54. At this location an existing 20' Type R sump inlet constructed along with the recent Briargate Parkway and Filing No. 1 improvements completely collects these proposed and anticipated future developed flows. Intercepted flows are conveyed by a public 30" RCP storm sewer within Briargate Parkway. These flows are then routed further downstream towards the existing Pond FSD-14A recently constructed along the Sterling Ranch East Filing No. 1 (SF2235)

This basin was previously studied in the "Final Drainage Report for Sterling Ranch East Filing No. 1", prepared by Classic Consulting, approved 7/2/24 (SF2235) as Basins P1-C2, P1-A5 and Design Point 6 ($Q_5$= 10.3 cfs, $Q_{100}$= 31.6 cfs). These off-site flows remain fairly consistent with what was previously planned and anticipated and the downstream facilities will continue to adequately handle these flows.

Interim and Ultimate Condition:

**Design Point 55 ($Q_5$ = 7 cfs, $Q_{100}$ = 13 cfs)** represents developed flows from Basin BG-2 (3.0 ac.) that are tributary to the proposed sump condition at Design Point 55. At this location, as existing 15' Type R sump inlet, constructed with the recent Briargate Parkway and Filing No. 1 improvements will completely collect both the 5-yr. and 100-yr. developed flows. A public 24" RCP within the ROW will convey these developed flows further downstream.

The following Basins represent both the Ultimate Conditions:

**Basin U ($Q_5$ = 2 cfs, $Q_{100}$ = 6 cfs)** represents developed flows from rear yards of lots 1-6 that are not able to be captured and routed to Pond FSD-16. However, these developed flows will enter the proposed north curb line of Briargate Parkway and travel as curb and gutter flow in a westerly direction towards the existing 20' Type R sump inlet at DP-54. This condition is consistent with the approved *Sterling Ranch MDDP Amendment No. 2 and PDR for Sterling Ranch East Preliminary Plan No.1 (SP224)* as previously planned Basin P1-A5. These developed flows within this basin are completely captured and routed downstream within the public storm system within Sterling Ranch Road and ultimately enter the existing Pond FSD-14A as constructed with *Sterling Ranch East Filing No. 1 FDR (SF2235).*

**Basin Z ($Q_5$ = 0.3 cfs, $Q_{100}$ = 0.9 cfs)** represents developed flows from rear yards of lots and the open space tract adjacent to Sterling Ranch Road (0.30 ac.). These flows sheet flow into the easterly curb line of Sterling Ranch Road and travel as curb and gutter flow in a southerly direction towards the downstream 15' Type R at-grade inlet proposed at DP-50. This basin was previously accounted for as Basin OS-4 in the Sterling Ranch East Filing No. 8 FDR.

**Basin AA ($Q_5$ = 4 cfs, $Q_{100}$ = 10 cfs)** represents developed flows from rear lots and adjacent Tract that sheet flow directly into Pond FSD-16 (2.6 ac.).

**Basin BB ($Q_5$ = 3 cfs, $Q_{100}$ = 16 cfs)** represents developed flows from the Pond FSD-16 area itself (6.2 ac.). These developed flows travel as sheet flow into the facility and then routed via concrete trickle channels towards the outlet structure.

Drainage map shows basin FF is not tributary to FSD-16, please provide an applicable exclusion for this area or provide treatment.

**Basin FF ($Q_5$ = 2 cfs, $Q_{100}$ = 4 cfs)** represents developed flows from the north half of the proposed Appleton Dr. public r curb and gutter flows in a southeasterly direction to in. These flows will ultimately be treated in a futu A temporary control berm is proposed along the north side of Appleton Dr. to route the off-site pre-developed flows from the north around the site. The berm will remain in place until future upstream facilities are designed and constructed with future Sterling Ranch residential filings within this basin.

Runoff reduction area now included for this Basin that will ultimately be treated further downstream by a future FSD Pond.

Missing Basin P1-F1, please include

Basin description now included.

TSBs cannot provide permanent WQ treatment. Please revise.

**DETENTION / STORMWATER QUALITY FACILITES**

As required, storm water quality measures will be utilized in order to reduce the amount of sediment, debris and pollutants that are allowed to enter Sand C e features include but are not limited to Pond FSD-16, existing downstream Pond FSD-14A and temporary sediment basins (All owned and maintained by Sterling Ranch Metro District No. 3). All urban areas require detention and will provide a Water Quality Capture Volume (WQCV) and Excess Urban Runoff Volume (EURV) in the lower portion of the facility storage volume that will release the more frequent storms at a slower rate to help minimize the effects of development of the property. The proposed facilities are to be private facilities with ownership and maintenance by the Sterling Ranch Metropolitan District No. 3. After completion of construction and upon the Board of County Commissioners acceptance, all the drainage facilities within the public Right-of-Way will be owned and maintained by El Paso County.

Revised

The following represents the proposed **Pond FSD-16 design:**

(See MHFD-Detention Design Sheets in Appendix)

**Ultimate Condition:**

**Total Tributary acreage: 211.5 Ac.**

**3.592 Ac.-ft. WQCV required**

**8.114 Ac.-ft. EURV required**

**7.446 Ac.-ft. 100-yr. Storage**

**19.152 Ac.-ft. Total**

**Total In-flow:** **$Q_5$ = 190 cfs, $Q_{100}$ = 471 cfs**

**Pond Design Release:** **$Q_5$ = 4.0 cfs, $Q_{100}$ = 118.8 cfs**

**(Ownership and maintenance by the Sterling Ranch Metro District No. 3)**

**DRAINAGE CRITERIA**

Hydrologic calculations were performed using the City of Colorado Springs/El Paso County Drainage Criteria Manual, as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014. Individual on-site developed basin design used for detention/SWQ basin sizing was calculated using the Rational Method. Runoff Coefficients are based on the imperviousness of the particular land use and the hydrologic soil type in accordance with Table 6-6. The average rainfall intensity, by recurrence interval found in the Intensity-Duration-Frequency (IDF) curves in Figure 6-5. (See Appendix)

The City of Colorado Springs/El Paso County DCM requires the Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainage ways, and implementing long-term source controls. The Four Step Process pertains to management of smaller, frequently occurring storm events, as

opposed to larger storms for which drainage and flood control infrastructure are sized. Implementation of these four steps helps to achieve storm water permit requirements.

This site adheres to this **Four Step Process** as follows:

1. **Employ Runoff Reduction Practices:** All proposed lot impervious area (roof tops, patios, etc.) will sheet flow across landscaped portions of front and rear yards and through open space areas to slow runoff and increase time of concentration prior to being conveyed to the proposed public streets or detention facilities. This will minimize directly connected impervious areas within the project site. Final Drainage Report will provide further detail on basins that will be providing Runoff Reduction.

2. **Stabilize Drainageways:** After developed flows utilize the runoff reduction practices through the front and rear yards, developed flows will travel via curb and gutter within the public streets and eventually public storm systems. These collected flows are then routed directly to the proposed extended detention basins (full-spectrum facilities). Where developed flows are not able to be routed to public street, sheet flows will travel across landscaped rear yards and then through undeveloped property prior to being released off-site.

3. **Provide Water Quality Capture Volume (WQCV):** Runoff from this development will be treated through capture and slow release of the WQCV and excess urban runoff volume (EURV) in the proposed Full-Spectrum permanent Extended Detention Basins designed per current El Paso County d area that is not able to be captured and routed to a permanent practices are required and will be provided in the rear setbacks of the lots or within the open space tract within these specific basins.

   Pond descriptions and runoff reduction now included.

   Please use pond identifiers specific to this project, clarify if runoff reduction is being used for WQ treatment, and discuss any exclusions (basin FF).

4. **Consider need for Industrial and Commercial BMPs**: No industrial or commercial uses are proposed within this development. However, a site-specific storm water quality and

erosion control plan and narrative along with the grading and erosion control plan will be submitted with the future Final Plat submittal. Details such as site-specific sediment and erosion control construction BMP's as well as temporary and permanent BMP's will be detailed in this plan and narrative to protect receiving waters. BMP's will be constructed and maintained as the development has been graded and erosion control methods employed.

**FLOODPLAIN STATEMENT**

No portion of this site is located within a floodplain as determined by the Flood Insurance Rate Maps (F.I.R.M.) Map Number 08041C0533G and 08041C535G with effective date of December 7, 2018 (See Appendix).

**DRAINAGE AND BRIDGE FEES**

This subdivision lies entirely within the Sand Creek Drainage Basin boundaries. The following are anticipated drainage and bridge fees using the following impervious acreage method approved by El Paso County.

**Total Final Plat area equals 62.50 acres** with the following different land uses proposed:

| | |
|---|---|
| 10.10 Ac. | Park/Open Space/Pond Tracts (Tracts A-H) |
| 44.36 Ac. | Urban Lots (RS-5000 zone with avg. Lot Size = 7,590 SF) |
| 8.04 Ac. | Briargate Parkway, Sterling Ranch Road and Appleton Dr. Right-of-Way |
| **62.50 Ac.** | **Total** |

The percent imperviousness for this subdivision is calculated as follows:

**Fees for Park/Open Space/Pond Tracts**

(Per El Paso County Percent Impervious Chart: 7**%**)

10.10 Ac. x 7% = **0.71 Impervious Ac.**

**Fees for Urban Lots** (Avg. Lot Size of 7,390 SF)

(Per El Paso County Percent Impervious Chart: 48**%**)

44.36 Ac. x 48% = **21.29 Impervious Ac.**

**Fees for adjacent Public Right-of-Way**

(Per El Paso County Percent Impervious Chart: 80**%**)

8.04 Ac. x 80% = **6.43 Impervious Ac.**

**Total Impervious Acreage:** **28.43 Imp. Ac.** (Drainage Fees)

**Total Impervious Acreage:** **28.43 Imp. Ac.** (Bridge Fees)

The following calculations are based on the 2026 Sand Creek drainage/bridge fees:

**ESTIMATED FEE TOTALS (Filing No. 1):**

**Bridge Fees**

$ 11,518.00 x 28.43 Impervious Ac. = **$ 327,456.74**

**Drainage Fees (Credits may be used)**

$ 28,160.00 x 28.43 Impervious Ac. = **$ 800,588.80**

Credits within the basin may be used for Drainage Fees only. Please reference the "Pre-credits" table below. Bridge Fees will be paid at plat recordation.

Please provide copy of the pre-credit table.

Spreadsheet now included

**SUMMARY**

The proposed Sterling Ranch East Filing No. 6 Final Plat is within the Sand Creek Drainage Basin. Recommendations are made within this report concerning necessary improvements that will be required as a result of development of this property. The points of storm water release from the proposed site are required to be at or below the calculated pre-developed flow quantities. The development of the proposed site does not significantly impact any downstream facility or property to an extent greater than that which currently exists in the pre-development conditions. All drainage facilities within this report were sized according to the Drainage Criteria Manuals and the full-spectrum storm water quality requirements.

PREPARED BY:

**Classic Consulting Engineers & Surveyors, LLC**

Marc A. Whorton, P.E.
Project Manager

maw/118360 FDR Fil. 6.doc

**REFERENCES**


1. City of Colorado Springs/County of El Paso Drainage Criteria Manual as revised in November 1991 and October 1994 with County adopted Chapter 6 and Section 3.2.1 of Chapter 13 of the City of Colorado Springs/El Paso County Drainage Criteria Manual as revised in May 2014.

2. "Urban Storm Drainage Criteria Manual Volume 1, 2 & 3" Urban Drainage and Flood Control District, dated January 2016.

3. "Final Drainage Report for Forest Gate Subdivision" Law & Mariotti Consultants, Inc. dated October 2004.

4. "Sand Creek Drainage Basin Planning Study," Kiowa Engineering Corporation, dated March 1996.

5. "2018 Sterling Ranch MDDP", M&S Civil Consultants, Inc., June 2018

6. "Final Drainage Report for Retreat at TimberRidge Filing No. 1", Classic Consulting, approved November, 2020.

7. "Final Drainage Report for Retreat at TimberRidge Filing No. 2", Classic Consulting, approved September, 2022.

8. "Sterling Ranch MDDP Amendment No. 2 & Preliminary Drainage Report for Sterling Ranch East Preliminary Plan No. 1", Classic Consulting, approved January, 2023.

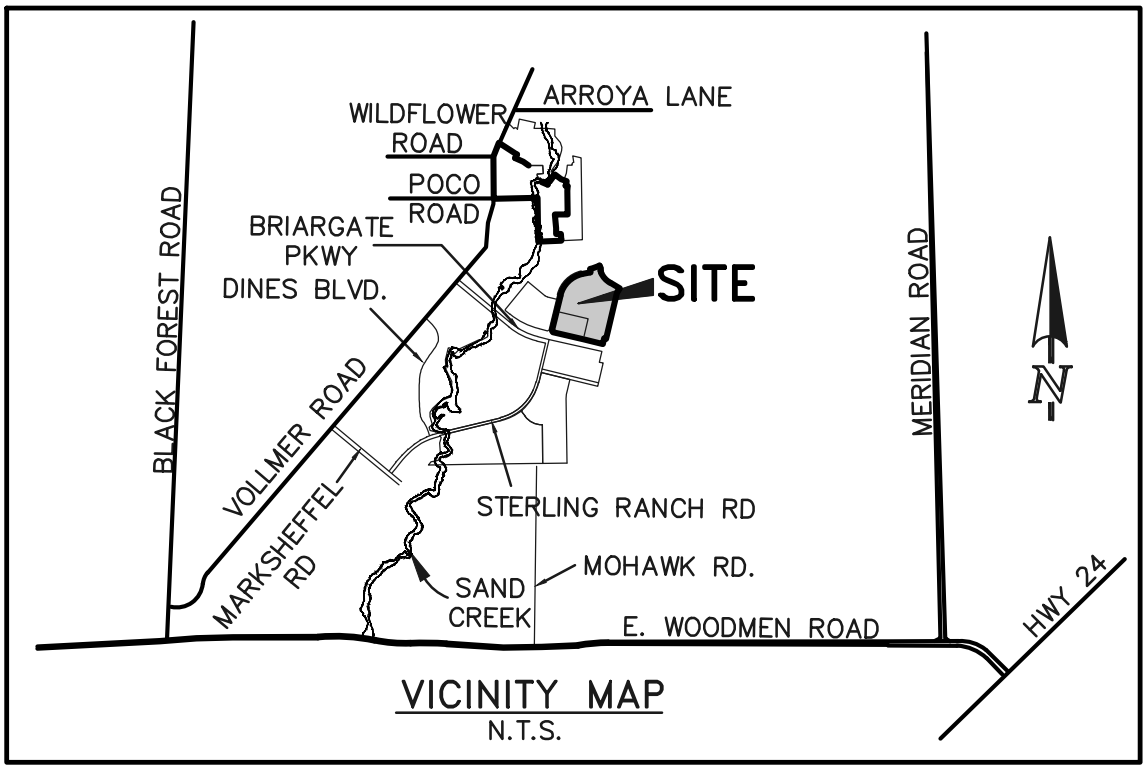
9. "Final Drainage Report for Sterling Ranch East Filing No. 2 and Foursquare at Sterling Ranch East Filing No. 1", Classic Consulting, dated August, 2024.

10. "Preliminary Drainage Report for Sterling Ranch East Filing No. 6 Preliminary Plan and Final Drainage Report for Early Grading ", Classic Consulting, dated April 2025

# APPENDIX

# VICINITY MAP

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

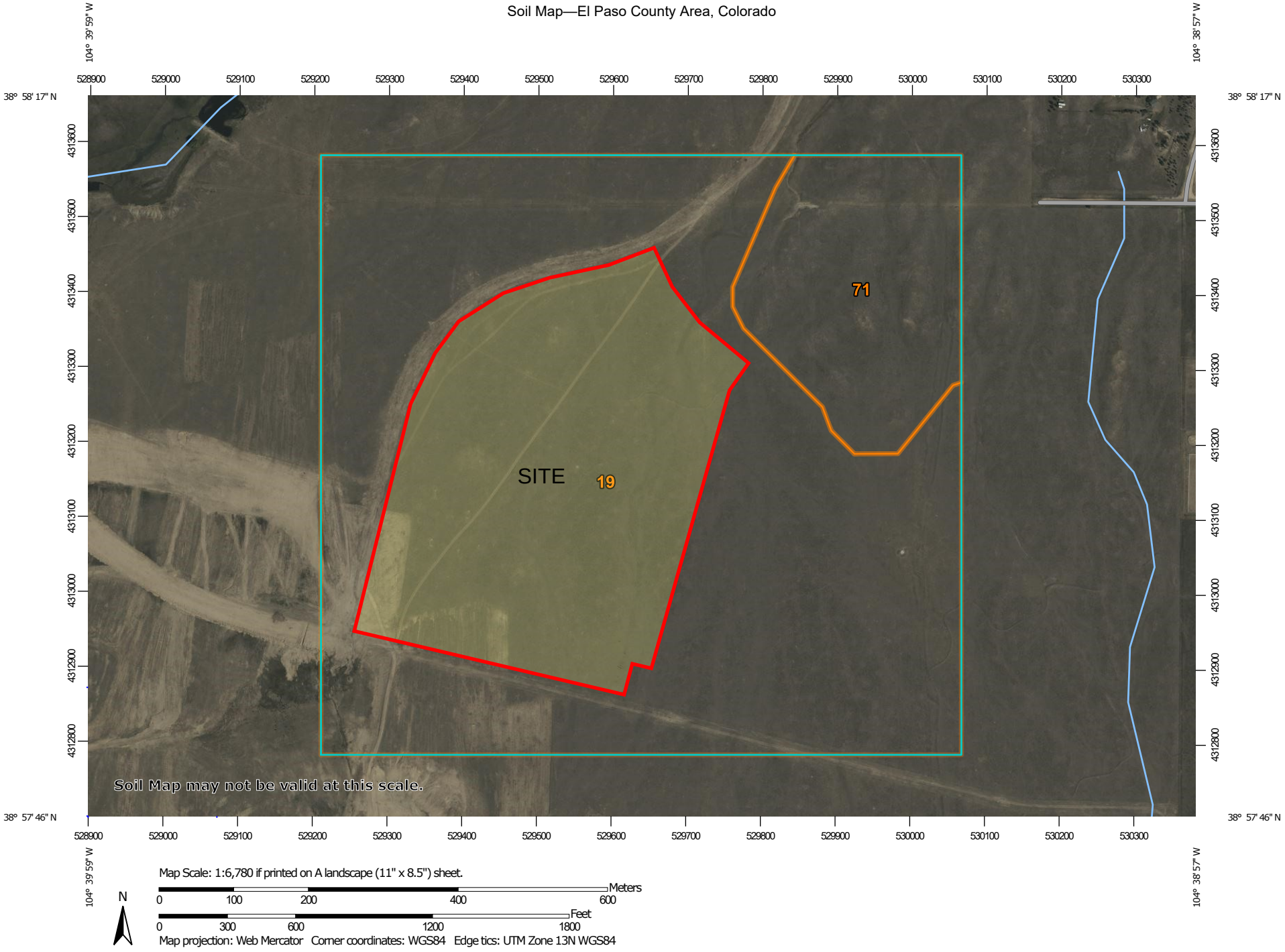



VICINITY MAP

N.T.S.

**SOILS MAP (S.C.S SURVEY)**

# Soil Map—El Paso County Area, Colorado



## MAP LEGEND

**Area of Interest (AOI)**
- Area of Interest (AOI)

**Soils**
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**
- Streams and Canals

**Transportation**
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**
- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 11, 2018—Oct 20, 2018

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| 19 | Columbine gravelly sandy loam, 0 to 3 percent slopes | 146.7 | 86.2% |
| 71 | Pring coarse sandy loam, 3 to 8 percent slopes | 23.5 | 13.8% |
| **Totals for Area of Interest** | | **170.2** | **100.0%** |

# El Paso County Area, Colorado

## 19—Columbine gravelly sandy loam, 0 to 3 percent slopes

### Map Unit Setting

*National map unit symbol:* 367p
*Elevation:* 6,500 to 7,300 feet
*Mean annual precipitation:* 14 to 16 inches
*Mean annual air temperature:* 46 to 50 degrees F
*Frost-free period:* 125 to 145 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Columbine and similar soils:* 97 percent
*Minor components:* 3 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Columbine

#### Setting

*Landform:* Flood plains, fan terraces, fans
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 14 inches:* gravelly sandy loam
*C - 14 to 60 inches:* very gravelly loamy sand

#### Properties and qualities

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Very low
*Capacity of the most limiting layer to transmit water (Ksat):* High to very high (5.95 to 19.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* Very low (about 2.5 inches)

#### Interpretive groups

*Land capability classification (irrigated):* 4e
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* A
*Ecological site:* R049XY214CO - Gravelly Foothill
*Hydric soil rating:* No

### Minor Components

#### Fluvaquentic haplaquolls

*Percent of map unit:* 1 percent

*Landform:* Swales
*Hydric soil rating:* Yes

**Other soils**
*Percent of map unit:* 1 percent
*Hydric soil rating:* No

**Pleasant**
*Percent of map unit:* 1 percent
*Landform:* Depressions
*Hydric soil rating:* Yes

# Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

# El Paso County Area, Colorado

## 71—Pring coarse sandy loam, 3 to 8 percent slopes

### Map Unit Setting

*National map unit symbol:* 369k
*Elevation:* 6,800 to 7,600 feet
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pring and similar soils:* 85 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pring

#### Setting

*Landform:* Hills
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Arkosic alluvium derived from sedimentary rock

#### Typical profile

*A - 0 to 14 inches:* coarse sandy loam
*C - 14 to 60 inches:* gravelly sandy loam

#### Properties and qualities

*Slope:* 3 to 8 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* High (2.00 to 6.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* Low (about 6.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* R048AY222CO - Loamy Park
*Hydric soil rating:* No

### Minor Components

#### Pleasant

*Percent of map unit:*
*Landform:* Depressions
*Hydric soil rating:* Yes

**Other soils**

*Percent of map unit:*
*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: El Paso County Area, Colorado
Survey Area Data: Version 21, Aug 24, 2023

**F.E.M.A. MAP**

## NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

**Coastal Base Flood Elevations** shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 13. The **horizontal datum** was NAD83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the **North American Vertical Datum of 1988 (NAVD88)**. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, MD 20910-3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242 or visit its website at http://www.ngs.noaa.gov/.

**Base Map** information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, and Anderson Consulting Engineers, Inc. These data are current as of 2008.

This map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. The profile baselines depicted on this map represent the hydraulic modeling baselines that match the flood profiles and Floodway Data Tables if applicable, in the FIS report. As a result, the profile baselines may deviate significantly from the new base map channel representation and may appear outside of the floodplain.

**Corporate limits** shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact **FEMA Map Service Center** (MSC) via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. The MSC may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

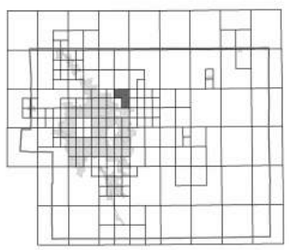
If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.

**El Paso County Vertical Datum Offset Table**

| Flooding Source | Vertical Datum Offset (ft) |
|---|---|

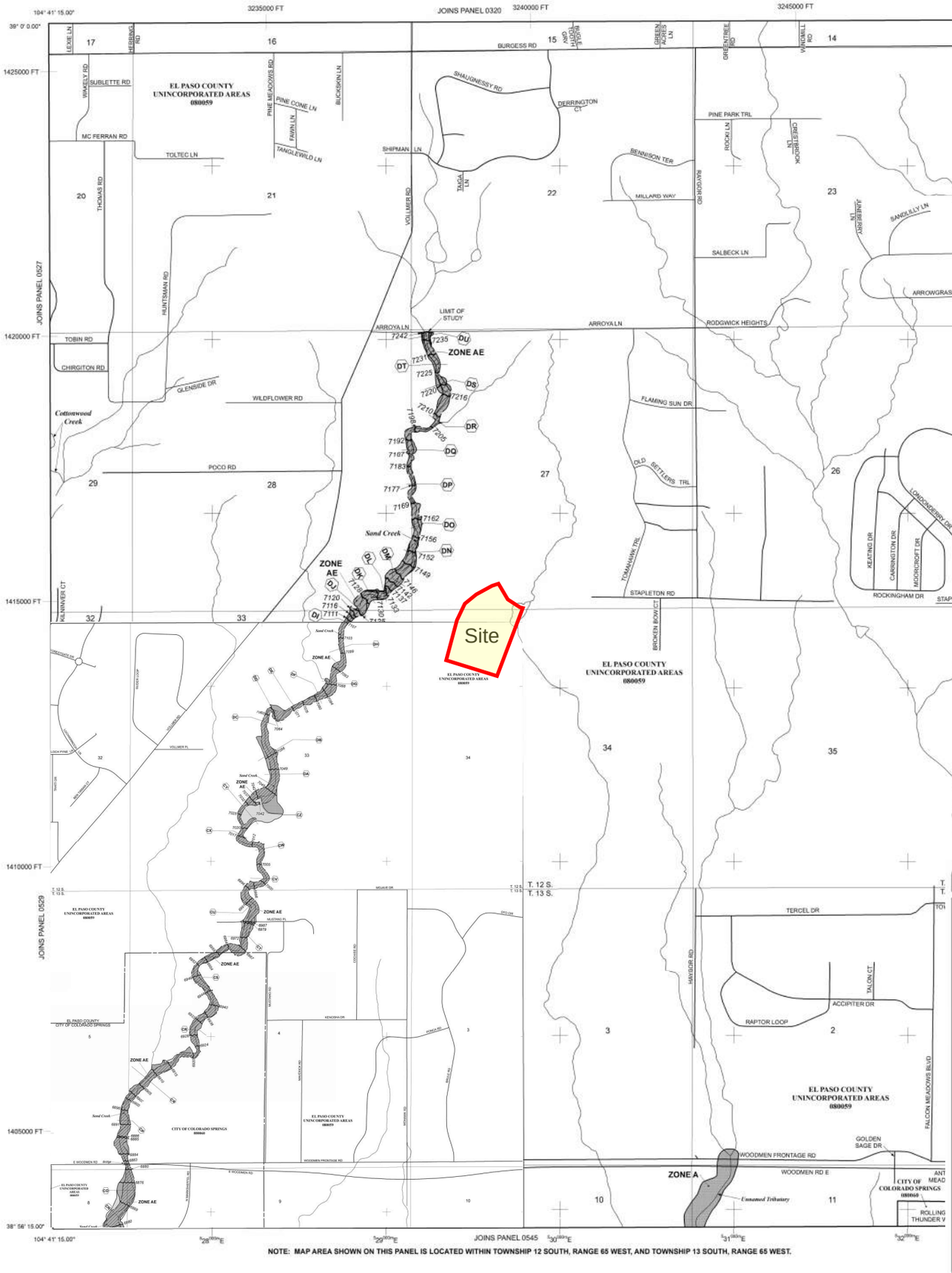
REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION

**Panel Location Map**



This Digital Flood Insurance Rate Map (DFIRM) was produced through a Cooperating Technical Partner (CTP) agreement between the State of Colorado Water Conservation Board (CWCB) and the Federal Emergency Management Agency (FEMA).

Additional Flood Hazard information and resources are available from local communities and the Colorado Water Conservation Board.




## LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAS) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

- **ZONE A** No Base Flood Elevations determined.
- **ZONE AE** Base Flood Elevations determined.
- **ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- **ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- **ZONE AR** Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- **ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- **ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- **ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

- **ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

- **ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- **ZONE D** Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30.00" / 32° 22' 30.00" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4375000 FT — 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 6000000 FT — 5000-foot grid ticks: Colorado State Plane coordinate system, central zone (FIPSZONE 0502), Lambert Conformal Conic Projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
**MARCH 17, 1997**

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL
**DECEMBER 7, 2018** - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to update map format, to add roads and road names, and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'
500 0 1000 2000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

**PANEL 0533G**

# FIRM
## FLOOD INSURANCE RATE MAP
## EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

**PANEL 533 OF 1300**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| COLORADO SPRINGS, CITY OF | 080060 | 0533 | G |
| EL PASO COUNTY | 080059 | 0533 | G |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER 08041C0533G**

**MAP REVISED DECEMBER 7, 2018**

Federal Emergency Management Agency

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

**PANEL 0535G**

# FIRM
## FLOOD INSURANCE RATE MAP
## EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

**PANEL 535 OF 1300**

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL | SUFFIX |
|---|---|---|---|
| COLORADO SPRINGS, CITY OF | 080060 | 0535 | G |
| EL PASO COUNTY | 080059 | 0535 | G |

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

**MAP NUMBER 08041C0535G**

**MAP REVISED DECEMBER 7, 2018**

Federal Emergency Management Agency

## HYDROLOGIC CALCULATIONS

Please include pre-development hydrology spreadsheets in appendix (Information as shown on existing drainage map)

Now included

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

For Colorado Springs and much of the Fountain Creek watershed, the 1-hour depths are fairly uniform and are summarized in Table 6-2. Depending on the location of the project, rainfall depths may be calculated using the described method and the NOAA Atlas maps shown in Figures 6-6 through 6-17.

**Table 6-2. Rainfall Depths for Colorado Springs**

| Return Period | 1-Hour Depth | 6-Hour Depth | 24-Hour Depth |
|---|---|---|---|
| 2 | 1.19 | 1.70 | 2.10 |
| 5 | 1.50 | 2.10 | 2.70 |
| 10 | 1.75 | 2.40 | 3.20 |
| 25 | 2.00 | 2.90 | 3.60 |
| 50 | 2.25 | 3.20 | 4.20 |
| 100 | 2.52 | 3.50 | 4.60 |

Where Z= 6,840 ft/100

These depths can be applied to the design storms or converted to intensities (inches/hour) for the Rational Method as described below. However, as the basin area increases, it is unlikely that the reported point rainfalls will occur uniformly over the entire basin. To account for this characteristic of rain storms an adjustment factor, the Depth Area Reduction Factor (DARF) is applied. This adjustment to rainfall depth and its effect on design storms is also described below. The UDFCD UD-Rain spreadsheet, available on UDFCD's website, also provides tools to calculate point rainfall depths and Intensity-Duration-Frequency curves[2] and should produce similar depth calculation results.

## 2.2 Design Storms

Design storms are used as input into rainfall/runoff models and provide a representation of the typical temporal distribution of rainfall events when the creation or routing of runoff hydrographs is required. It has long been observed that rainstorms in the Front Range of Colorado tend to occur as either short-duration, high-intensity, localized, convective thunderstorms (cloud bursts) or longer-duration, lower-intensity, broader, frontal (general) storms. The significance of these two types of events is primarily determined by the size of the drainage basin being studied. Thunderstorms can create high rates of runoff within a relatively small area, quickly, but their influence may not be significant very far downstream. Frontal storms may not create high rates of runoff within smaller drainage basins due to their lower intensity, but tend to produce larger flood flows that can be hazardous over a broader area and extend further downstream.

- **Thunderstorms**: Based on the extensive evaluation of rain storms completed in the Carlton study (Carlton 2011), it was determined that typical thunderstorms have a duration of about 2 hours. The study evaluated over 300,000 storm cells using gage-adjusted NEXRAD data, collected over a 14-year period (1994 to 2008). Storms lasting longer than 3 hours were rarely found. Therefore, the results of the Carlton study have been used to define the shorter duration design storms.

  To determine the temporal distribution of thunderstorms, 22 gage-adjusted NEXRAD storm cells were studied in detail. Through a process described in a technical memorandum prepared by the City of Colorado Springs (City of Colorado Springs 2012), the results of this analysis were interpreted and normalized to the 1-hour rainfall depth to create the distribution shown in Table 6-3 with a 5 minute time interval for drainage basins up to 1 square mile in size. This distribution represents the rainfall

**Table 6-6. Runoff Coefficients for Rational Method**
(Source: UDFCD 2001)

| Land Use or Surface Characteristics | Percent Impervious | Runoff Coefficients | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2-year | | 5-year | | 10-year | | 25-year | | 50-year | | 100-year | |
| | | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D | HSG A&B | HSG C&D |
| Business | | | | | | | | | | | | | |
| Commercial Areas | 95 | 0.79 | 0.80 | 0.81 | 0.82 | 0.83 | 0.84 | 0.85 | 0.87 | 0.87 | 0.88 | 0.88 | 0.89 |
| Neighborhood Areas | 70 | 0.45 | 0.49 | 0.49 | 0.53 | 0.53 | 0.57 | 0.58 | 0.62 | 0.60 | 0.65 | 0.62 | 0.68 |
| | | | | | | | | | | | | | |
| Residential | | | | | | | | | | | | | |
| 1/8 Acre or less | 65 | 0.41 | 0.45 | 0.45 | 0.49 | 0.49 | 0.54 | 0.54 | 0.59 | 0.57 | 0.62 | 0.59 | 0.65 |
| 1/4 Acre | 40 | 0.23 | 0.28 | 0.30 | 0.35 | 0.36 | 0.42 | 0.42 | 0.50 | 0.46 | 0.54 | 0.50 | 0.58 |
| 1/3 Acre | 30 | 0.18 | 0.22 | 0.25 | 0.30 | 0.32 | 0.38 | 0.39 | 0.47 | 0.43 | 0.52 | 0.47 | 0.57 |
| 1/2 Acre | 25 | 0.15 | 0.20 | 0.22 | 0.28 | 0.30 | 0.36 | 0.37 | 0.46 | 0.41 | 0.51 | 0.46 | 0.56 |
| 1 Acre | 20 | 0.12 | 0.17 | 0.20 | 0.26 | 0.27 | 0.34 | 0.35 | 0.44 | 0.40 | 0.50 | 0.44 | 0.55 |
| | | | | | | | | | | | | | |
| Industrial | | | | | | | | | | | | | |
| Light Areas | 80 | 0.57 | 0.60 | 0.59 | 0.63 | 0.63 | 0.66 | 0.66 | 0.70 | 0.68 | 0.72 | 0.70 | 0.74 |
| Heavy Areas | 90 | 0.71 | 0.73 | 0.73 | 0.75 | 0.75 | 0.77 | 0.78 | 0.80 | 0.80 | 0.82 | 0.81 | 0.83 |
| | | | | | | | | | | | | | |
| Parks and Cemeteries | 7 | 0.05 | 0.09 | 0.12 | 0.19 | 0.20 | 0.29 | 0.30 | 0.40 | 0.34 | 0.46 | 0.39 | 0.52 |
| Playgrounds | 13 | 0.07 | 0.13 | 0.16 | 0.23 | 0.24 | 0.31 | 0.32 | 0.42 | 0.37 | 0.48 | 0.41 | 0.54 |
| Railroad Yard Areas | 40 | 0.23 | 0.28 | 0.30 | 0.35 | 0.36 | 0.42 | 0.42 | 0.50 | 0.46 | 0.54 | 0.50 | 0.58 |
| | | | | | | | | | | | | | |
| Undeveloped Areas | | | | | | | | | | | | | |
| Historic Flow Analysis--Greenbelts, Agriculture | 2 | 0.03 | 0.05 | 0.09 | 0.16 | 0.17 | 0.26 | 0.26 | 0.38 | 0.31 | 0.45 | 0.36 | 0.51 |
| Pasture/Meadow | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |
| Forest | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |
| Exposed Rock | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Offsite Flow Analysis (when landuse is undefined) | 45 | 0.26 | 0.31 | 0.32 | 0.37 | 0.38 | 0.44 | 0.44 | 0.51 | 0.48 | 0.55 | 0.51 | 0.59 |
| | | | | | | | | | | | | | |
| Streets | | | | | | | | | | | | | |
| Paved | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Gravel | 80 | 0.57 | 0.60 | 0.59 | 0.63 | 0.63 | 0.66 | 0.66 | 0.70 | 0.68 | 0.72 | 0.70 | 0.74 |
| | | | | | | | | | | | | | |
| Drive and Walks | 100 | 0.89 | 0.89 | 0.90 | 0.90 | 0.92 | 0.92 | 0.94 | 0.94 | 0.95 | 0.95 | 0.96 | 0.96 |
| Roofs | 90 | 0.71 | 0.73 | 0.73 | 0.75 | 0.75 | 0.77 | 0.78 | 0.80 | 0.80 | 0.82 | 0.81 | 0.83 |
| Lawns | 0 | 0.02 | 0.04 | 0.08 | 0.15 | 0.15 | 0.25 | 0.25 | 0.37 | 0.30 | 0.44 | 0.35 | 0.50 |

## 3.2 Time of Concentration

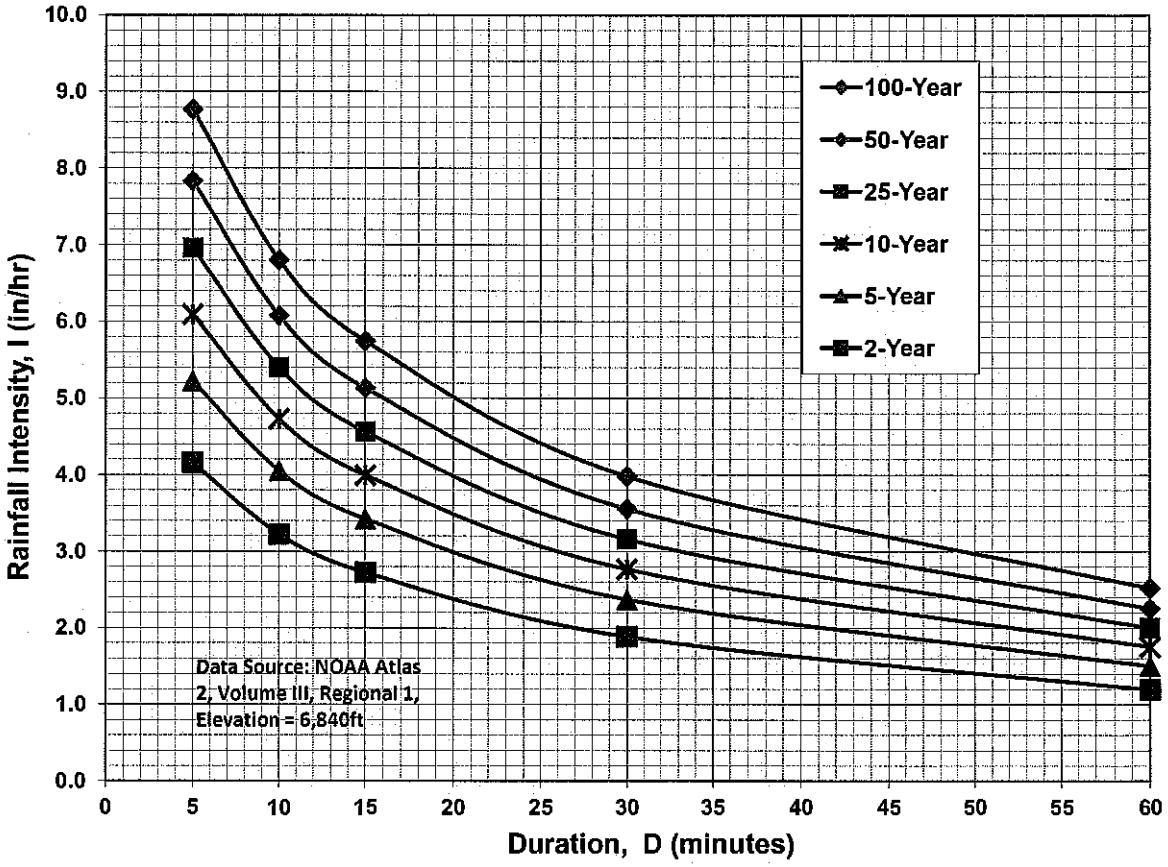
One of the basic assumptions underlying the Rational Method is that runoff is a function of the average rainfall rate during the time required for water to flow from the hydraulically most remote part of the drainage area under consideration to the design point. However, in practice, the time of concentration can be an empirical value that results in reasonable and acceptable peak flow calculations.

For urban areas, the time of concentration ($t_c$) consists of an initial time or overland flow time ($t_i$) plus the travel time ($t_t$) in the storm sewer, paved gutter, roadside drainage ditch, or drainage channel. For non-urban areas, the time of concentration consists of an overland flow time ($t_i$) plus the time of travel in a concentrated form, such as a swale or drainageway. The travel portion ($t_t$) of the time of concentration can be estimated from the hydraulic properties of the storm sewer, gutter, swale, ditch, or drainageway. Initial time, on the other hand, will vary with surface slope, depression storage, surface cover, antecedent rainfall, and infiltration capacity of the soil, as well as distance of surface flow. The time of concentration is represented by Equation 6-7 for both urban and non-urban areas.

## Table 6-10. NRCS Curve Numbers for Frontal Storms & Thunderstorms for Developed Conditions (ARCII)

| Fully Developed Urban Areas (vegetation established)[1] | Treatment | Hydrologic Condition | % I | Pre-Development CN | | | |
|---|---|---|---|---|---|---|---|
| | | | | HSG A | HSG B | HSG C | HSG D |
| Open space (lawns, parks, golf courses, cemeteries, etc.): | | | | | | | |
| Poor condition (grass cover < 50%) | ----- | ----- | --- | 68 | 79 | 86 | 89 |
| Fair condition (grass cover 50% to 75%) | ----- | ----- | --- | 49 | 69 | 79 | 84 |
| Good condition (grass cover > 75%) | ----- | ----- | --- | 39 | 61 | 74 | 80 |
| Impervious areas: | | | | | | | |
| Paved parking lots, roofs, driveways, etc. (excluding right-of-way | ----- | ----- | --- | 98 | 98 | 98 | 98 |
| Streets and roads: | | | | | | | |
| Paved; curbs and storm sewers (excluding right-of-way) | ----- | ----- | --- | 98 | 98 | 98 | 98 |
| Paved; open ditches (including right-of-way) | ----- | ----- | --- | 83 | 89 | 92 | 93 |
| Gravel (including right-of-way) | ----- | ----- | --- | 76 | 85 | 89 | 91 |
| Dirt (including right-of-way) | ----- | ----- | --- | 72 | 82 | 87 | 89 |
| Western desert urban areas: | | | | | | | |
| Natural desert landscaping (pervious areas only) | ----- | ----- | --- | 63 | 77 | 85 | 88 |
| Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) | ----- | ----- | --- | 96 | 96 | 96 | 96 |
| Urban districts: | | | | | | | |
| Commercial and business | ----- | ----- | 85 | 89 | 92 | 94 | 95 |
| Industrial | ----- | ----- | 72 | 81 | 88 | 91 | 93 |
| Residential districts by average lot size: | | | | | | | |
| 1/8 acre or less (town houses) | ----- | ----- | 65 | 77 | 85 | 90 | 92 |
| 1/4 acre | ----- | ----- | 38 | 61 | 75 | 83 | 87 |
| 1/3 acre | ----- | ----- | 30 | 57 | 72 | 81 | 86 |
| 1/2 acre | ----- | ----- | 25 | 54 | 70 | 80 | 85 |
| 1 acre | ----- | ----- | 20 | 51 | 68 | 79 | 84 |
| 2 acres | ----- | ----- | 12 | 46 | 65 | 77 | 82 |
| **Developing Urban Areas[1]** | **Treatment[2]** | **Hydrologic Condition[3]** | **% I** | **HSG A** | **HSG B** | **HSG C** | **HSG D** |
| Newly graded areas (pervious areas only, no vegetation) | ----- | ----- | --- | 77 | 86 | 91 | 94 |
| **Cultivated Agricultural Lands[1]** | **Treatment** | **Hydrologic Condition** | **% I** | **HSG A** | **HSG B** | **HSG C** | **HSG D** |
| Fallow | Bare soil | ----- | --- | 77 | 86 | 91 | 94 |
| | Crop residue cover (CR) | Poor | --- | 76 | 85 | 90 | 93 |
| | | Good | --- | 74 | 83 | 88 | 90 |
| Row crops | Straight row (SR) | Poor | --- | 72 | 81 | 88 | 91 |
| | | Good | --- | 67 | 78 | 85 | 89 |
| | SR + CR | Poor | --- | 71 | 80 | 87 | 90 |
| | | Good | --- | 64 | 75 | 82 | 85 |
| | Contoured (C) | Poor | --- | 70 | 79 | 84 | 88 |
| | | Good | --- | 65 | 75 | 82 | 86 |
| | C + CR | Poor | --- | 69 | 78 | 83 | 87 |
| | | Good | --- | 64 | 74 | 81 | 85 |
| | Contoured & terraced (C&T) | Poor | --- | 66 | 74 | 80 | 82 |
| | | Good | --- | 62 | 71 | 78 | 81 |
| | C&T+ CR | Poor | --- | 65 | 73 | 79 | 81 |
| | | Good | --- | 61 | 70 | 77 | 80 |
| Small grain | SR | Poor | --- | 65 | 76 | 84 | 88 |
| | | Good | --- | 63 | 75 | 83 | 87 |
| | SR + CR | Poor | --- | 64 | 75 | 83 | 86 |
| | | Good | --- | 60 | 72 | 80 | 84 |
| | C | Poor | --- | 63 | 74 | 82 | 85 |
| | | Good | --- | 61 | 73 | 81 | 84 |
| | C + CR Poor | Poor | --- | 62 | 73 | 81 | 84 |
| | | Good | --- | 60 | 72 | 80 | 83 |
| | C&T | Poor | --- | 61 | 72 | 79 | 82 |
| | | Good | --- | 59 | 70 | 78 | 81 |
| | C&T+ CR | Poor | --- | 60 | 71 | 78 | 81 |
| | | Good | --- | 58 | 69 | 77 | 80 |

**Figure 6-5. Colorado Springs Rainfall Intensity Duration Frequency**




**IDF Equations**

$I_{100} = -2.52 \ln(D) + 12.735$

$I_{50} = -2.25 \ln(D) + 11.375$

$I_{25} = -2.00 \ln(D) + 10.111$

$I_{10} = -1.75 \ln(D) + 8.847$

$I_{5} = -1.50 \ln(D) + 7.583$

$I_{2} = -1.19 \ln(D) + 6.035$

Note: Values calculated by equations may not precisely duplicate values read from figure.

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

Added

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY (Proposed)

| BASIN | TOTAL AREA (AC) | C VALUE DCM TABLE 6-6 | | | | | | C VALUE DCM TABLE 6-6 | | | | | | WEIGHTED "C" VALUE | | | WEIGHTED CA | | | DCM TABLE 6-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | C(2) | C(5) | C(100) | CA(2) | CA(5) | CA(100) | WEIGHTED % IMPERVIOUS |
| A | 3.60 | RES 1/6 AC. | 52.5% | 3.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.15 | 1.35 | 1.96 | 52.5% |
| B | 1.20 | RES 1/6 AC. | 52.5% | 1.20 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.38 | 0.45 | 0.65 | 52.5% |
| C | 4.50 | RES 1/6 AC. | 52.5% | 3.90 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.60 | 0.05 | 0.12 | 0.39 | 0.28 | 0.34 | 0.52 | 1.28 | 1.53 | 2.36 | 46.4% |
| D | 1.50 | RES 1/6 AC. | 52.5% | 1.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.48 | 0.56 | 0.82 | 52.5% |
| E | 1.60 | RES 1/6 AC. | 52.5% | 1.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.51 | 0.60 | 0.87 | 52.5% |
| F | 3.50 | RES 1/6 AC. | 52.5% | 3.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.12 | 1.31 | 1.91 | 52.5% |
| G | 1.10 | RES 1/6 AC. | 52.5% | 1.10 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.35 | 0.41 | 0.60 | 52.5% |
| H | 1.70 | RES 1/6 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| I | 0.22 | RES 1/6 AC. | 52.5% | 0.22 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.07 | 0.08 | 0.12 | 52.5% |
| J | 1.90 | RES 1/6 AC. | 52.5% | 1.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.61 | 0.71 | 1.04 | 52.5% |
| K | 0.73 | RES 1/6 AC. | 52.5% | 0.73 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.23 | 0.27 | 0.40 | 52.5% |
| L | 2.20 | RES 1/5 AC. | 46.0% | 2.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.62 | 0.75 | 1.14 | 46.0% |
| M | 0.57 | RES 1/5 AC. | 46.0% | 0.57 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.16 | 0.19 | 0.30 | 46.0% |
| N | 1.70 | RES 1/6 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| O | 0.49 | RES 1/6 AC. | 52.5% | 0.49 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.16 | 0.18 | 0.27 | 52.5% |
| P | 0.40 | RES 1/6 AC. | 52.5% | 0.40 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.13 | 0.15 | 0.22 | 52.5% |
| Q | 1.70 | RES 1/6 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| R | 2.70 | RES 1/6 AC. | 52.5% | 2.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.86 | 1.01 | 1.47 | 52.5% |
| S | 1.60 | RES 1/6 AC. | 52.5% | 1.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.51 | 0.60 | 0.87 | 52.5% |
| T | 0.49 | RES 1/6 AC. | 52.5% | 0.49 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.16 | 0.18 | 0.27 | 52.5% |
| U | 1.70 | RES 1/6 AC. | 52.5% | 1.37 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.33 | 0.05 | 0.12 | 0.39 | 0.27 | 0.33 | 0.51 | 0.45 | 0.55 | 0.88 | 43.7% |
| V | 2.70 | RES 1/5 AC. | 46.0% | 1.93 | 0.28 | 0.34 | 0.52 | POCKET PARK | 7.0% | 0.77 | 0.05 | 0.12 | 0.39 | 0.21 | 0.28 | 0.48 | 0.58 | 0.75 | 1.30 | 34.9% |
| W | 0.79 | RES 1/6 AC. | 52.5% | 0.79 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.25 | 0.30 | 0.43 | 52.5% |
| X | 2.00 | RES 1/6 AC. | 52.5% | 2.00 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.64 | 0.75 | 1.09 | 52.5% |
| Y | 3.20 | RES 1/5 AC. | 46.0% | 3.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.28 | 0.34 | 0.52 | 0.90 | 1.09 | 1.66 | 46.0% |
| Z | 0.30 | RES 1/5 AC. | 46.0% | 0.15 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.15 | 0.05 | 0.12 | 0.39 | 0.17 | 0.23 | 0.46 | 0.05 | 0.07 | 0.14 | 26.5% |
| AA | 2.60 | RES 1/5 AC. | 46.0% | 2.35 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.26 | 0.32 | 0.51 | 0.67 | 0.83 | 1.32 | 42.3% |
| BB | 6.20 | RES 1/5 AC. | 46.0% | 0.00 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 6.20 | 0.05 | 0.12 | 0.39 | 0.05 | 0.12 | 0.39 | 0.31 | 0.74 | 2.42 | 7.0% |
| CC | 5.80 | RES 1/5 AC. | 46.0% | 3.60 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 2.20 | 0.05 | 0.12 | 0.39 | 0.19 | 0.26 | 0.47 | 1.12 | 1.49 | 2.73 | 31.2% |
| DD | 4.40 | RES 1/6 AC. | 52.5% | 4.00 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.40 | 0.05 | 0.12 | 0.39 | 0.30 | 0.35 | 0.53 | 1.30 | 1.55 | 2.34 | 48.4% |
| EE | 1.30 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.44 | 0.49 | 0.68 | 0.57 | 0.64 | 0.89 | 50.5% |
| FF | 0.62 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | | | 0.00 | 0.05 | 0.12 | 0.39 | 0.86 | 0.87 | 0.93 | 0.53 | 0.54 | 0.58 | 96.8% |
| GG | 2.50 | RES 1/6 AC. | 52.5% | 1.90 | 0.32 | 0.38 | 0.55 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | 0.46 | 0.50 | 0.64 | 1.14 | 1.25 | 1.61 | 63.9% |
| HH | 2.00 | RES 1/6 AC. | 52.5% | 1.00 | 0.32 | 0.38 | 0.55 | STREET | 100.0% | 1.00 | 0.89 | 0.90 | 0.96 | 0.61 | 0.64 | 0.75 | 1.21 | 1.28 | 1.51 | 76.3% |
| | | | | | | | | | | | | | | | | | | | | |
| F4-1 | 9.00 | RES 1/5 AC. | 46.0% | 9.00 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 2.52 | 3.06 | 4.68 | 46.0% |
| F4-2 | 2.20 | RES 1/5 AC. | 46.0% | 2.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.62 | 0.75 | 1.14 | 46.0% |
| F4-3 | 3.20 | RES 1/5 AC. | 46.0% | 3.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.90 | 1.09 | 1.66 | 46.0% |
| F4-4 | 9.80 | RES 1/5 AC. | 46.0% | 6.10 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 3.70 | 0.05 | 0.12 | 0.39 | 0.19 | 0.26 | 0.47 | 1.89 | 2.52 | 4.62 | 31.3% |
| F4-5 | 1.70 | RES 1/6 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| F4-6 | 3.50 | RES 1/5 AC. | 46.0% | 3.50 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.98 | 1.19 | 1.82 | 46.0% |
| F4-7 | 6.90 | RES 1/6 AC. | 52.5% | 6.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 2.21 | 2.59 | 3.76 | 52.5% |
| F4-8 | 1.10 | RES 1/6 AC. | 52.5% | 1.10 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.35 | 0.41 | 0.60 | 52.5% |
| F4-9 | 4.90 | RES 1/6 AC. | 52.5% | 4.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.57 | 1.84 | 2.67 | 52.5% |
| F4-10 | 8.50 | RES 1/6 AC. | 52.5% | 8.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 2.72 | 3.19 | 4.63 | 52.5% |
| | | | | | | | | | | | | | | | | | | | | |
| F2-A | 2.90 | RES 1/6 AC. | 52.5% | 2.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.93 | 1.09 | 1.58 | 52.5% |
| F2-B | 5.00 | RES 1/6 AC. | 52.5% | 5.00 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.60 | 1.88 | 2.73 | 52.5% |
| F2-C | 0.72 | STREET | 100.0% | 0.19 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.53 | 0.05 | 0.12 | 0.39 | 0.27 | 0.33 | 0.54 | 0.20 | 0.23 | 0.39 | 31.5% |
| | | | | | | | | | | | | | | | | | | | | |
| F8-1 | 3.30 | RES 1/6 AC. | 52.5% | 3.10 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.20 | 0.05 | 0.12 | 0.39 | 0.30 | 0.36 | 0.54 | 1.00 | 1.19 | 1.77 | 49.7% |
| F8-2 | 1.00 | RES 1/5 AC. | 46.0% | 0.88 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.12 | 0.05 | 0.12 | 0.39 | 0.25 | 0.31 | 0.50 | 0.25 | 0.31 | 0.50 | 41.3% |
| F8-3 | 3.00 | RES 1/8 AC. | 65.0% | 2.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.38 | 0.42 | 0.57 | 1.14 | 1.27 | 1.72 | 60.2% |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| | | C VALUE DCM TABLE 6-6 | | | | | | C VALUE DCM TABLE 6-6 | | | | | | WEIGHTED "C" VALUE | | | WEIGHTED CA | | | DCM TABLE 6-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BASIN | TOTAL AREA (AC) | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | C(2) | C(5) | C(100) | CA(2) | CA(5) | CA(100) | WEIGHTED % IMPERVIOUS |
| F8-4 | 5.00 | RES 1/8 AC. | 65.0% | 4.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.39 | 0.43 | 0.58 | **1.96** | **2.17** | **2.90** | 62.1% |
| F8-5 | 2.50 | RES 1/8 AC. | 65.0% | 2.01 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.49 | 0.05 | 0.12 | 0.39 | 0.34 | 0.39 | 0.55 | **0.85** | **0.96** | **1.38** | 53.6% |
| F8-6 | 3.50 | RES 1/8 AC. | 65.0% | 2.30 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 1.20 | 0.05 | 0.12 | 0.39 | 0.29 | 0.34 | 0.52 | **1.00** | **1.18** | **1.83** | 45.1% |
| F8-7 | 4.90 | RES 1/8 AC. | 65.0% | 4.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.15 | 0.05 | 0.12 | 0.39 | 0.40 | 0.44 | 0.58 | **1.96** | **2.16** | **2.86** | 63.2% |
| F8-8 | 1.30 | RES 1/8 AC. | 65.0% | 0.50 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.19 | 0.25 | 0.47 | **0.25** | **0.32** | **0.61** | 29.3% |
| F8-9 | 1.60 | RES 1/8 AC. | 65.0% | 0.80 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.23 | 0.29 | 0.49 | **0.37** | **0.46** | **0.78** | 36.0% |
| | | | | | | | | | | | | | | | | | | | | |
| P1-A2 | 4.20 | STREET | 100.0% | 3.50 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.70 | 0.05 | 0.12 | 0.39 | 0.75 | 0.77 | 0.87 | **3.15** | **3.23** | **3.63** | 84.5% |
| P1-A3 | 1.20 | STREET | 100.0% | 1.03 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.17 | 0.05 | 0.12 | 0.39 | 0.77 | 0.79 | 0.88 | **0.93** | **0.95** | **1.06** | 86.8% |
| SR-1 | 1.20 | STREET | 100.0% | 0.75 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.45 | 0.05 | 0.12 | 0.39 | 0.58 | 0.61 | 0.75 | **0.69** | **0.73** | **0.90** | 65.1% |
| SR-2 | 0.65 | STREET | 100.0% | 0.48 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.17 | 0.05 | 0.12 | 0.39 | 0.67 | 0.70 | 0.81 | **0.44** | **0.45** | **0.53** | 75.7% |
| BG-1 | 4.20 | STREET | 100.0% | 3.00 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 1.20 | 0.05 | 0.12 | 0.39 | 0.65 | 0.68 | 0.80 | **2.73** | **2.84** | **3.35** | 73.4% |
| BG-2 | 3.00 | STREET | 100.0% | 2.25 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.75 | 0.05 | 0.12 | 0.39 | 0.68 | 0.71 | 0.82 | **2.04** | **2.12** | **2.45** | 76.8% |
| | | | | | | | | | | | | | | | | | | | | |
| P1-F1 | 60.60 | RES 1/6 AC. | 52.5% | 60.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **19.39** | **22.73** | **33.03** | 52.5% |
| | | | | | | | | | | | | | | | | | | | | |
| **TOTAL AREA TRIBUTARY TO POND FSD-16** | **211.5** | **49.1%** | | | | | | | | | | | | | | | | | | |
| **Tributary Area to NWesterly Outfall** | **136.1** | **49.1%** | | | | | | | | | | | | | | | | | | |
| **Tributary Area to Easterly Outfall** | **33.4** | **51.1%** | | | | | | | | | | | | | | | | | | |
| **Tributary Area to SWesterly Outfall** | **33.0** | **52.0%** | | | | | | | | | | | | | | | | | | |
| **Basins tributary to Pond FSD-14A** | **17.9** | **66.4%** | | | | | | | | | | | | | | | | | | |
| **Basin tributary to future SWQ pond** | **0.62** | **96.8%** | | | | | | | | | | | | | | | | | | |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
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DATE: ***05/01/26***
CALC'D BY: ***MAW***

| Return Period | 1-Hour Depth |
|---|---|
| 2 | 1.19 |
| 5 | 1.50 |
| 10 | 1.75 |
| 25 | 2.00 |
| 50 | 2.25 |
| 100 | 2.52 |

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

**Table 6-7. Conveyance Coefficient, $C_v$**

| Type of Land Surface | $C_v$ |
|---|---|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

$t_c = \frac{L}{180} + 10$

*For buried riprap, select $C_v$ value based on type of cover.

# FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

(Proposed) Added

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| A | 1.15 | 1.35 | 1.96 | 0.12 | 100 | 2 | 14.1 | 600 | 1.5% | 2.4 | 4.1 | 18.2 | 2.59 | 3.23 | 5.43 | 3 | 4 | 11 |
| B | 0.38 | 0.45 | 0.65 | 0.12 | 100 | 2 | 14.1 | 650 | 2.5% | 3.2 | 3.4 | 17.5 | 2.63 | 3.29 | 5.52 | 1 | 1 | 4 |
| C | 1.28 | 1.53 | 2.36 | 0.12 | 100 | 2 | 14.1 | 650 | 2.5% | 3.2 | 3.4 | 17.5 | 2.63 | 3.29 | 5.52 | 3 | 5 | 13 |
| D | 0.48 | 0.56 | 0.82 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.86 | 3.58 | 6.02 | 1 | 2 | 5 |
| E | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 360 | 2.0% | 2.8 | 2.1 | 16.2 | 2.72 | 3.41 | 5.72 | 1 | 2 | 5 |
| F | 1.12 | 1.31 | 1.91 | 0.12 | 100 | 2 | 14.1 | 510 | 1.5% | 2.4 | 3.5 | 17.5 | 2.63 | 3.29 | 5.52 | 3 | 4 | 11 |
| G | 0.35 | 0.41 | 0.60 | 0.12 | 50 | 1 | 10.0 | 510 | 1.5% | 2.4 | 3.5 | 13.4 | 2.94 | 3.69 | 6.19 | 1 | 2 | 4 |
| H | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 180 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.86 | 2 | 2 | 5 |
| I | 0.07 | 0.08 | 0.12 | 0.12 | 50 | 1 | 10.0 | 10 | 1.5% | 2.4 | 0.1 | 10.0 | 3.29 | 4.13 | 6.93 | 0.2 | 0.3 | 0.8 |
| J | 0.61 | 0.71 | 1.04 | 0.12 | 100 | 2 | 14.1 | 240 | 1.5% | 2.4 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 2 | 2 | 6 |
| K | 0.23 | 0.27 | 0.40 | 0.12 | 50 | 1 | 10.0 | 240 | 1.5% | 2.4 | 1.6 | 11.6 | 3.12 | 3.91 | 6.56 | 0.7 | 1.1 | 2.6 |
| L | 0.62 | 0.75 | 1.14 | 0.12 | 100 | 2 | 14.1 | 220 | 1.5% | 2.4 | 1.5 | 15.6 | 2.77 | 3.46 | 5.82 | 2 | 3 | 7 |
| M | 0.16 | 0.19 | 0.30 | 0.12 | 50 | 1 | 10.0 | 200 | 1.5% | 2.4 | 1.4 | 11.3 | 3.15 | 3.94 | 6.62 | 0.5 | 0.8 | 2.0 |
| N | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 180 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.86 | 2 | 2 | 5 |
| O | 0.16 | 0.18 | 0.27 | 0.12 | 50 | 1 | 10.0 | 180 | 1.5% | 2.4 | 1.2 | 11.2 | 3.16 | 3.96 | 6.65 | 0.5 | 0.7 | 1.8 |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
JOB NUMBER: ***1183.60***
DATE: ***05/01/26***
CALC'D BY: ***MAW***

| Return Period | 1-Hour Depth |
|---|---|
| 2 | 1.19 |
| 5 | 1.50 |
| 10 | 1.75 |
| 25 | 2.00 |
| 50 | 2.25 |
| 100 | 2.52 |

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

**Table 6-7. Conveyance Coefficient, $C_v$**

| Type of Land Surface | $C_v$ |
|---|---|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

$t_c = \frac{L}{180} + 10$

*For buried riprap, select $C_v$ value based on type of vegetative cover.

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| P | 0.13 | 0.15 | 0.22 | 0.12 | 50 | 1 | 10.0 | 120 | 3.0% | 3.5 | 0.6 | 10.5 | 3.23 | 4.05 | 6.80 | 0.4 | **0.6** | **1.5** |
| Q | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 340 | 3.0% | 3.5 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 1 | **2** | **5** |
| R | 0.86 | 1.01 | 1.47 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 2 | **3** | **8** |
| S | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 1 | **2** | **5** |
| T | 0.16 | 0.18 | 0.27 | 0.12 | 50 | 1 | 10.0 | 150 | 1.5% | 2.4 | 1.0 | 11.0 | 3.18 | 3.99 | 6.70 | 0.5 | **0.7** | **1.8** |
| U | 0.45 | 0.55 | 0.88 | 0.12 | 80 | 3 | 10.2 | | | | | 10.2 | 3.27 | 4.09 | 6.87 | 1 | **2** | **6** |
| V | 0.58 | 0.75 | 1.30 | 0.12 | 100 | 2 | 14.1 | 390 | 2.0% | 2.8 | 2.3 | 16.4 | 2.71 | 3.39 | 5.69 | 2 | **3** | **7** |
| W | 0.25 | 0.30 | 0.43 | 0.12 | 50 | 1 | 10.0 | 370 | 2.0% | 2.8 | 2.2 | 12.1 | 3.06 | 3.84 | 6.45 | 0.8 | **1.1** | **2.8** |
| X | 0.64 | 0.75 | 1.09 | 0.12 | 100 | 2 | 14.1 | 350 | 1.5% | 2.4 | 2.4 | 16.5 | 2.70 | 3.38 | 5.68 | 2 | **3** | **6** |
| Y | 0.90 | 1.09 | 1.66 | 0.12 | 100 | 2 | 14.1 | 600 | 4.0% | 4.0 | 2.5 | 16.6 | 2.69 | 3.37 | 5.66 | 2 | **4** | **9** |
| Z | 0.05 | 0.07 | 0.14 | 0.12 | 90 | 3 | 11.3 | | | | | 11.3 | 3.15 | 3.95 | 6.63 | 0.2 | **0.3** | **0.9** |
| AA | 0.67 | 0.83 | 1.32 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | **4** | **10** |
| BB | 0.31 | 0.74 | 2.42 | 0.12 | 70 | 2 | 10.5 | | | | | 10.5 | 3.24 | 4.06 | 6.82 | 1 | **3** | **16** |
| CC | 1.12 | 1.49 | 2.73 | 0.12 | 100 | 2 | 14.1 | 300 | 2.0% | 2.8 | 1.8 | 15.8 | 2.75 | 3.44 | 5.77 | 3 | **5** | **16** |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
JOB NUMBER: ***1183.60***
DATE: ***05/01/26***
CALC'D BY: ***MAW***

| Return Period | 1-Hour Depth |
|---|---|
| 2 | 1.19 |
| 5 | 1.50 |
| 10 | 1.75 |
| 25 | 2.00 |
| 50 | 2.25 |
| 100 | 2.52 |

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

**Table 6-7. Conveyance Coefficient, $C_v$**

| Type of Land Surface | $C_v$ |
|---|---|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

$t_c = \frac{L}{180} + 10$

*For buried riprap, select $C_v$ value based on type of vegetative cover.

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| DD | 1.30 | 1.55 | 2.34 | 0.12 | 100 | 2 | 14.1 | 350 | 2.0% | 2.8 | 2.1 | 16.1 | 2.73 | 3.41 | 5.73 | 4 | 5 | 13 |
| EE | 0.57 | 0.64 | 0.89 | 0.12 | 90 | 2 | 12.9 | 300 | 1.5% | 2.4 | 2.0 | 14.9 | 2.82 | 3.53 | 5.92 | 2 | 2 | 5 |
| FF | 0.53 | 0.54 | 0.58 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | 2 | 4 |
| GG | 1.14 | 1.25 | 1.61 | 0.12 | 80 | 5 | 8.6 | 900 | 3.5% | 3.7 | 4.0 | 12.7 | 3.01 | 3.78 | 6.34 | 3 | 5 | 10 |
| HH | 1.21 | 1.28 | 1.51 | 0.12 | 80 | 3 | 10.2 | 900 | 3.5% | 3.7 | 4.0 | 14.2 | 2.87 | 3.60 | 6.04 | 3 | 5 | 9 |
| | | | | | | | | | | | | | | | | | | |
| F4-1 | 2.52 | 3.06 | 4.68 | 0.12 | 100 | 2 | 14.1 | 670 | 2.5% | 3.2 | 3.5 | 17.6 | 2.62 | 3.28 | 5.51 | 7 | 10 | 26 |
| F4-2 | 0.62 | 0.75 | 1.14 | 0.12 | 100 | 2 | 14.1 | 350 | 2.5% | 3.2 | 1.8 | 15.9 | 2.74 | 3.43 | 5.76 | 2 | 3 | 7 |
| F4-3 | 0.90 | 1.09 | 1.66 | 0.12 | 100 | 2 | 14.1 | 450 | 2.5% | 3.2 | 2.4 | 16.4 | 2.70 | 3.38 | 5.68 | 2 | 4 | 9 |
| F4-4 | 1.89 | 2.52 | 4.62 | 0.12 | 100 | 2 | 14.1 | 730 | 2.5% | 3.2 | 3.8 | 17.9 | 2.60 | 3.25 | 5.46 | 5 | 8 | 25 |
| F4-5 | 0.54 | 0.64 | 0.93 | 0.12 | 50 | 1 | 10.0 | 770 | 2.5% | 3.2 | 4.1 | 14.0 | 2.89 | 3.62 | 6.08 | 2 | 2 | 6 |
| F4-6 | 0.98 | 1.19 | 1.82 | 0.12 | 50 | 1 | 10.0 | 850 | 1.5% | 2.4 | 5.8 | 15.7 | 2.76 | 3.45 | 5.79 | 3 | 4 | 11 |
| F4-7 | 2.21 | 2.59 | 3.76 | 0.12 | 100 | 2 | 14.1 | 870 | 2.0% | 2.8 | 5.1 | 19.2 | 2.52 | 3.15 | 5.29 | 6 | 8 | 20 |
| F4-8 | 0.35 | 0.41 | 0.60 | 0.12 | 50 | 1 | 10.0 | 200 | 1.5% | 2.4 | 1.4 | 11.3 | 3.15 | 3.94 | 6.62 | 1 | 2 | 4 |
| F4-9 | 1.57 | 1.84 | 2.67 | 0.12 | 50 | 1 | 10.0 | 1500 | 2.0% | 2.8 | 8.8 | 18.8 | 2.54 | 3.18 | 5.34 | 4 | 6 | 14 |
| F4-10 | 2.72 | 3.19 | 4.63 | 0.12 | 100 | 2 | 14.1 | 1070 | 2.5% | 3.2 | 5.6 | 19.7 | 2.49 | 3.11 | 5.22 | 7 | 10 | 24 |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
JOB NUMBER: ***1183.60***
DATE: ***05/01/26***
CALC'D BY: ***MAW***

| Return Period | 1-Hour Depth |
|---|---|
| 2 | 1.19 |
| 5 | 1.50 |
| 10 | 1.75 |
| 25 | 2.00 |
| 50 | 2.25 |
| 100 | 2.52 |

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

**Table 6-7. Conveyance Coefficient, $C_v$**

| Type of Land Surface | $C_v$ |
|---|---|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

$t_c = \frac{L}{180} + 10$

*For buried riprap, select $C_v$ value based on type of vegetative cover.

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| | | | | | | | | | | | | | | | | | | |
| F2-A | 0.93 | 1.09 | 1.58 | 0.12 | 50 | 1 | 10.0 | 300 | 2.0% | 2.8 | 1.8 | 11.7 | 3.11 | 3.89 | 6.53 | 3 | **4** | **10** |
| F2-B | 1.60 | 1.88 | 2.73 | 0.12 | 100 | 2 | 14.1 | 300 | 2.0% | 2.8 | 1.8 | 15.8 | 2.75 | 3.44 | 5.77 | 4 | **6** | **16** |
| F2-C | 0.20 | 0.23 | 0.39 | 0.12 | 50 | 1 | 10.0 | | | | | 10.0 | 3.30 | 4.14 | 6.94 | 0.6 | **1.0** | **3** |
| | | | | | | | | | | | | | | | | | | |
| F8-1 | 1.00 | 1.19 | 1.77 | 0.12 | 90 | 2 | 12.9 | 560 | 1.5% | 2.4 | 3.8 | 16.7 | 2.68 | 3.36 | 5.64 | 3 | **4** | **10** |
| F8-2 | 0.25 | 0.31 | 0.50 | 0.12 | 100 | 3 | 12.3 | 60 | 1.5% | 2.4 | 0.4 | 12.7 | 3.01 | 3.77 | 6.33 | 0.8 | **1.2** | **3** |
| F8-3 | 1.14 | 1.27 | 1.72 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.86 | 3.58 | 6.02 | 3 | **5** | **10** |
| F8-4 | 1.96 | 2.17 | 2.90 | 0.12 | 100 | 2 | 14.1 | 800 | 1.5% | 2.4 | 5.4 | 19.5 | 2.50 | 3.13 | 5.25 | 5 | **7** | **15** |
| F8-5 | 0.85 | 0.96 | 1.38 | 0.12 | 50 | 1 | 10.0 | 650 | 2.3% | 3.0 | 3.6 | 13.5 | 2.94 | 3.68 | 6.17 | 2 | **4** | **8** |
| F8-6 | 1.00 | 1.18 | 1.83 | 0.12 | 100 | 2 | 14.1 | 325 | 1.5% | 2.4 | 2.2 | 16.3 | 2.71 | 3.40 | 5.70 | 3 | **4** | **10** |
| F8-7 | 1.96 | 2.16 | 2.86 | 0.12 | 100 | 2 | 14.1 | 500 | 1.5% | 2.4 | 3.4 | 17.5 | 2.63 | 3.29 | 5.53 | 5 | **7** | **16** |
| F8-8 | 0.25 | 0.32 | 0.61 | 0.12 | 120 | 7 | 10.8 | | | | | 10.8 | 3.20 | 4.01 | 6.73 | 0.8 | **1.3** | **4** |
| F8-9 | 0.37 | 0.46 | 0.78 | 0.12 | 80 | 8 | 7.4 | | | | | 7.4 | 3.65 | 4.58 | 7.69 | 1 | **2** | **6** |
| | | | | | | | | | | | | | | | | | | |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
JOB NUMBER: ***1183.60***
DATE: ***05/01/26***
CALC'D BY: ***MAW***

| Return Period | 1-Hour Depth |
|---|---|
| 2 | 1.19 |
| 5 | 1.50 |
| 10 | 1.75 |
| 25 | 2.00 |
| 50 | 2.25 |
| 100 | 2.52 |

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L}}{S^{0.33}} \qquad V = C_v S_w^{0.5} \qquad \text{Tc=L/V}$$

**Table 6-7. Conveyance Coefficient, $C_v$**

| Type of Land Surface | $C_v$ |
|---|---|
| Heavy meadow | 2.5 |
| Tillage/field | 5 |
| Riprap (not buried)* | 6.5 |
| Short pasture and lawns | 7 |
| Nearly bare ground | 10 |
| Grassed waterway | 15 |
| Paved areas and shallow paved swales | 20 |

$t_c = \frac{L}{180} + 10$

*For buried riprap, select $C_v$ value based on type of vegetative cover.

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| P1-A2 | 3.15 | 3.23 | 3.63 | 0.12 | 20 | 0.5 | 5.8 | 1500 | 1.0% | 2.0 | 12.5 | 18.3 | 2.57 | 3.22 | 5.40 | 8.1 | **10.4** | **19.6** |
| P1-A3 | 0.93 | 0.95 | 1.06 | 0.12 | 20 | 0.5 | 5.8 | 780 | 1.0% | 2.0 | 6.5 | 12.3 | 3.04 | 3.81 | 6.40 | 2.8 | **3.6** | **6.8** |
| SR-1 | 0.69 | 0.73 | 0.90 | 0.12 | 50 | 5 | 5.9 | 550 | 3.5% | 3.7 | 2.4 | 8.3 | 3.52 | 4.41 | 7.40 | 2 | **3** | **7** |
| SR-2 | 0.44 | 0.45 | 0.53 | 0.12 | 15 | 0.4 | 5.0 | 550 | 3.5% | 1.9 | 4.9 | 9.9 | 3.31 | 4.15 | 6.97 | 1 | **2** | **4** |
| BG-1 | 2.73 | 2.84 | 3.35 | 0.12 | 80 | 2 | 11.7 | 700 | 1.0% | 2.0 | 5.8 | 17.5 | 2.63 | 3.29 | 5.52 | 7 | **9** | **18** |
| BG-2 | 2.04 | 2.12 | 2.45 | 0.12 | 60 | 2 | 9.2 | 1150 | 1.0% | 2.0 | 9.6 | 18.8 | 2.54 | 3.18 | 5.34 | 5 | **7** | **13** |
| | | | | | | | | | | | | | | | | | | |
| P1-F1 | 19.39 | 22.73 | 33.03 | 0.12 | 100 | 2 | 14.1 | 2000 | 1.5% | 2.4 | 13.6 | 27.7 | 2.08 | 2.60 | 4.37 | 40 | **59** | **144** |
| | | | | | | | | | | | | | | | | | | |

Did not find this basin on the drainage map. Please ensure it is show and labeled on map or remove from spreadsheets.

This basin is used and now better described in narrative.

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

*ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 1 | A | 1.35 | 1.96 | 18.2 | 3.23 | 5.43 | 4 | 11 | Prop. 10' Type R At-grade Inlet |
| 2 | B, C, Flow-by from DP-1 | 2.01 | 3.66 | 18.4 | 3.22 | 5.40 | 6 | 20 | Prop. 10' Type R Sump Inlet |
| 3 | D | 0.56 | 0.82 | 14.4 | 3.58 | 6.02 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 4 | E | 0.60 | 0.87 | 16.2 | 3.41 | 5.72 | 2 | 5 | Prop. 10' Type R At-grade Inlet |
| 5 | F | 1.31 | 1.91 | 17.5 | 3.29 | 5.52 | 4 | 11 | Prop. 5' Type R Sump Inlet |
| 6 | G | 0.41 | 0.60 | 13.4 | 3.69 | 6.19 | 2 | 4 | Prop. 5' Type R Sump Inlet |
| 7 | H | 0.64 | 0.93 | 15.3 | 3.49 | 5.86 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 8 | I | 0.08 | 0.12 | 10.0 | 4.13 | 6.93 | 0.3 | 0.8 | Prop. 5' Type R Sump Inlet |
| 9 | J | 0.71 | 1.04 | 15.7 | 3.45 | 5.79 | 2 | 6 | Prop. 5' Type R Sump Inlet |
| 10 | K | 0.27 | 0.40 | 11.6 | 3.91 | 6.56 | 1.1 | 2.6 | Prop. 5' Type R Sump Inlet |
| 11 | L | 0.75 | 1.14 | 15.6 | 3.46 | 5.82 | 3 | 7 | Prop. 5' Type R Sump Inlet |
| 12 | M | 0.19 | 0.30 | 11.3 | 3.94 | 6.62 | 0.8 | 2.0 | Prop. 5' Type R Sump Inlet |
| 13 | N | 0.64 | 0.93 | 15.3 | 3.49 | 5.86 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 14 | O | 0.18 | 0.27 | 11.2 | 3.96 | 6.65 | 0.7 | 1.8 | Prop. 5' Type R Sump Inlet |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

*ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

Appears this should be DP-4

Calcs. were correct but label wrong. Corrected to DP-4

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Con | ivalent A(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 15 | P | 0.15 | 0.22 | 10.5 | 4.05 | 6.80 | 0.6 | 1.5 | Prop. 5' Type R Sump Inlet |
| 16 | Q | 0.64 | 0.93 | 15.7 | 3.45 | 5.79 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 17 | R, Flow-by from DP-7 | 1.01 | 1.53 | 17.3 | 3.30 | 5.55 | 3 | 9 | Prop. 10' Type R At-grade Inlet |
| 18 | S | 0.60 | 0.87 | 17.3 | 3.30 | 5.55 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 19 | T | 0.18 | 0.27 | 11.0 | 3.99 | 6.70 | 0.7 | 1.8 | Prop. 5' Type R Sump Inlet |
| **20** | **POND FSD-16 INFLOW (EASTERLY FOREBAY)** | **12.28** | **17.69** | **20.8** | **3.03** | **5.09** | **37** | **90** | **Prop. Concrete Forebay** |
| 21 | V | 0.75 | 1.30 | 16.4 | 3.39 | 5.69 | 3 | 7 | Prop. 6' County Std. Crosspan |
| 22 | W, X, DP-21 | 1.79 | 2.82 | 16.5 | 3.38 | 5.68 | 6 | 16 | Prop. 10' Type R Sump Inlet |
| 23 | Y | 1.09 | 1.66 | 16.6 | 3.37 | 5.66 | 4 | 9 | Prop. 5' Type R Sump Inlet |
| 24 | CC | 1.49 | 2.73 | 15.8 | 3.44 | 5.77 | 5 | 16 | Future Type R inlets at Sump Condition |
| 25 | EE | 0.64 | 0.89 | 14.9 | 3.53 | 5.92 | 2 | 5 | Prop. 10' Type R Sump Inlet |
| 26 | DD | 1.55 | 2.34 | 16.1 | 3.41 | 5.73 | 5 | 13 | Prop. 5' Type R Sump Inlet |
| 27 | F4-1 | 3.06 | 4.68 | 17.6 | 3.28 | 5.51 | 10 | 26 | Future Type R inlets at Sump Condition |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

*ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 28 | F4-2 | 0.75 | 1.14 | 15.9 | 3.43 | 5.76 | 3 | 7 | Future Type R inlet at Sump Condition |
| 29 | F4-3 | 1.09 | 1.66 | 16.4 | 3.38 | 5.68 | 4 | 9 | Future At-grade Type R inlet |
| 30 | F4-4 | 2.52 | 4.62 | 17.9 | 3.25 | 5.46 | 8 | 25 | Future Type R inlets at Sump Condition |
| 31 | F4-5 | 0.64 | 0.93 | 14.0 | 3.62 | 6.08 | 2 | 6 | Future Type R inlets at Sump Condition |
| 32 | F4-6, Flow-by from DP-29 | 1.20 | 2.25 | 15.7 | 3.45 | 5.79 | 4 | 13 | Future Type R inlets at Sump Condition |
| 33 | F4-7 | 2.59 | 3.76 | 19.2 | 3.15 | 5.29 | 8 | 20 | Future Type R inlets at Sump Condition |
| 34 | F4-8 | 0.41 | 0.60 | 11.3 | 3.94 | 6.62 | 2 | 4 | Future Type R inlets at Sump Condition |
| 35 | F4-9 | 1.84 | 2.67 | 18.8 | 3.18 | 5.34 | 6 | 14 | Future Type R inlets at Sump Condition |
| 36 | F4-10 | 3.19 | 4.63 | 19.7 | 3.11 | 5.22 | 10 | 24 | Future Type R inlets at Sump Condition |
| 37 | GG | 1.25 | 1.61 | 12.7 | 3.78 | 6.34 | 5 | 10 | Prop. 15' Type R At-Grade Inlet |
| 38 | HH | 1.28 | 1.51 | 14.2 | 3.60 | 6.04 | 5 | 9 | Prop. 15' Type R At-Grade Inlet |
| **39** | **POND FSD-16 INFLOW (NORTHWEST FOREBAY)** | **49.07** | **72.89** | **29.5** | **2.51** | **4.21** | **123** | **307** | **Prop. Impact Structure** |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

*ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 40 | F8-1 | 1.19 | 1.77 | 16.7 | 3.36 | 5.64 | 4 | 10 | Future Type R inlets at Sump Condition |
| 41 | F8-2 | 0.31 | 0.50 | 12.7 | 3.77 | 6.33 | 1.2 | 3 | Future Type R inlet at Sump Condition |
| 42 | F8-3 | 1.27 | 1.72 | 14.4 | 3.58 | 6.02 | 5 | 10 | Future At-grade Type R inlet |
| 43 | F8-4 | 2.17 | 2.90 | 19.5 | 3.13 | 5.25 | 7 | 15 | Future At-grade Type R inlet |
| 44 | F8-7 | 2.16 | 2.86 | 17.5 | 3.29 | 5.53 | 7 | 16 | Future Type R inlet at Sump Condition |
| 45 | F2-A | 1.09 | 1.58 | 11.7 | 3.89 | 6.53 | 4 | 10 | Prop. 5' Type R Sump Inlet |
| 46 | F2-B | 1.88 | 2.73 | 15.8 | 3.44 | 5.77 | 6 | 16 | Prop. 10' Type R Sump Inlet |
| 47 | F8-5 | 0.96 | 1.38 | 13.5 | 3.68 | 6.17 | 4 | 8 | Prop. 15' Type R At-Grade Inlet |
| 48 | F8-6 | 1.18 | 1.83 | 16.3 | 3.40 | 5.70 | 4 | 10 | Future Type R inlet at Sump Condition |
| 49 | SR-1, Flow-by from DP-37 | 0.73 | 1.02 | 8.3 | 4.41 | 7.40 | 3 | 8 | Prop. 15' Type R At-Grade Inlet |
| 50 | SR-2, Flow-by from DP-38 | 0.45 | 0.60 | 9.9 | 4.15 | 6.97 | 2 | 4 | Prop. 15' Type R At-Grade Inlet |
| **51** | **POND FSD-16 INFLOW (SOUTHWEST FOREBAY)** | **13.38** | **18.64** | **23.2** | **2.87** | **4.81** | **38** | **90** | **Prop. Concrete Forebay** |

Basin Z?

Now included in calcs. and sheet text and already in narrative.

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

*ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 52 | P1-A2, F2-C, F8-8, Flow-by from DP-47 | 3.79 | 4.66 | 18.3 | 3.22 | 5.40 | 12.2 | 25.2 | Exist. 15' Type R At-grade Inlet |
| 53 | P1-A3, F8-9, Flow-by from DP-52 | 1.97 | 3.70 | 12.3 | 3.81 | 6.40 | 7.5 | 23.7 | Exist. 15' Type R At-grade Inlet |
| 54 | BG-1, U, Flow-by from DP-17, 49 and 53 | 3.40 | 5.87 | 17.5 | 3.29 | 5.52 | 11.2 | 32.4 | Exist. 20' Type R Sump Inlet |
| 55 | BG-2 | 2.12 | 2.45 | 18.8 | 3.18 | 5.34 | 7 | 13 | Exist. 15' Type R Sump Inlet |
| | **POND FSD-16 TOTALINFLOW (Incl. Basins AA and BB)** | **76.30** | **112.96** | **29.9** | **2.49** | **4.17** | **190** | **471** | |

What about flow-by from DP-50?

As seen in inlet calcs. for DP-50, 100% of flows are captured with no flow-by.

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM SLOPE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.
ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

Added

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY (Proposed)

| Pipe Run | Contributing Basin / Design Point / Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Pipe Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 1 | DP-1 Capture | 1.32 | 1.31 | 18.7 | 3.19 | 5.36 | 4 | 7 | PROP. 18" RCP |
| 2 | DP-2 | 2.01 | 3.66 | 18.4 | 3.22 | 5.40 | 6 | 20 | PROP. 24" RCP |
| 3 | DP-3 | 0.56 | 0.82 | 14.4 | 3.58 | 6.02 | 2 | 5 | PROP. 18" RCP |
| 4 | PR-1, PR-2, PR-3 | 3.90 | 5.79 | 19.0 | 3.17 | 5.32 | 12 | 31 | PROP. 30" RCP |
| **5** | DP-4 Capture | 0.60 | 0.81 | 16.2 | 3.41 | 5.72 | 2 | 5 | PROP. 18" RCP |
| 6 | PR-4, PR-5 | 4.50 | 6.60 | 19.1 | 3.16 | 5.31 | 14 | 35 | PROP. 30" RCP |
| 7 | DP-5 | 1.31 | 1.91 | 17.5 | 3.29 | 5.52 | 4 | 11 | PROP. 24" RCP |
| 8 | DP-6 | 0.41 | 0.60 | 13.4 | 3.69 | 6.19 | 2 | 4 | PROP. 18" RCP |
| 9 | PR-7, PR-8 | 1.73 | 2.51 | 17.7 | 3.27 | 5.49 | 6 | 14 | PROP. 24" RCP |
| 10 | PR-6, PR-9 | 6.22 | 9.11 | 19.5 | 3.13 | 5.25 | 19 | 48 | PROP. 36" RCP |
| 11 | DP-7 | 0.64 | 0.93 | 15.3 | 3.49 | 5.86 | 2 | 5 | PROP. 18" RCP |
| 12 | DP-8 | 0.08 | 0.12 | 10.0 | 4.13 | 6.93 | 0.3 | 0.8 | PROP. 18" RCP |
| 13 | PR-10, PR-11, PR-12 | 6.94 | 10.16 | 19.7 | 3.12 | 5.23 | 22 | 53 | PROP. 36" RCP |

JOB NAME: ***STERLING RANCH EAST FILING NO. 6 - FINAL PLAT***
JOB NUMBER: ***1183.60***
DATE: ***05/01/26***
CALCULATED BY: ***MAW***

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM SLOPE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.
ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Contributing Basin / Design Point / Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | Pipe Size* |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | |
| 14 | DP-9 | 0.71 | 1.04 | 15.7 | 3.45 | 5.79 | 2 | 6 | PROP. 18" RCP |
| 15 | DP-10 | 0.27 | 0.40 | 11.6 | 3.91 | 6.56 | 1.1 | 2.6 | PROP. 18" RCP |
| 16 | PR-14, PR-15 | 0.99 | 1.43 | 15.7 | 3.45 | 5.79 | 3 | 8 | PROP. 24" RCP |
| 17 | PR-13, PR-16 | 7.93 | 11.59 | 20.2 | 3.08 | 5.17 | 24 | 60 | PROP. 36" RCP |
| 18 | DP-11 | 0.75 | 1.14 | 15.6 | 3.46 | 5.82 | 3 | 7 | PROP. 18" RCP |
| 19 | DP-12 | 0.19 | 0.30 | 11.3 | 3.94 | 6.62 | 0.8 | 2.0 | PROP. 18" RCP |
| 20 | PR-18, PR-19 | 0.94 | 1.44 | 16.1 | 3.42 | 5.74 | 3 | 8 | PROP. 24" RCP |
| 21 | DP-13 | 0.64 | 0.93 | 15.3 | 3.49 | 5.86 | 2 | 5 | PROP. 18" RCP |
| 22 | DP-14 | 0.18 | 0.27 | 11.2 | 3.96 | 6.65 | 0.7 | 1.8 | PROP. 18" RCP |
| 23 | PR-20, PR-21, PR-22 | 1.76 | 2.63 | 16.2 | 3.41 | 5.72 | 6 | 15 | PROP. 30" RCP |
| 24 | PR-17, PR-23 | 9.69 | 14.22 | 20.4 | 3.06 | 5.14 | 30 | 73 | PROP. 42" RCP |
| 25 | DP-15 | 0.15 | 0.22 | 10.5 | 4.05 | 6.80 | 0.6 | 1.5 | PROP. 18" RCP |
| 26 | DP-16 | 0.64 | 0.93 | 15.7 | 3.45 | 5.79 | 2 | 5 | PROP. 18" RCP |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM SLOPE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.
ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

| Pipe Run | Contributing Basin / Design Point / Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | Pipe Size* |
| 27 | PR-24, PR-25, PR-6 | 10.48 | 15.37 | 20.6 | 3.05 | 5.12 | 32 | 79 | PROP. 42" RCP |
| 28 | DP-17 Capture | 1.01 | 1.18 | 17.3 | 3.30 | 5.55 | 3 | 7 | PROP. 18" RCP |
| 29 | DP-18 | 0.60 | 0.87 | 17.3 | 3.30 | 5.55 | 2 | 5 | PROP. 18" RCP |
| 30 | DP-19 | 0.18 | 0.27 | 11.0 | 3.99 | 6.70 | 0.7 | 1.8 | PROP. 18" RCP |
| 31 | PR-28, PR-29, PR-30 | 1.80 | 2.32 | 17.4 | 3.30 | 5.53 | 6 | 13 | PROP. 24" RCP |
| **32** | **TOTAL INFLOW POND FSD - 16 (EASTERLY FOREBAY)** | **12.28** | **17.69** | **20.8** | **3.03** | **5.09** | **37** | **90** | **PROP. 48" RCP** |
| 33 | DP-22 | 1.79 | 2.82 | 16.5 | 3.38 | 5.68 | 6 | 16 | PROP. 24" RCP |
| 34 | DP-23, PR-33 | 2.88 | 4.49 | 16.7 | 3.36 | 5.65 | 10 | 25 | PROP. 30" RCP |
| 35 | P1-F1 (50%) | 11.36 | 16.51 | 27.7 | 2.60 | 4.37 | 30 | 72 | PROP. 42" RCP STUB |
| 36 | DP-24, P1-F1 (50%) | 12.85 | 19.24 | 27.7 | 2.60 | 4.37 | 33 | 84 | PROP. 42" RCP STUB |
| 37 | PR-35, PR-36 | 24.21 | 35.76 | 27.9 | 2.59 | 4.35 | 63 | 155 | PROP. 48" RCP |
| 38 | DP-25 | 0.64 | 0.89 | 14.9 | 3.53 | 5.92 | 2 | 5 | PROP. 18" RCP |
| 39 | DP-26, PR-38 | 2.18 | 3.22 | 16.1 | 3.41 | 5.73 | 7 | 18 | PROP. 24" RCP |

JOB NAME: *STERLING RANCH EAST FILING NO. 6 - FINAL PLAT*
JOB NUMBER: *1183.60*
DATE: *05/01/26*
CALCULATED BY: *MAW*

* PIPES ARE LISTED AT MAXIMUM SIZE REQUIRED TO ACCOMMODATE Q100 FLOWS AT MINIMUM SLOPE.
REFER TO INDIVIDUAL PIPE SHEETS FOR HYDRAULIC INFORMATION.
ALL STORM FACILITIES WITHIN PUBLIC ROW TO BE OWNED/MAINTAINED BY EL PASO COUNTY

## FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY

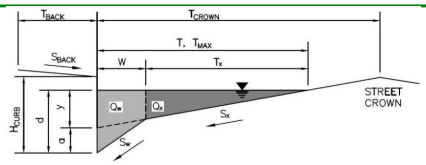
| Pipe Run | Contributing Basin / Design Point / Pipe Run | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity | | Flow | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | I(5) | I(100) | Q(5) | Q(100) | Pipe Size* |
| 40 | PR-37, PR-39 | 26.40 | 38.98 | 28.6 | 2.55 | 4.29 | 67 | 167 | PROP. 48" RCP |
| 41 | DP-27, DP-28, DP-29 Capture, DP-30, DP-31 | 8.04 | 12.60 | 20.4 | 3.06 | 5.13 | 25 | 65 | PROP. 42" RCP |
| 42 | PR-40, PR-41 | 34.44 | 51.58 | 29.2 | 2.52 | 4.23 | 87 | 218 | PROP. 54" RCP |
| 43 | DP-32, DP-33, DP-34, DP-35, DP-36 | 9.23 | 13.92 | 20.2 | 3.07 | 5.16 | 28 | 72 | PROP. 42" RCP |
| 44 | PR-42, PR-43 | 43.66 | 65.49 | 29.2 | 2.52 | 4.23 | 110 | 277 | PROP. 60" RCP |
| 45 | DP-37 Capture | 1.25 | 1.48 | 12.7 | 3.78 | 6.34 | 5 | 9 | PROP. 18" RCP |
| 46 | DP-38 Capture, PR-45 | 2.53 | 2.91 | 14.2 | 3.60 | 6.04 | 9 | 18 | PROP. 24" RCP |
| 47 | PR-44, PR-46 | 46.19 | 68.41 | 29.3 | 2.52 | 4.22 | 116 | 289 | PROP. 60" RCP |
| **48** | **PR-34, PR-47 TOTAL INFLOW POND FSD-16 (NW OUTFALL)** | **49.07** | **72.89** | **29.5** | **2.51** | **4.21** | **123** | **307** | **PROP. 66" RCP** |
| **49** | **DP-40 THRU DP-50 TOTAL INFLOW POND FSD-16 (SW OUTFALL)** | **13.38** | **18.64** | **23.2** | **2.87** | **4.81** | **38** | **90** | **PROP. 48" RCP** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-1**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.015 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| MINOR STORM Allowable Capacity is based on Spread Criterion | | | | |
| MAJOR STORM Allowable Capacity is based on Spread Criterion | **$Q_{allow}$ =** | **13.3** | **13.3** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 11.00 cfs on sheet 'Inlet Management'**

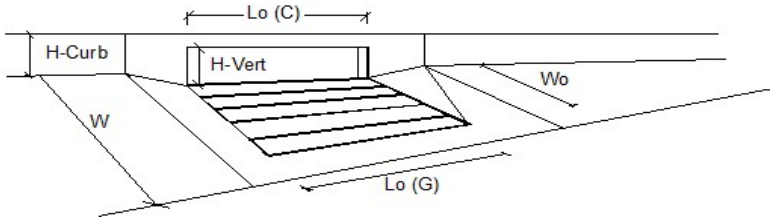
Provide inlet summary pages

Now included

Missing inlet calcs for DP25, DP26, DP45, DP46. Please include

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 10.00 | 10.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

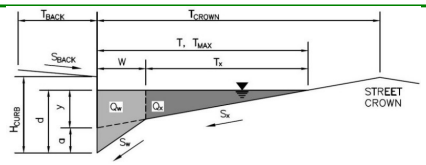
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **3.9** | **7.4** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.1** | **3.6** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **98** | **67** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-2**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

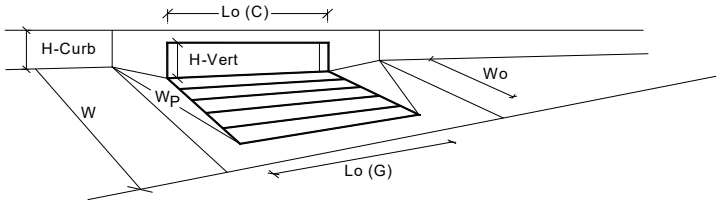
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



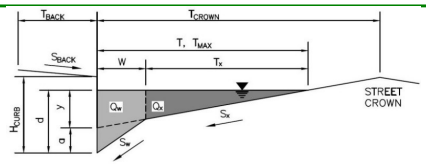

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 10.00 | 10.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 0.93 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **8.3** | **25.5** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 6.1 | 19.6 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-3**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

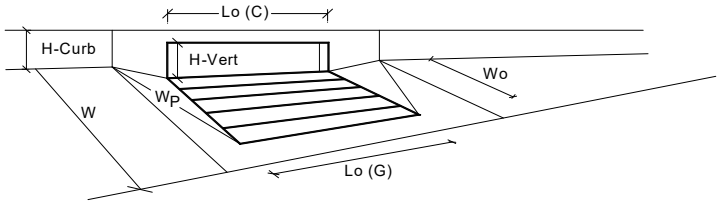
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



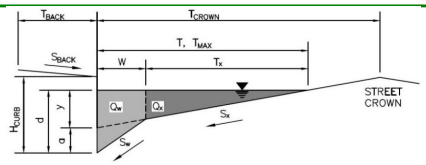

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 5.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-4**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.020 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

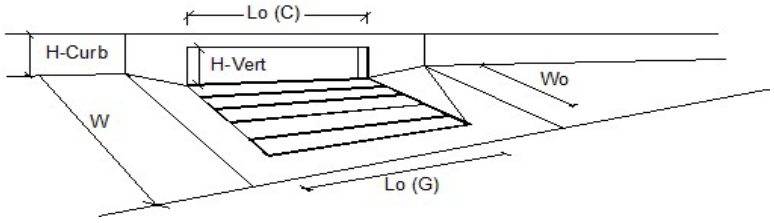
| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| MINOR STORM Allowable Capacity is based on Spread Criterion | | | | |
| MAJOR STORM Allowable Capacity is based on Spread Criterion | **$Q_{allow}$ =** | **15.4** | **15.4** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 5.00 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 10.00 | 10.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

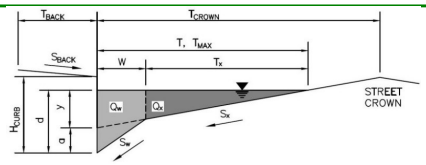
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **2.0** | **4.7** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.3** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **93** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-5**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

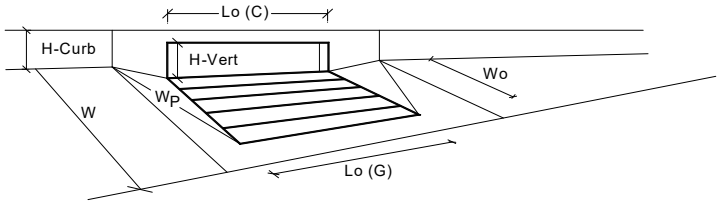
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



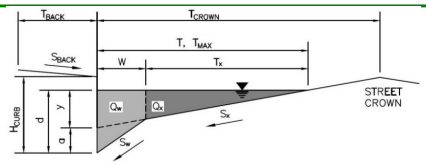

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 4.0 | 11.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-6**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

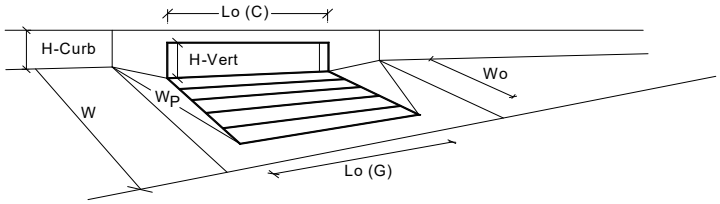
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



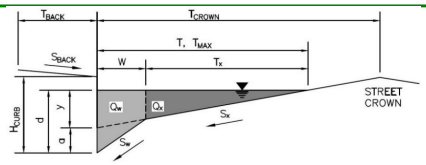

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 4.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-7**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

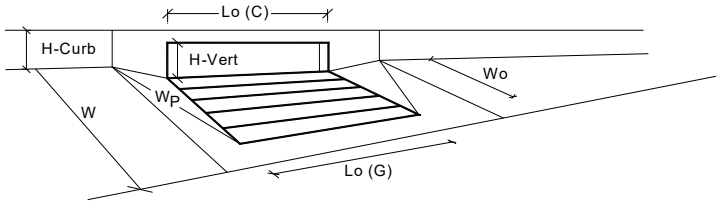
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



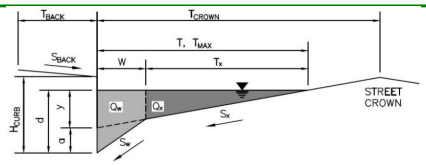

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 5.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-8**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

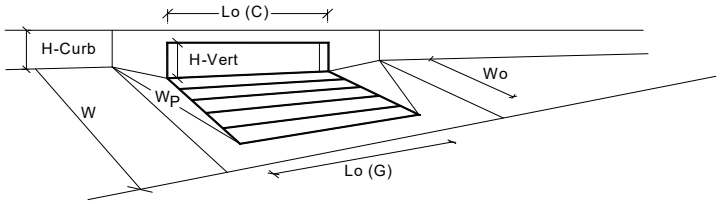
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



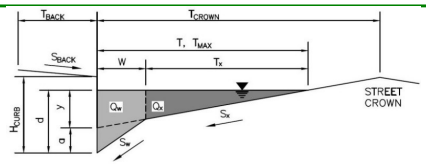

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 0.3 | 0.8 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-9**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

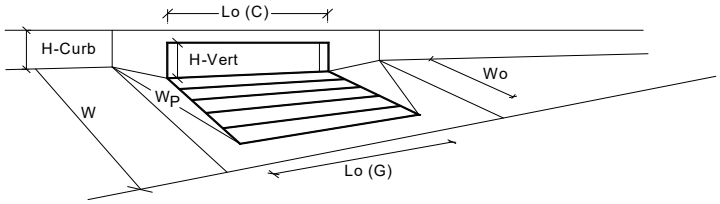
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



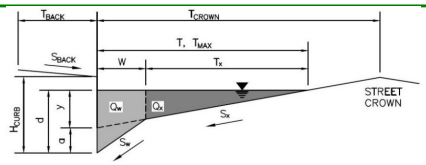

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 6.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-10**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

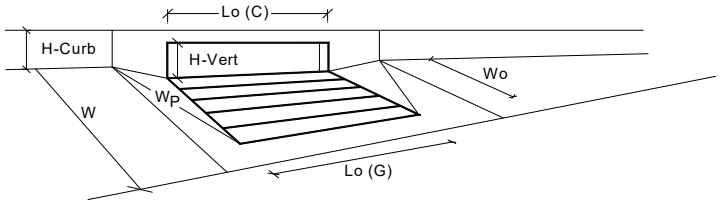
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



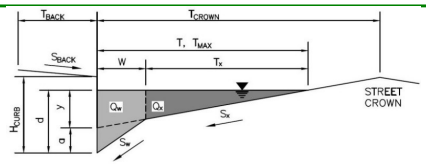

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 1.1 | 2.6 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-11**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

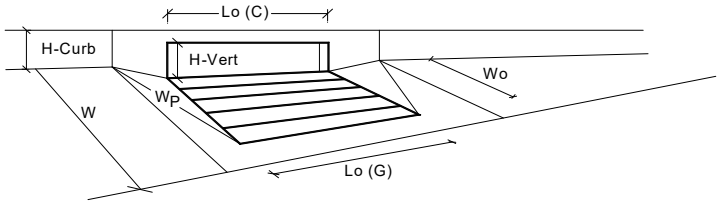
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



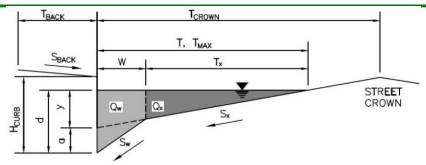

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 3.0 | 7.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-12**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

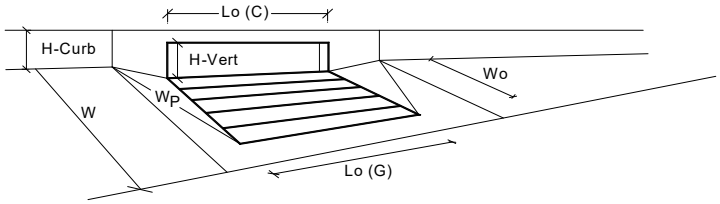
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



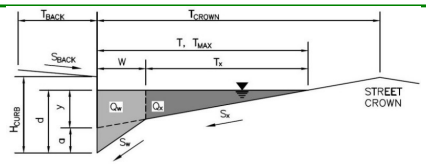

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 0.8 | 2.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-13**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

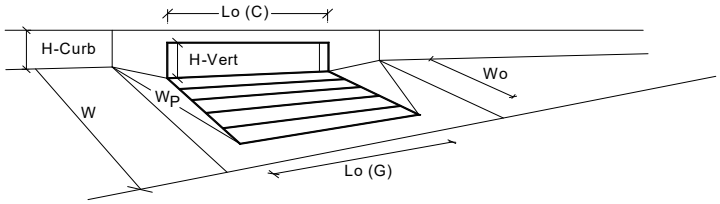
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



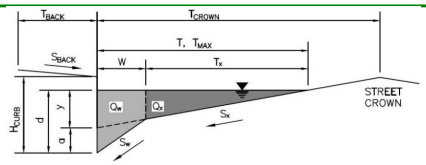

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 5.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-14**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

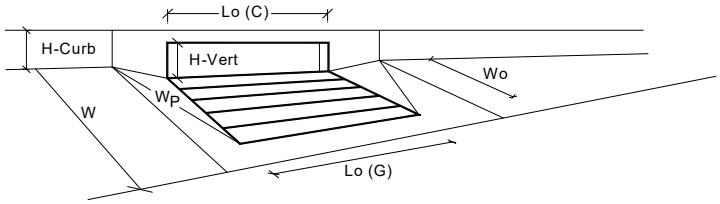
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



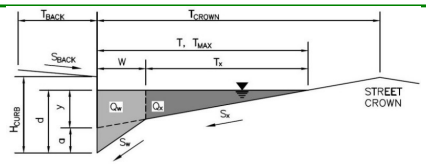

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 0.7 | 1.8 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-15**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

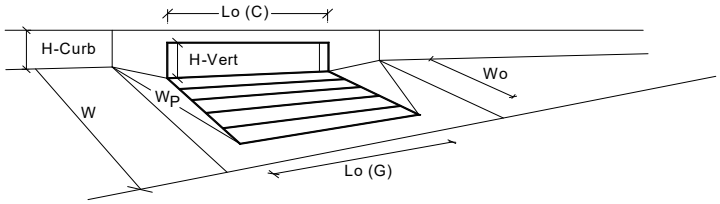
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



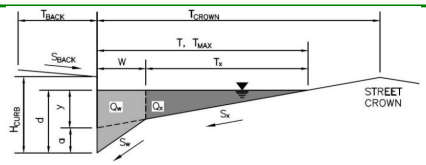

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 0.6 | 1.5 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-16**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

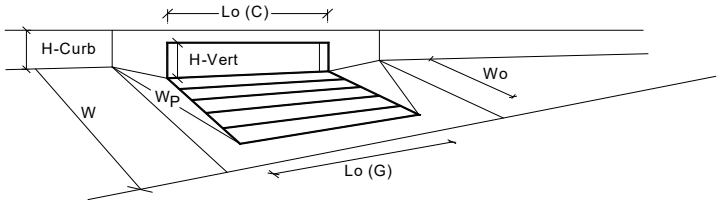
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



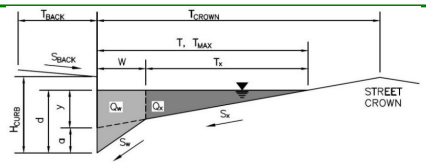

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 5.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-17**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.018 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

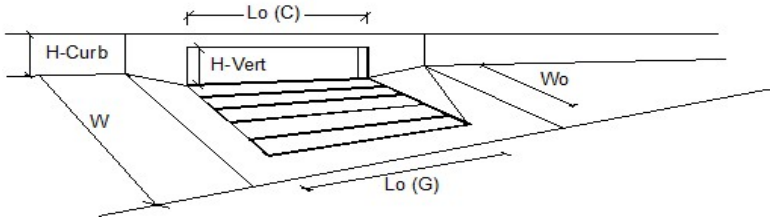
| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| MINOR STORM Allowable Capacity is based on Spread Criterion | | | | |
| MAJOR STORM Allowable Capacity is based on Spread Criterion | **$Q_{allow}$ =** | **14.6** | **14.6** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.34 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 10.00 | 10.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

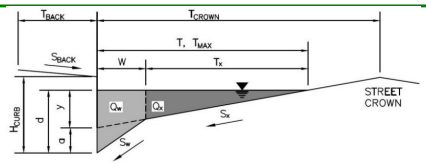
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **3.0** | **6.4** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **2.0** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **77** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-18**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

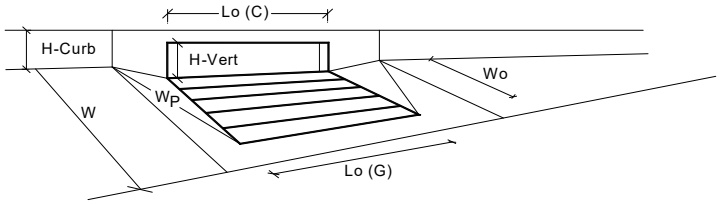
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



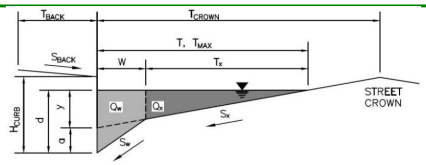

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 2.0 | 5.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-19**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

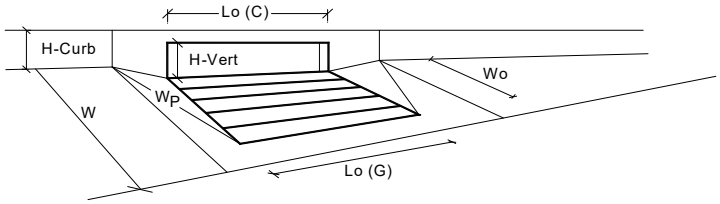
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



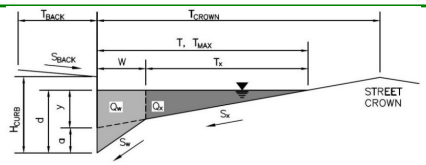

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 0.7 | 1.8 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-22**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

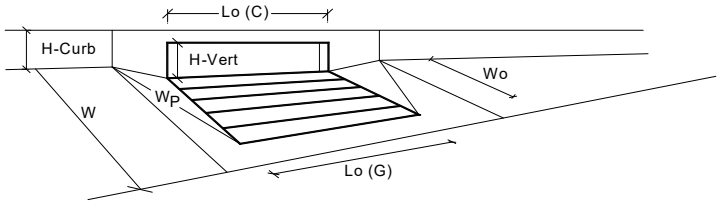
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



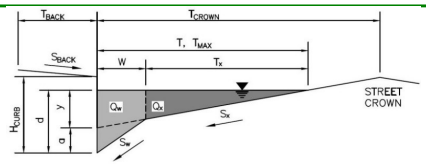

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 10.00 | 10.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 0.93 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **8.3** | **25.5** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 6.0 | 16.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-23**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

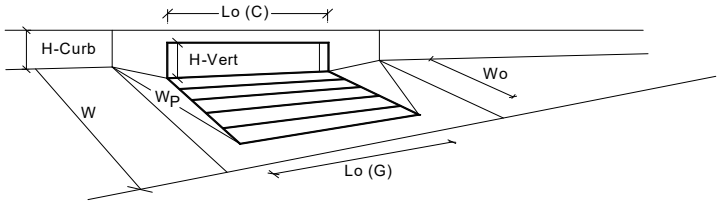
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



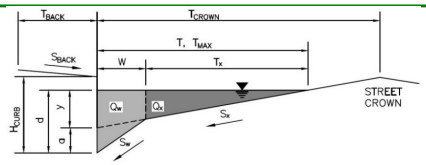

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 5.00 | 5.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 1.00 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **5.4** | **12.3** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 4.0 | 9.0 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-29**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.025 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

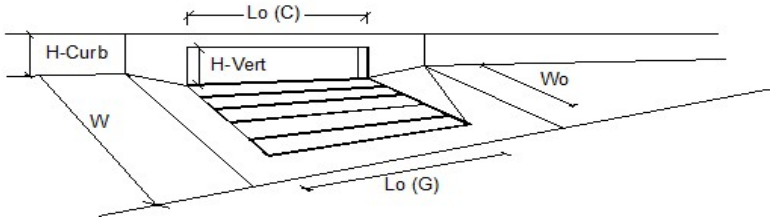
| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| MINOR STORM Allowable Capacity is based on Spread Criterion | | | | |
| MAJOR STORM Allowable Capacity is based on Spread Criterion | **$Q_{allow}$ =** | **17.2** | **17.2** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 9.00 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 10.00 | 10.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

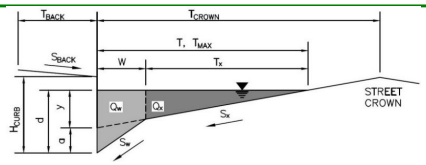
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **3.9** | **6.7** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.1** | **2.3** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **99** | **74** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-37**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 13.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 26.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.035 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

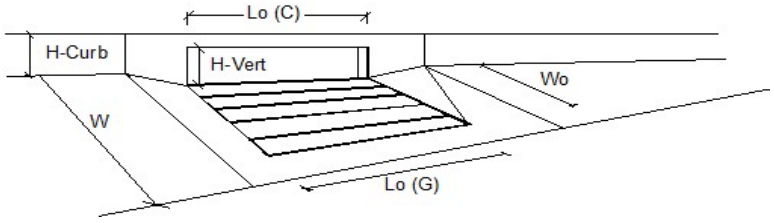
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **17.0** | **62.1** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 5.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 10.00 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

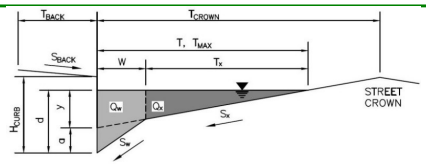
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **5.0** | **9.2** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.8** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **92** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-38**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 13.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 26.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.035 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

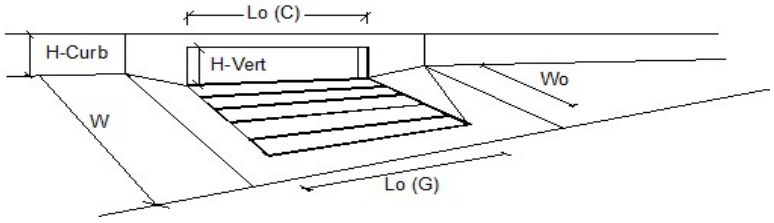
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **17.0** | **62.1** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 5.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 9.00 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

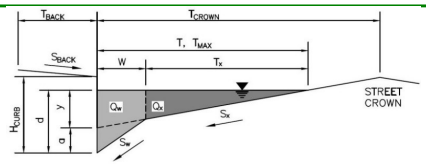
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **5.0** | **8.6** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.4** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **95** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-47**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 7.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 17.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.025 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 17.0 | 17.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

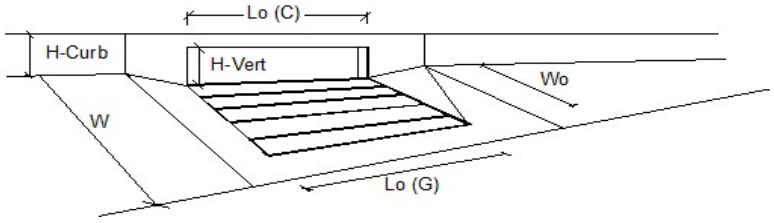
| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| MINOR STORM Allowable Capacity is based on Spread Criterion | | | | |
| MAJOR STORM Allowable Capacity is based on Spread Criterion | **$Q_{allow}$ =** | **17.2** | **17.2** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 4.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 8.00 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

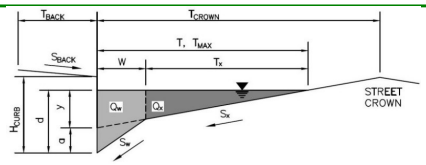
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **4.0** | **7.8** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.2** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **98** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-49**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 13.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 26.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.033 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

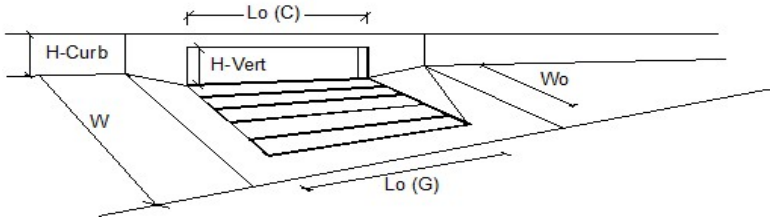
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **17.3** | **60.3** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 3.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 7.77 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

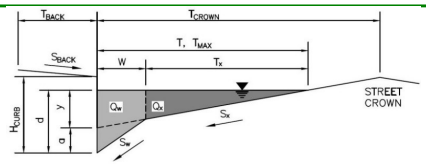
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **3.0** | **7.6** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.1** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **98** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-50**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 13.5 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 26.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.033 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

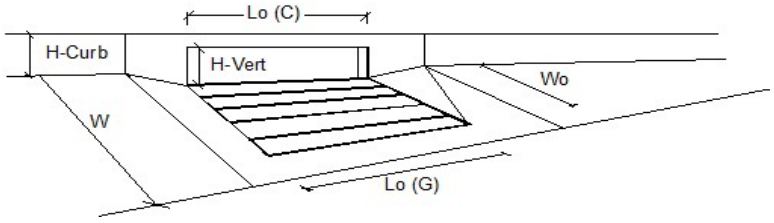
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **17.3** | **60.3** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 2.00 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 4.44 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

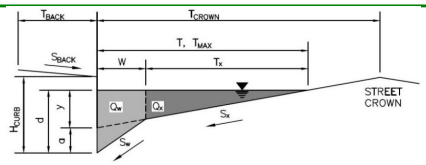
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **2.0** | **4.4** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.0** | **0.0** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **100** | **100** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-52**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 10.0 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 57.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.009 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

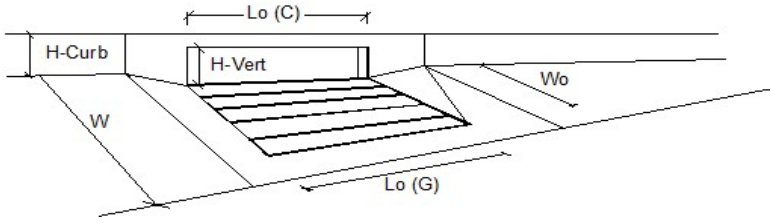
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **12.7** | **30.6** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 12.20 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 25.19 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

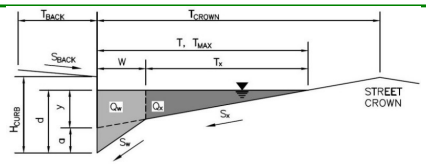
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **10.4** | **15.2** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **1.8** | **10.0** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **85** | **60** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-53**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 10.0 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 57.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.009 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Allow Flow Depth at Street Crown (check box for yes, leave blank for no) | | ☐ | ☐ | |

MINOR STORM Allowable Capacity is based on Depth Criterion

MAJOR STORM Allowable Capacity is based on Spread Criterion

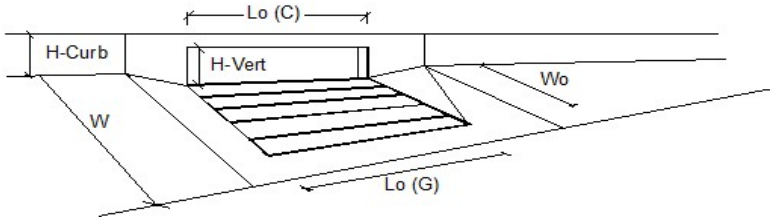
| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **12.7** | **30.6** | **cfs** |

**Minor storm max. allowable capacity GOOD - greater than the design peak flow of 7.23 cfs on sheet 'Inlet Management'**

**Major storm max. allowable capacity GOOD - greater than the design peak flow of 21.79 cfs on sheet 'Inlet Management'**

# INLET ON A CONTINUOUS GRADE

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet (CDOT Type R Curb Opening) | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a') | $a_{LOCAL}$ = | 3.0 | 3.0 | inches |
| Total Number of Units in the Inlet (Grate or Curb Opening) | No = | 1 | 1 | |
| Length of a Single Unit Inlet (Grate or Curb Opening) | $L_o$ = | 15.00 | 15.00 | ft |
| Width of a Unit Grate (cannot be greater than W, Gutter Width) | $W_o$ = | N/A | N/A | ft |
| Clogging Factor for a Single Unit Grate (typical min. value = 0.5) | $C_f$ (G) = | N/A | N/A | |
| Clogging Factor for a Single Unit Curb Opening (typical min. value = 0.1) | $C_f$ (C) = | 0.10 | 0.10 | |

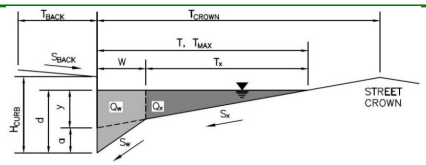
| Street Hydraulics: OK - Q < Allowable Street Capacity' | | MINOR | MAJOR | |
|---|---|---|---|---|
| Total Inlet Interception Capacity | **$Q_a$ =** | **7.2** | **14.2** | **cfs** |
| Total Inlet Carry-Over Flow (flow bypassing inlet) | **$Q_b$ =** | **0.1** | **7.6** | **cfs** |
| Capture Percentage = $Q_a/Q_o$ | **C% =** | **99** | **65** | **%** |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-54**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 10.0 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 56.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

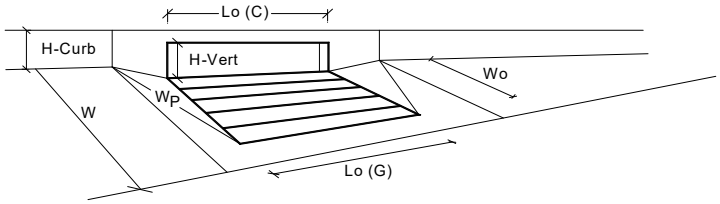
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*



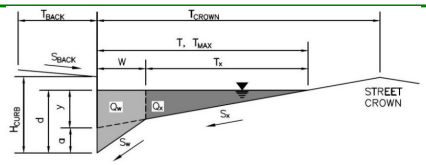

| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 20.00 | 20.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 0.79 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **12.5** | **52.7** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 11.3 | 30.9 | cfs |

# ALLOWABLE CAPACITY FOR ONE-HALF OF STREET (Minor & Major Storm)

**(Based on Regulated Criteria for Maximum Allowable Flow Depth and Spread)**

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Inlet ID:** **DP-55**




Gutter Geometry:

| | | | |
|---|---|---|---|
| Maximum Allowable Width for Spread Behind Curb | $T_{BACK}$ = | 10.0 | ft |
| Side Slope Behind Curb (leave blank for no conveyance credit behind curb) | $S_{BACK}$ = | 0.020 | ft/ft |
| Manning's Roughness Behind Curb (typically between 0.012 and 0.020) | $n_{BACK}$ = | 0.013 | |
| Height of Curb at Gutter Flow Line | $H_{CURB}$ = | 6.00 | inches |
| Distance from Curb Face to Street Crown | $T_{CROWN}$ = | 56.0 | ft |
| Gutter Width | W = | 2.00 | ft |
| Street Transverse Slope | $S_X$ = | 0.020 | ft/ft |
| Gutter Cross Slope (typically 2 inches over 24 inches or 0.083 ft/ft) | $S_W$ = | 0.083 | ft/ft |
| Street Longitudinal Slope - Enter 0 for sump condition | $S_O$ = | 0.000 | ft/ft |
| Manning's Roughness for Street Section (typically between 0.012 and 0.020) | $n_{STREET}$ = | 0.016 | |

| | | Minor Storm | Major Storm | |
|---|---|---|---|---|
| Max. Allowable Spread for Minor & Major Storm | $T_{MAX}$ = | 26.0 | 26.0 | ft |
| Max. Allowable Depth at Gutter Flowline for Minor & Major Storm | $d_{MAX}$ = | 6.0 | 12.0 | inches |
| Check boxes are not applicable in SUMP conditions | | ☐ | ☐ | |

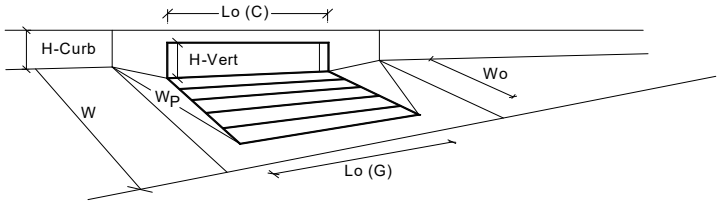
MINOR STORM Allowable Capacity is not applicable to Sump Condition

MAJOR STORM Allowable Capacity is not applicable to Sump Condition

| | Minor Storm | Major Storm | |
|---|---|---|---|
| **$Q_{allow}$ =** | **SUMP** | **SUMP** | **cfs** |

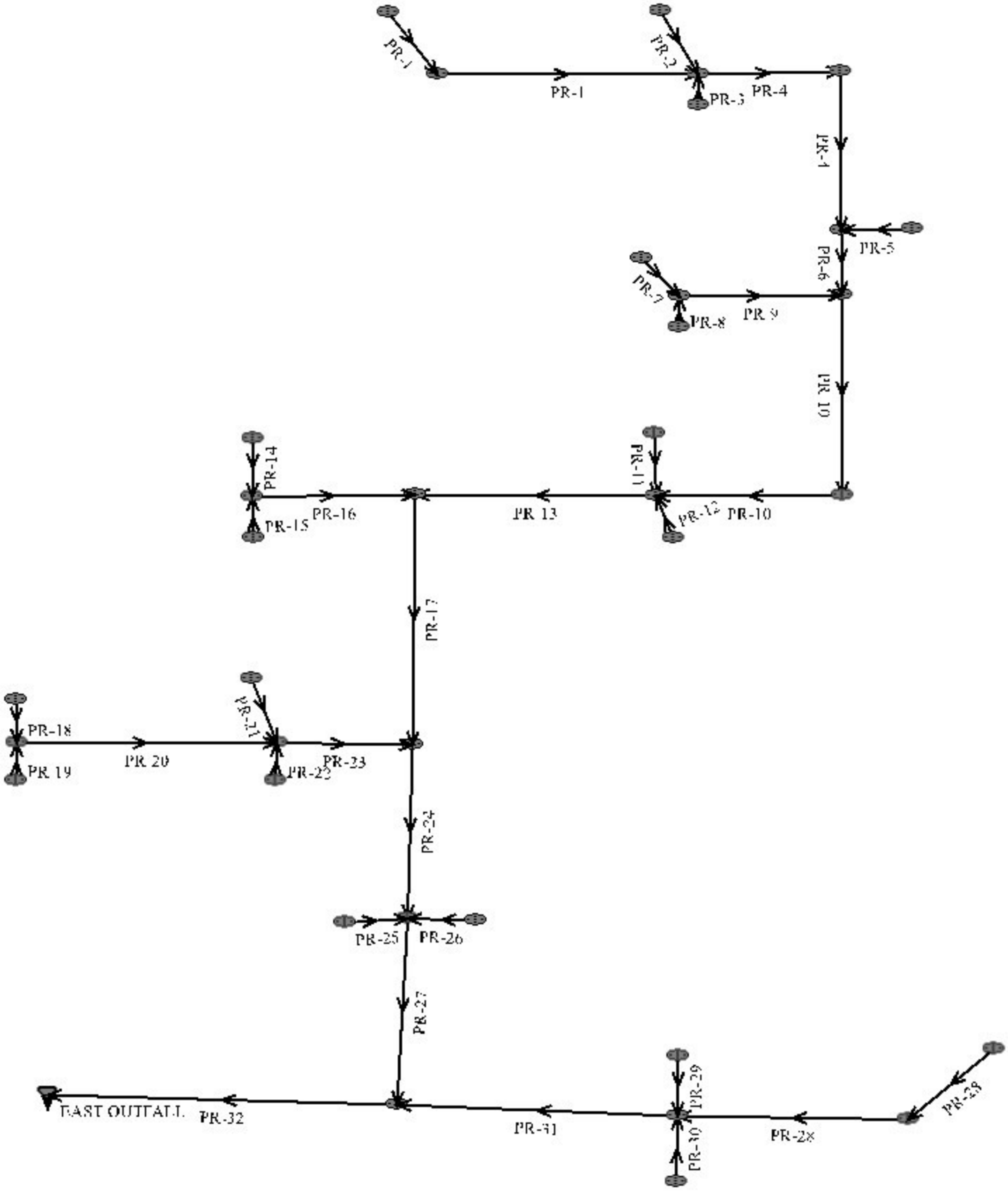
# INLET IN A SUMP OR SAG LOCATION

*MHFD-Inlet, Version 6.00 (August 2025)*




| Design Information (Input) | | MINOR | MAJOR | |
|---|---|---|---|---|
| Type of Inlet | Type = | CDOT Type R Curb Opening | | |
| Local Depression (additional to continuous gutter depression 'a' from above) | $a_{local}$ = | 3.00 | 3.00 | inches |
| Number of Unit Inlets (Grate or Curb Opening) | No = | 1 | 1 | |
| Water Depth at Flowline (outside of local depression) | Ponding Depth = | 6.0 | 12.0 | inches |
| **Grate Information** | | MINOR | MAJOR | ☑ Override Depths |
| Length of a Unit Grate | $L_o$ (G) = | N/A | N/A | feet |
| Width of a Unit Grate | $W_o$ = | N/A | N/A | feet |
| Open Area Ratio for a Grate (typical values 0.15-0.90) | $A_{ratio}$ = | N/A | N/A | |
| Clogging Factor for a Single Grate (typical value 0.50 - 0.70) | $C_f$ (G) = | N/A | N/A | |
| Grate Weir Coefficient (typical value 2.15 - 3.60) | $C_w$ (G) = | N/A | N/A | |
| Grate Orifice Coefficient (typical value 0.60 - 0.80) | $C_o$ (G) = | N/A | N/A | |
| **Curb Opening Information** | | MINOR | MAJOR | |
| Length of a Unit Curb Opening | $L_o$ (C) = | 15.00 | 15.00 | feet |
| Height of Vertical Curb Opening in Inches | $H_{vert}$ = | 6.00 | 6.00 | inches |
| Height of Curb Orifice Throat in Inches | $H_{throat}$ = | 6.00 | 6.00 | inches |
| Angle of Throat | Theta = | 63.40 | 63.40 | degrees |
| Side Width for Depression Pan (typically the gutter width of 2 feet) | $W_p$ = | 2.00 | 2.00 | feet |
| Clogging Factor for a Single Curb Opening (typical value 0.10) | $C_f$ (C) = | 0.10 | 0.10 | |
| Curb Opening Weir Coefficient (typical value 2.3-3.7) | $C_w$ (C) = | 3.60 | 3.60 | |
| Curb Opening Orifice Coefficient (typical value 0.60 - 0.70) | $C_o$ (C) = | 0.67 | 0.67 | |
| **Low Head Performance Reduction (Calculated)** | | MINOR | MAJOR | |
| Depth for Grate Midwidth | $d_{Grate}$ = | N/A | N/A | ft |
| Depth for Curb Opening Weir Equation | $d_{Curb}$ = | 0.33 | 0.83 | ft |
| Grated Inlet Performance Reduction Factor for Long Inlets | $RF_{Grate}$ = | N/A | N/A | |
| Curb Opening Performance Reduction Factor for Long Inlets | $RF_{Curb}$ = | 0.79 | 1.00 | |
| Combination Inlet Performance Reduction Factor for Long Inlets | $RF_{Combination}$ = | N/A | N/A | |
| | | MINOR | MAJOR | |
| Total Inlet Interception Capacity (assumes clogged condition) | **$Q_a$ =** | **9.7** | **39.1** | **cfs** |
| **Inlet Capacity IS GOOD for Minor and Major Storms (>Q Peak)** | $Q_{PEAK\ REQUIRED}$ = | 7.0 | 13.0 | cfs |

East 48" RCP Storm Outfall
100-yr. HGL Map



# System Input Summary (East 48” RCP Storm Outfall – 100yr. HGL)

## Rainfall Parameters

**Rainfall Return Period:** 100
**Rainfall Calculation Method:** Formula

**One Hour Depth (in):** 2.52
**Rainfall Constant "A":** 28.5
**Rainfall Constant "B":** 10
**Rainfall Constant "C":** 0.786

## Rational Method Constraints

**Minimum Urban Runoff Coeff.:** 0.20
**Maximum Rural Overland Len. (ft):** 500
**Maximum Urban Overland Len. (ft):** 300
**Used UDFCD Tc. Maximum:** Yes

## Sizer Constraints

**Minimum Sewer Size (in):** 18.00
**Maximum Depth to Rise Ratio:** 0.90
**Maximum Flow Velocity (fps):** 18.0
**Minimum Flow Velocity (fps):** 2.0

## Backwater Calculations:

**Tailwater Elevation (ft):** 7100.59

# Manhole Input Summary:

| | | Given Flow | | Sub Basin Information | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Element Name** | **Ground Elevation (ft)** | **Total Known Flow (cfs)** | **Local Contribution (cfs)** | **Drainage Area (Ac.)** | **Runoff Coefficient** | **5yr Coefficient** | **Overland Length (ft)** | **Overland Slope (%)** | **Gutter Length (ft)** | **Gutter Velocity (fps)** |
| EAST OUTFALL | 7102.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-32 | 7115.00 | 90.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-27 | 7113.60 | 78.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-24 | 7116.20 | 73.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-23 | 7115.33 | 15.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-20 | 7116.87 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-19 | 7117.09 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-18 | 7117.09 | 7.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-21 | 7115.41 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-22 | 7115.33 | 1.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-17 | 7128.88 | 59.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-16 | 7128.21 | 8.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-15 | 7128.44 | 2.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-14 | 7128.44 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-13 | 7126.22 | 52.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-10 | 7127.45 | 47.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-10 | 7133.44 | 47.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-9 | 7132.21 | 14.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-7 | 7132.50 | 11.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-8 | 7132.44 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-6 | 7134.64 | 34.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-4 | 7139.43 | 29.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-4 | 7138.41 | 29.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-2 | 7138.62 | 18.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-1 | 7141.50 | 7.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-1 | 7141.80 | 7.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-3 | 7138.55 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-5 | 7134.80 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-11 | 7126.44 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-12 | 7126.44 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-25 | 7113.97 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-26 | 7113.97 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-31 | 7112.00 | 13.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-28 | 7113.00 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-28 | 7114.00 | 6.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-30 | 7112.24 | 1.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| PR-29 | 7112.24 | 5.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# Manhole Output Summary:

| | Local Contribution | | | | | Total Design Flow | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Element Name** | **Overland Time (min)** | **Gutter Time (min)** | **Basin Tc (min)** | **Intensity (in/hr)** | **Local Contrib (cfs)** | **Coeff. Area** | **Intensity (in/hr)** | **Manhole Tc (min)** | **Peak Flow (cfs)** | **Comment** |
| EAST OUTFALL | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.90 | 11.39 | 0.41 | 90.00 | |
| PR-32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 90.00 | |
| PR-27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 78.00 | |
| PR-24 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 73.00 | |
| PR-23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 15.00 | |
| PR-20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.00 | |
| PR-19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | |
| PR-18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 | |
| PR-21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |
| PR-22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.80 | |
| PR-17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 59.00 | |
| PR-16 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 8.00 | |
| PR-15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.60 | |
| PR-14 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | |
| PR-13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 52.00 | |
| PR-10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 47.00 | |
| PR-10 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 47.00 | |
| PR-9 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 14.00 | |
| PR-7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11.00 | |
| PR-8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 4.00 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 34.00 | |
| PR-4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 29.00 | |
| PR-4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 29.00 | |
| PR-2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 18.00 | |
| PR-1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 | |
| PR-1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 7.00 | |
| PR-3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |
| PR-5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |
| PR-11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |
| PR-12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | |
| PR-25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 | |
| PR-26 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |
| PR-31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 13.00 | |
| PR-28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | |
| PR-28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6.00 | |
| PR-30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.80 | |
| PR-29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 5.00 | |

# Sewer Input Summary:

| | | Elevation | | | Loss Coefficients | | | Given Dimensions | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Element Name | Sewer Length (ft) | Downstream Invert (ft) | Slope (%) | Upstream Invert (ft) | Mannings n | Bend Loss | Lateral Loss | Cross Section | Rise (ft or in) | Span (ft or in) |
| PR-32 | 177.55 | 7098.75 | 2.1 | 7102.48 | 0.013 | 0.03 | 1.00 | CIRCULAR | 48.00 in | 48.00 in |
| PR-27 | 91.37 | 7102.98 | 3.0 | 7105.72 | 0.013 | 1.32 | 1.00 | CIRCULAR | 42.00 in | 42.00 in |
| PR-24 | 114.13 | 7106.22 | 1.1 | 7107.51 | 0.013 | 0.05 | 1.00 | CIRCULAR | 42.00 in | 42.00 in |
| PR-23 | 89.26 | 7108.51 | 1.0 | 7109.41 | 0.013 | 1.32 | 0.00 | CIRCULAR | 30.00 in | 30.00 in |
| PR-20 | 306.24 | 7109.91 | 0.7 | 7112.05 | 0.013 | 0.05 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-19 | 5.67 | 7112.55 | 3.0 | 7112.72 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-18 | 24.67 | 7112.55 | 1.0 | 7112.80 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-21 | 26.51 | 7110.41 | 2.0 | 7110.94 | 0.013 | 1.06 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-22 | 5.67 | 7110.41 | 5.0 | 7110.69 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-17 | 290.50 | 7108.01 | 3.0 | 7116.73 | 0.013 | 0.05 | 1.00 | CIRCULAR | 36.00 in | 36.00 in |
| PR-16 | 160.50 | 7119.23 | 2.2 | 7122.76 | 0.013 | 1.32 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-15 | 5.67 | 7123.26 | 5.0 | 7123.54 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-14 | 24.67 | 7123.26 | 1.0 | 7123.51 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-13 | 180.09 | 7117.23 | 1.2 | 7119.39 | 0.013 | 1.32 | 1.00 | CIRCULAR | 36.00 in | 36.00 in |
| PR-10 | 99.91 | 7119.89 | 1.0 | 7120.89 | 0.013 | 0.05 | 1.00 | CIRCULAR | 36.00 in | 36.00 in |
| PR-10 | 285.50 | 7121.39 | 1.5 | 7125.67 | 0.013 | 1.32 | 1.00 | CIRCULAR | 36.00 in | 36.00 in |
| PR-9 | 90.51 | 7126.67 | 0.5 | 7127.12 | 0.013 | 1.32 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-7 | 26.32 | 7127.62 | 1.0 | 7127.88 | 0.013 | 0.83 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-8 | 5.67 | 7128.12 | 2.0 | 7128.23 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-6 | 49.67 | 7126.17 | 3.0 | 7127.66 | 0.013 | 0.05 | 1.00 | CIRCULAR | 30.00 in | 30.00 in |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-4 | 230.83 | 7128.16 | 1.5 | 7131.62 | 0.013 | 0.05 | 1.00 | CIRCULAR | 30.00 in | 30.00 in |
| PR-4 | 88.97 | 7132.12 | 1.0 | 7133.01 | 0.013 | 1.32 | 1.00 | CIRCULAR | 30.00 in | 30.00 in |
| PR-2 | 25.97 | 7133.51 | 1.5 | 7133.90 | 0.013 | 0.83 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-1 | 221.09 | 7133.51 | 1.0 | 7135.72 | 0.013 | 0.63 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-1 | 29.37 | 7136.22 | 1.0 | 7136.51 | 0.013 | 0.63 | 0.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-3 | 5.67 | 7134.01 | 3.0 | 7134.18 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-5 | 24.67 | 7129.66 | 3.0 | 7130.40 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-11 | 24.67 | 7121.39 | 2.0 | 7121.88 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-12 | 9.96 | 7121.39 | 5.0 | 7121.89 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-25 | 5.67 | 7108.22 | 5.0 | 7108.50 | 0.013 | 1.32 | 1.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-26 | 24.67 | 7108.22 | 4.0 | 7109.21 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-31 | 187.00 | 7104.48 | 1.6 | 7107.41 | 0.013 | 0.05 | 1.00 | CIRCULAR | 24.00 in | 24.00 in |
| PR-28 | 79.98 | 7107.91 | 1.0 | 7108.71 | 0.013 | 0.05 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-28 | 52.72 | 7109.21 | 1.0 | 7109.74 | 0.013 | 0.31 | 1.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-30 | 25.17 | 7107.91 | 1.0 | 7108.16 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |
| PR-29 | 6.17 | 7107.91 | 0.5 | 7107.94 | 0.013 | 1.32 | 0.00 | CIRCULAR | 18.00 in | 18.00 in |

# Sewer Flow Summary:

| | Full Flow Capacity | | Critical Flow | | Normal Flow | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Element Name** | **Flow (cfs)** | **Velocity (fps)** | **Depth (in)** | **Velocity (fps)** | **Depth (in)** | **Velocity (fps)** | **Froude Number** | **Flow Condition** | **Flow (cfs)** | **Surcharged Length (ft)** | **Comment** |
| PR-32 | 208.72 | 16.61 | 34.51 | 9.31 | 22.03 | 15.99 | 2.37 | Supercritical | 90.00 | 0.00 | |
| PR-27 | 174.73 | 18.16 | 33.14 | 9.58 | 19.66 | 17.65 | 2.76 | Supercritical Jump | 78.00 | 22.78 | |
| PR-24 | 107.23 | 11.15 | 32.11 | 9.25 | 25.42 | 11.99 | 1.58 | Supercritical | 73.00 | 0.00 | |
| PR-23 | 41.31 | 8.41 | 15.67 | 5.78 | 12.50 | 7.75 | 1.54 | Supercritical Jump | 15.00 | 62.92 | |
| PR-20 | 18.98 | 6.04 | 12.08 | 5.05 | 10.87 | 5.78 | 1.22 | Supercritical | 8.00 | 0.00 | |
| PR-19 | 18.24 | 10.32 | 6.40 | 3.55 | 4.02 | 6.78 | 2.46 | Supercritical | 2.00 | 0.00 | |
| PR-18 | 10.53 | 5.96 | 12.29 | 5.45 | 10.72 | 6.38 | 1.30 | Supercritical | 7.00 | 0.00 | |
| PR-21 | 14.90 | 8.43 | 10.32 | 4.77 | 7.18 | 7.60 | 2.00 | Supercritical | 5.00 | 0.00 | |
| PR-22 | 23.55 | 13.33 | 6.06 | 3.45 | 3.37 | 7.88 | 3.14 | Supercritical | 1.80 | 0.00 | |
| PR-17 | 115.87 | 16.39 | 29.80 | 9.43 | 18.19 | 16.47 | 2.66 | Supercritical | 59.00 | 0.00 | |
| PR-16 | 33.64 | 10.71 | 12.08 | 5.05 | 7.97 | 8.78 | 2.22 | Supercritical | 8.00 | 0.00 | |
| PR-15 | 23.55 | 13.33 | 7.33 | 3.84 | 4.04 | 8.77 | 3.18 | Supercritical | 2.60 | 0.00 | |
| PR-14 | 10.53 | 5.96 | 11.35 | 5.11 | 9.73 | 6.15 | 1.34 | Supercritical | 6.00 | 0.00 | |
| PR-13 | 73.25 | 10.36 | 28.13 | 8.77 | 22.40 | 11.25 | 1.57 | Supercritical Jump | 52.00 | 147.03 | |
| PR-10 | 66.88 | 9.46 | 26.79 | 8.33 | 22.25 | 10.25 | 1.44 | Supercritical | 47.00 | 0.00 | |
| PR-10 | 81.91 | 11.59 | 26.79 | 8.33 | 19.55 | 11.98 | 1.84 | Supercritical | 47.00 | 0.00 | |
| PR-9 | 16.04 | 5.11 | 16.17 | 6.22 | 17.36 | 5.75 | 0.87 | Pressurized | 14.00 | 90.51 | |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| PR-7 | 22.68 | 7.22 | 14.27 | 5.65 | 11.79 | 7.17 | 1.44 | Supercritical Jump | 11.00 | 10.78 | |
| PR-8 | 14.90 | 8.43 | 9.18 | 4.41 | 6.37 | 7.15 | 2.02 | Pressurized | 4.00 | 5.67 | |
| PR-6 | 71.24 | 14.51 | 23.79 | 8.15 | 14.60 | 14.34 | 2.60 | Supercritical | 34.00 | 0.00 | |
| PR-4 | 50.37 | 10.26 | 22.03 | 7.51 | 16.33 | 10.62 | 1.79 | Supercritical | 29.00 | 0.00 | |
| PR-4 | 41.13 | 8.38 | 22.03 | 7.51 | 18.59 | 9.08 | 1.39 | Supercritical | 29.00 | 0.00 | |
| PR-2 | 27.78 | 8.84 | 18.34 | 6.99 | 14.07 | 9.41 | 1.68 | Supercritical Jump | 18.00 | 14.27 | |
| PR-1 | 22.68 | 7.22 | 11.26 | 4.83 | 9.15 | 6.36 | 1.49 | Supercritical Jump | 7.00 | 20.15 | |
| PR-1 | 22.68 | 7.22 | 11.26 | 4.83 | 9.15 | 6.36 | 1.49 | Supercritical | 7.00 | 0.00 | |
| PR-3 | 18.24 | 10.32 | 10.32 | 4.77 | 6.44 | 8.80 | 2.47 | Pressurized | 5.00 | 5.67 | |
| PR-5 | 18.24 | 10.32 | 10.32 | 4.77 | 6.44 | 8.80 | 2.47 | Supercritical | 5.00 | 0.00 | |
| PR-11 | 14.90 | 8.43 | 10.32 | 4.77 | 7.18 | 7.60 | 2.00 | Supercritical | 5.00 | 0.00 | |
| PR-12 | 23.55 | 13.33 | 3.99 | 2.74 | 2.27 | 6.19 | 3.03 | Supercritical Jump | 0.80 | 0.82 | |
| PR-25 | 23.55 | 13.33 | 5.51 | 3.27 | 3.08 | 7.46 | 3.12 | Pressurized | 1.50 | 5.67 | |
| PR-26 | 21.07 | 11.92 | 10.32 | 4.77 | 5.97 | 9.77 | 2.86 | Supercritical | 5.00 | 0.00 | |
| PR-31 | 28.39 | 9.04 | 15.56 | 6.03 | 11.40 | 8.84 | 1.82 | Supercritical Jump | 13.00 | 40.27 | |
| PR-28 | 10.53 | 5.96 | 11.35 | 5.11 | 9.73 | 6.15 | 1.34 | Supercritical | 6.00 | 0.00 | |
| PR-28 | 10.53 | 5.96 | 11.35 | 5.11 | 9.73 | 6.15 | 1.34 | Supercritical | 6.00 | 0.00 | |
| PR-30 | 10.53 | 5.96 | 6.06 | 3.45 | 5.03 | 4.45 | 1.43 | Supercritical | 1.80 | 0.00 | |
| PR-29 | 7.45 | 4.21 | 10.32 | 4.77 | 10.79 | 4.52 | 0.92 | Subcritical | 5.00 | 0.00 | |

- A Froude number of 0 indicates that pressured flow occurs (adverse slope or undersized pipe).
- If the sewer is not pressurized, full flow represents the maximum gravity flow in the sewer.

- If the sewer is pressurized, full flow represents the pressurized flow conditions.

---

## Sewer Sizing Summary:

| | | | Existing | | Calculated | | Used | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Element Name** | **Peak Flow (cfs)** | **Cross Section** | **Rise** | **Span** | **Rise** | **Span** | **Rise** | **Span** | **Area (ft^2)** | **Comment** |
| PR-32 | 90.00 | CIRCULAR | 48.00 in | 48.00 in | 36.00 in | 36.00 in | 48.00 in | 48.00 in | 12.57 | |
| PR-27 | 78.00 | CIRCULAR | 42.00 in | 42.00 in | 33.00 in | 33.00 in | 42.00 in | 42.00 in | 9.62 | |
| PR-24 | 73.00 | CIRCULAR | 42.00 in | 42.00 in | 42.00 in | 42.00 in | 42.00 in | 42.00 in | 9.62 | |
| PR-23 | 15.00 | CIRCULAR | 30.00 in | 30.00 in | 21.00 in | 21.00 in | 30.00 in | 30.00 in | 4.91 | |
| PR-20 | 8.00 | CIRCULAR | 24.00 in | 24.00 in | 18.00 in | 18.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-19 | 2.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-18 | 7.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-21 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-22 | 1.80 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-17 | 59.00 | CIRCULAR | 36.00 in | 36.00 in | 30.00 in | 30.00 in | 36.00 in | 36.00 in | 7.07 | |
| PR-16 | 8.00 | CIRCULAR | 24.00 in | 24.00 in | 18.00 in | 18.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-15 | 2.60 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-14 | 6.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-13 | 52.00 | CIRCULAR | 36.00 in | 36.00 in | 33.00 in | 33.00 in | 36.00 in | 36.00 in | 7.07 | |
| PR-10 | 47.00 | CIRCULAR | 36.00 in | 36.00 in | 33.00 in | 33.00 in | 36.00 in | 36.00 in | 7.07 | |
| PR-10 | 47.00 | CIRCULAR | 36.00 in | 36.00 in | 30.00 in | 30.00 in | 36.00 in | 36.00 in | 7.07 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| PR-9 | 14.00 | CIRCULAR | 24.00 in | 24.00 in | 24.00 in | 24.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-7 | 11.00 | CIRCULAR | 24.00 in | 24.00 in | 21.00 in | 21.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-8 | 4.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-6 | 34.00 | CIRCULAR | 30.00 in | 30.00 in | 24.00 in | 24.00 in | 30.00 in | 30.00 in | 4.91 | |
| PR-4 | 29.00 | CIRCULAR | 30.00 in | 30.00 in | 27.00 in | 27.00 in | 30.00 in | 30.00 in | 4.91 | |
| PR-4 | 29.00 | CIRCULAR | 30.00 in | 30.00 in | 27.00 in | 27.00 in | 30.00 in | 30.00 in | 4.91 | |
| PR-2 | 18.00 | CIRCULAR | 24.00 in | 24.00 in | 21.00 in | 21.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-1 | 7.00 | CIRCULAR | 24.00 in | 24.00 in | 18.00 in | 18.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-1 | 7.00 | CIRCULAR | 24.00 in | 24.00 in | 18.00 in | 18.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-3 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-5 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-11 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-12 | 0.80 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-25 | 1.50 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-26 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-31 | 13.00 | CIRCULAR | 24.00 in | 24.00 in | 18.00 in | 18.00 in | 24.00 in | 24.00 in | 3.14 | |
| PR-28 | 6.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-28 | 6.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-30 | 1.80 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |
| PR-29 | 5.00 | CIRCULAR | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 18.00 in | 1.77 | |

- Calculated diameter was determined by sewer hydraulic capacity rounded up to the nearest commercially available size.
- Sewer sizes should not decrease downstream.
- All hydraulics where calculated using the 'Used' parameters.

# Grade Line Summary:

**Tailwater Elevation (ft):** 7100.59

| | Invert Elev. | | Downstream Manhole Losses | | HGL | | EGL | | |
|---|---|---|---|---|---|---|---|---|---|
| Element Name | Downstream (ft) | Upstream (ft) | Bend Loss (ft) | Lateral Loss (ft) | Downstream (ft) | Upstream (ft) | Downstream (ft) | Friction Loss (ft) | Upstream (ft) |
| PR-32 | 7098.75 | 7102.48 | 0.00 | 0.00 | 7100.59 | 7105.36 | 7104.56 | 2.14 | 7106.70 |
| PR-27 | 7102.98 | 7105.72 | 1.35 | 0.00 | 7107.03 | 7108.48 | 7108.05 | 1.86 | 7109.91 |
| PR-24 | 7106.22 | 7107.51 | 0.04 | 0.13 | 7108.65 | 7110.19 | 7110.57 | 0.94 | 7111.51 |
| PR-23 | 7108.51 | 7109.41 | 0.19 | 0.00 | 7111.56 | 7111.62 | 7111.71 | 0.08 | 7111.79 |
| PR-20 | 7109.91 | 7112.05 | 0.01 | 0.00 | 7111.68 | 7113.06 | 7111.79 | 1.66 | 7113.45 |
| PR-19 | 7112.55 | 7112.72 | 0.03 | 0.00 | 7113.08 | 7113.53 | 7113.60 | 0.00 | 7113.60 |
| PR-18 | 7112.55 | 7112.80 | 0.32 | 0.00 | 7113.44 | 7113.82 | 7114.07 | 0.21 | 7114.28 |
| PR-21 | 7110.41 | 7110.94 | 0.13 | 0.00 | 7111.79 | 7111.80 | 7111.92 | 0.23 | 7112.15 |
| PR-22 | 7110.41 | 7110.69 | 0.02 | 0.00 | 7111.79 | 7111.79 | 7111.81 | 0.01 | 7111.82 |
| PR-17 | 7108.01 | 7116.73 | 0.05 | 0.00 | 7110.24 | 7119.21 | 7113.74 | 6.86 | 7120.59 |
| PR-16 | 7119.23 | 7122.76 | 0.13 | 0.00 | 7119.89 | 7123.77 | 7121.09 | 3.07 | 7124.16 |
| PR-15 | 7123.26 | 7123.54 | 0.04 | 0.00 | 7123.81 | 7124.75 | 7124.79 | 0.00 | 7124.79 |
| PR-14 | 7123.26 | 7123.51 | 0.24 | 0.00 | 7124.07 | 7124.45 | 7124.66 | 0.20 | 7124.86 |
| PR-13 | 7117.23 | 7119.39 | 1.11 | 0.24 | 7121.10 | 7121.73 | 7121.94 | 0.98 | 7122.93 |
| PR-10 | 7119.89 | 7120.89 | 0.03 | 0.15 | 7121.92 | 7123.12 | 7123.37 | 0.83 | 7124.20 |
| PR-10 | 7121.39 | 7125.67 | 0.91 | 0.00 | 7124.03 | 7127.91 | 7125.25 | 3.73 | 7128.98 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| PR-9 | 7126.67 | 7127.12 | 0.41 | 0.00 | 7129.08 | 7129.43 | 7129.39 | 0.34 | 7129.73 |
| PR-7 | 7127.62 | 7127.88 | 0.16 | 0.00 | 7129.70 | 7129.71 | 7129.89 | 0.03 | 7129.92 |
| PR-8 | 7128.12 | 7128.23 | 0.11 | 0.00 | 7129.76 | 7129.77 | 7129.84 | 0.01 | 7129.85 |
| PR-6 | 7126.17 | 7127.66 | 0.04 | 0.00 | 7127.94 | 7129.64 | 7130.58 | 0.09 | 7130.67 |
| PR-4 | 7128.16 | 7131.62 | 0.03 | 0.20 | 7129.87 | 7133.46 | 7131.27 | 3.06 | 7134.33 |
| PR-4 | 7132.12 | 7133.01 | 0.72 | 0.00 | 7134.48 | 7134.85 | 7135.05 | 0.67 | 7135.72 |
| PR-2 | 7133.51 | 7133.90 | 0.42 | 0.00 | 7135.63 | 7135.63 | 7136.14 | 0.09 | 7136.23 |
| PR-1 | 7133.51 | 7135.72 | 0.05 | 0.00 | 7135.69 | 7136.66 | 7135.77 | 1.25 | 7137.02 |
| PR-1 | 7136.22 | 7136.51 | 0.05 | 0.00 | 7136.98 | 7137.45 | 7137.61 | 0.20 | 7137.82 |
| PR-3 | 7134.01 | 7134.18 | 0.16 | 0.00 | 7135.76 | 7135.77 | 7135.88 | 0.01 | 7135.90 |
| PR-5 | 7129.66 | 7130.40 | 0.16 | 0.00 | 7130.20 | 7131.26 | 7131.40 | 0.21 | 7131.61 |
| PR-11 | 7121.39 | 7121.88 | 0.16 | 0.00 | 7121.93 | 7122.74 | 7123.09 | 0.00 | 7123.10 |
| PR-12 | 7121.39 | 7121.89 | 0.00 | 0.00 | 7122.93 | 7122.93 | 7122.93 | 0.00 | 7122.94 |
| PR-25 | 7108.22 | 7108.50 | 0.01 | 1.01 | 7110.92 | 7110.92 | 7110.93 | 0.00 | 7110.93 |
| PR-26 | 7108.22 | 7109.21 | 0.16 | 0.00 | 7108.72 | 7110.07 | 7110.20 | 0.22 | 7110.42 |
| PR-31 | 7104.48 | 7107.41 | 0.01 | 0.53 | 7106.98 | 7108.71 | 7107.24 | 2.03 | 7109.27 |
| PR-28 | 7107.91 | 7108.71 | 0.01 | 0.00 | 7108.72 | 7109.66 | 7109.31 | 0.75 | 7110.06 |
| PR-28 | 7109.21 | 7109.74 | 0.06 | 0.00 | 7110.02 | 7110.69 | 7110.61 | 0.48 | 7111.09 |
| PR-30 | 7107.91 | 7108.16 | 0.02 | 0.00 | 7109.28 | 7109.28 | 7109.29 | 0.01 | 7109.30 |
| PR-29 | 7107.91 | 7107.94 | 0.16 | 0.00 | 7109.30 | 7109.31 | 7109.44 | 0.01 | 7109.45 |

- Bend and Lateral losses only apply when there is an outgoing sewer. The system outfall, sewer #0, is not considered a sewer.
- Bend loss = Bend K * V_fi ^ 2/(2*g)
- Lateral loss = V_fo ^ 2/(2*g)- Junction Loss K * V_fi ^ 2/(2*g).
- Friction loss is always Upstream EGL - Downstream EGL.

# STORMWATER QUALITY CALCULATIONS

Provide calculations for trickle channels & sizing of spillway riprap

Now Added

CLASSIC SM
CONSULTING ENGINEERS & SURVEYORS

# Design Procedure Form: Extended Detention Basin (EDB)

UD-BMP (Version 3.07, March 2018)



**Designer:** Marc A. Whorton, P.E.
**Company:** Classic Consulting
**Date:** May 1, 2026
**Project:** Sterling Ranch East Filing No. 6 - Final Plat
**Location:** Easterly Forebay

Provide design for other forebays

Now provided

1. Basin Storage Volume

A) Effective Imperviousness of Tributary Area, $I_a$ — $I_a$ = 51.1 %

B) Tributary Area's Imperviousness Ratio ($i = I_a / 100$) — i = 0.511

C) Contributing Watershed Area — Area = 33.400 ac

D) For Watersheds Outside of the Denver Region, Depth of Average Runoff Producing Storm — $d_6$ = 0.42 in

E) Design Concept (Select EURV when also designing for flood control)
Choose One
- ○ Water Quality Capture Volume (WQCV)
- ◉ Excess Urban Runoff Volume (EURV)

F) Design Volume (WQCV) Based on 40-hour Drain Time
($V_{DESIGN} = (1.0 * (0.91 * i^3 - 1.19 * i^2 + 0.78 * i) / 12 * Area$) — $V_{DESIGN}$ = ac-ft

G) For Watersheds Outside of the Denver Region, Water Quality Capture Volume (WQCV) Design Volume
($V_{WQCV\ OTHER} = (d_6 * (V_{DESIGN}/0.43))$) — $V_{DESIGN\ OTHER}$ = 0.569 ac-ft

H) User Input of Water Quality Capture Volume (WQCV) Design Volume (Only if a different WQCV Design Volume is desired) — $V_{DESIGN\ USER}$ = ac-ft

I) NRCS Hydrologic Soil Groups of Tributary Watershed
- i) Percentage of Watershed consisting of Type A Soils — $HSG_A$ = 50 %
- ii) Percentage of Watershed consisting of Type B Soils — $HSG_B$ = 50 %
- iii) Percentage of Watershed consisting of Type C/D Soils — $HSG_{C/D}$ = 0 %

J) Excess Urban Runoff Volume (EURV) Design Volume
For HSG A: $EURV_A = 1.68 * i^{1.28}$
For HSG B: $EURV_B = 1.36 * i^{1.08}$
For HSG C/D: $EURV_{C/D} = 1.20 * i^{1.08}$
— $EURV_{DESIGN}$ = 1.907 ac-f t

K) User Input of Excess Urban Runoff Volume (EURV) Design Volume (Only if a different EURV Design Volume is desired) — $EURV_{DESIGN\ USER}$ = ac-f t

2. Basin Shape: Length to Width Ratio
(A basin length to width ratio of at least 2:1 will improve TSS reduction.) — L : W = 2.0 : 1

3. Basin Side Slopes

A) Basin Maximum Side Slopes
(Horizontal distance per unit vertical, 4:1 or flatter preferred) — Z = 4.00 ft / ft

4. Inlet

A) Describe means of providing energy dissipation at concentrated inflow locations:

5. Forebay

A) Minimum Forebay Volume
($V_{FMIN}$ = 3% of the WQCV) — $V_{FMIN}$ = 0.017 ac-ft

B) Actual Forebay Volume — $V_F$ = 0.017 ac-ft

C) Forebay Depth
($D_F$ = 18 inch maximum) — $D_F$ = 18.0 in

D) Forebay Discharge

i) Undetained 100-year Peak Discharge — $Q_{100}$ = 90.00 cfs

ii) Forebay Discharge Design Flow
($Q_F = 0.02 * Q_{100}$) — $Q_F$ = 1.80 cfs

E) Forebay Discharge Design
Choose One
- ○ Berm With Pipe
- ◉ Wall with Rect. Notch
- ○ Wall with V-Notch Weir

Flow too small for berm w/ pipe

F) Discharge Pipe Size (minimum 8-inches) — Calculated $D_P$ = in

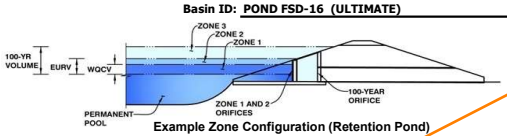
G) Rectangular Notch Width — Calculated $W_N$ = 7.1 in

# DETENTION BASIN STAGE-STORAGE TABLE BUILDER

*MHFD-Detention, Version 4.06 (July 2022)*

**Project:** STERLING RANCH EAST FILING NO. 6 - FINAL PLAT

**Basin ID:** POND FSD-16 (ULTIMATE)




**Example Zone Configuration (Retention Pond)**

WQ map states 212.7 ac are trib to FSD-16. Please revise calcs or map.

Total is 211.50 corrected on SWQ Map

## Watershed Information

| | | |
|---|---|---|
| Selected BMP Type = | EDB | |
| Watershed Area = | 211.50 | acres |
| Watershed Length = | 4,000 | ft |
| Watershed Length to Centroid = | 2,000 | ft |
| Watershed Slope = | 0.040 | ft/ft |
| Watershed Imperviousness = | 49.10% | percent |
| Percentage Hydrologic Soil Group A = | 75.0% | percent |
| Percentage Hydrologic Soil Group B = | 25.0% | percent |
| Percentage Hydrologic Soil Groups C/D = | 0.0% | percent |
| Target WQCV Drain Time = | 40.0 | hours |
| Location for 1-hr Rainfall Depths = | User Input | |

After providing required inputs above including 1-hour rainfall depths, click 'Run CUHP' to generate runoff hydrographs using the embedded Colorado Urban Hydrograph Procedure.

| | | | Optional User Overrides | |
|---|---|---|---|---|
| Water Quality Capture Volume (WQCV) = | 3.592 | acre-feet | | acre-feet |
| Excess Urban Runoff Volume (EURV) = | 11.706 | acre-feet | | acre-feet |
| 2-yr Runoff Volume (P1 = 1.19 in.) = | 9.253 | acre-feet | 1.19 | inches |
| 5-yr Runoff Volume (P1 = 1.5 in.) = | 12.236 | acre-feet | 1.50 | inches |
| 10-yr Runoff Volume (P1 = 1.75 in.) = | 15.137 | acre-feet | 1.75 | inches |
| 25-yr Runoff Volume (P1 = 2 in.) = | 20.045 | acre-feet | 2.00 | inches |
| 50-yr Runoff Volume (P1 = 2.25 in.) = | 23.974 | acre-feet | 2.25 | inches |
| 100-yr Runoff Volume (P1 = 2.52 in.) = | 29.280 | acre-feet | 2.52 | inches |
| 500-yr Runoff Volume (P1 = 3 in.) = | 37.677 | acre-feet | 3.00 | inches |
| Approximate 2-yr Detention Volume = | 7.828 | acre-feet | | |
| Approximate 5-yr Detention Volume = | 10.426 | acre-feet | | |
| Approximate 10-yr Detention Volume = | 13.041 | acre-feet | | |
| Approximate 25-yr Detention Volume = | 15.483 | acre-feet | | |
| Approximate 50-yr Detention Volume = | 17.000 | acre-feet | | |
| Approximate 100-yr Detention Volume = | 19.152 | acre-feet | | |

## Define Zones and Basin Geometry

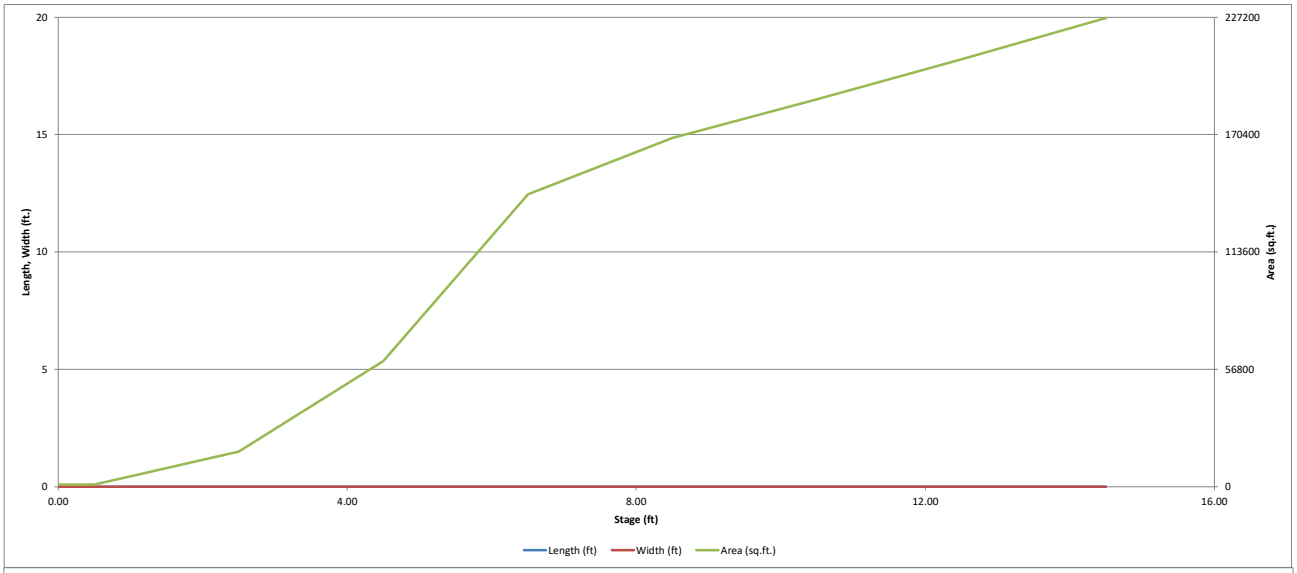
| | | |
|---|---|---|
| Zone 1 Volume (WQCV) = | 3.592 | acre-feet |
| Zone 2 Volume (EURV - Zone 1) = | 8.114 | acre-feet |
| Zone 3 Volume (100-year - Zones 1 & 2) = | 7.446 | acre-feet |
| Total Detention Basin Volume = | 19.152 | acre-feet |
| Initial Surcharge Volume (ISV) = | user | $ft^3$ |
| Initial Surcharge Depth (ISD) = | user | ft |
| Total Available Detention Depth ($H_{total}$) = | user | ft |
| Depth of Trickle Channel ($H_{TC}$) = | user | ft |
| Slope of Trickle Channel ($S_{TC}$) = | user | ft/ft |
| Slopes of Main Basin Sides ($S_{main}$) = | user | H:V |
| Basin Length-to-Width Ratio ($R_{L/W}$) = | user | |
| Initial Surcharge Area ($A_{ISV}$) = | user | $ft^2$ |
| Surcharge Volume Length ($L_{ISV}$) = | user | ft |
| Surcharge Volume Width ($W_{ISV}$) = | user | ft |
| Depth of Basin Floor ($H_{FLOOR}$) = | user | ft |
| Length of Basin Floor ($L_{FLOOR}$) = | user | ft |
| Width of Basin Floor ($W_{FLOOR}$) = | user | ft |
| Area of Basin Floor ($A_{FLOOR}$) = | user | $ft^2$ |
| Volume of Basin Floor ($V_{FLOOR}$) = | user | $ft^3$ |
| Depth of Main Basin ($H_{MAIN}$) = | user | ft |
| Length of Main Basin ($L_{MAIN}$) = | user | ft |
| Width of Main Basin ($W_{MAIN}$) = | user | ft |
| Area of Main Basin ($A_{MAIN}$) = | user | $ft^2$ |
| Volume of Main Basin ($V_{MAIN}$) = | user | $ft^3$ |
| Calculated Total Basin Volume ($V_{total}$) = | **user** | acre-feet |

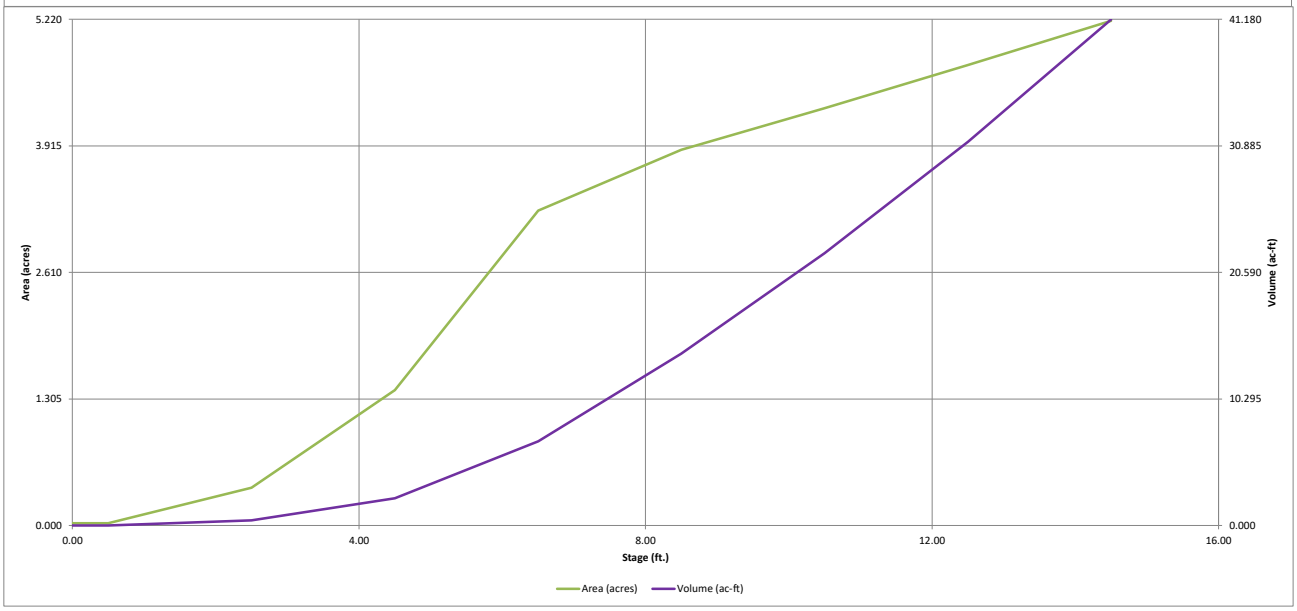
Depth Increment = ft

| Stage - Storage Description | Stage (ft) | Optional Override Stage (ft) | Length | Width | Area | Optional Override Area | Area (acre) | Volume ($ft^3$) | Volume (ac-ft) |
|---|---|---|---|---|---|---|---|---|---|
| **Top of Micropool** | -- | 0.00 | | | | | 0.024 | | |
| **7092** | -- | 0.50 | | | | | 0.024 | 514 | 0.012 |
| **7094** | -- | 2.50 | | | | | 0.390 | 18,550 | 0.426 |
| **7096** | -- | 4.50 | | | | | 1.398 | 96,473 | 2.215 |
| **7098** | -- | 6.50 | | | | | 3.249 | 298,894 | 6.862 |
| **7100** | -- | 8.50 | -- | -- | -- | 168,799 | 3.875 | 609,201 | 13.985 |
| **7102** | -- | 10.50 | -- | -- | -- | 187,503 | 4.304 | 965,503 | 22.165 |
| **7104** | -- | 12.50 | -- | -- | -- | 206,914 | 4.750 | 1,359,920 | 31.219 |
| **7106** | -- | 14.50 | -- | -- | -- | 226,802 | 5.207 | 1,793,636 | 41.176 |

# DETENTION BASIN STAGE-STORAGE TABLE BUILDER

*MHFD-Detention, Version 4.06 (July 2022)*



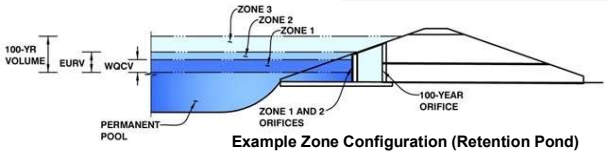



# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.06 (July 2022)*

**Project:** **STERLING RANCH EAST FILING NO. 6 - FINAL PLAT**

**Basin ID:** **POND FSD-16 (ULTIMATE)**




**Example Zone Configuration (Retention Pond)**

| | Estimated Stage (ft) | Estimated Volume (ac-ft) | Outlet Type |
|---|---|---|---|
| Zone 1 (WQCV) | 5.29 | 3.592 | Orifice Plate |
| Zone 2 (EURV) | 7.90 | 8.114 | Orifice Plate |
| Zone 3 (100-year) | 9.79 | 7.446 | Weir&Pipe (Restrict) |
| Total (all zones) | | 19.152 | |

User Input: Orifice at Underdrain Outlet (typically used to drain WQCV in a Filtration BMP)

| | | | | | |
|---|---|---|---|---|---|
| Underdrain Orifice Invert Depth = | N/A | ft (distance below the filtration media surface) | Underdrain Orifice Area = | N/A | ft² |
| Underdrain Orifice Diameter = | N/A | inches | Underdrain Orifice Centroid = | N/A | feet |

Calculated Parameters for Underdrain

User Input: Orifice Plate with one or more orifices or Elliptical Slot Weir (typically used to drain WQCV and/or EURV in a sedimentation BMP)

| | | | | | |
|---|---|---|---|---|---|
| Centroid of Lowest Orifice = | 0.00 ✓ | ft (relative to basin bottom at Stage = 0 ft) | WQ Orifice Area per Row = | N/A | ft² |
| Depth at top of Zone using Orifice Plate = | 8.50 ✓ | ft (relative to basin bottom at | ical Half-Width = | N/A | feet |
| Orifice Plate: Orifice Vertical Spacing = | 20.40 ✓ | inches | al Slot Centroi | | |
| Orifice Plate: Orifice Area per Row = | N/A | sq. inches | otical Slot Are | | |

Calculated Parameters for Plate

Spacing does not match with CD's. Please verify correct spacing and revise as needed

Matches ultimate phase detail on orifice plate detail. Revise plan view outlet structure note.

User Input: Stage and Total Area of Each Orifice Row (numbered from lowest to highest)

| | Row 1 (required) | Row 2 (optional) | Row 3 (optiona | | | Row 6 (optio | | |
|---|---|---|---|---|---|---|---|---|
| Stage of Orifice Centroid (ft) | 0.00 | 1.70 | 3.40 | | | | | |
| Orifice Area (sq. inches) | 7.00 | 9.00 | 16.00 | | | | | |

Spacing does match CDs

| | Row 9 (optional) | Row 10 (optional) | Row 11 (optional) | Row 12 (optional) | Row 13 (optional) | Row 14 (optional) | Ro | nal) |
|---|---|---|---|---|---|---|---|---|
| Stage of Orifice Centroid (ft) | | | | | | | | |
| Orifice Area (sq. inches) | | | | | | | | |

Revised note on CDs

User Input: Vertical Orifice (Circular or Rectangular)

| | Not Selected | Not Selected | | | Not Selected | Not Selected | |
|---|---|---|---|---|---|---|---|
| Invert of Vertical Orifice = | N/A | N/A | ft (relative to basin bottom at Stage = 0 ft) | Vertical Orifice Area = | N/A | N/A | ft² |
| Depth at top of Zone using Vertical Orifice = | N/A | N/A | ft (relative to basin bottom at Stage = 0 ft) | Vertical Orifice Centroid = | N/A | N/A | feet |
| Vertical Orifice Diameter = | N/A | N/A | inches | | | | |

Calculated Parameters for Vertical Orifice

User Input: Overflow Weir (Dropbox with Flat or Sloped Grate and Outlet Pipe OR Rectangular/Trapezoidal Weir and No Outlet Pipe)

| | Zone 3 Weir | Not Selected | | | Zone 3 Weir | Not Selected | |
|---|---|---|---|---|---|---|---|
| Overflow Weir Front Edge Height, Ho = | 8.50 ✓ | N/A | ft (relative to basin bottom at Stage = 0 ft) | Height of Grate Upper Edge, $H_t$ = | 8.50 | N/A | feet |
| Overflow Weir Front Edge Length = | 20.00 ✓ | N/A | feet | Overflow Weir Slope Length = | 4.00 | N/A | feet |
| Overflow Weir Grate Slope = | 0.00 ✓ | N/A | H:V | Grate Open Area / 100-yr Orifice Area = | 7.65 | N/A | |
| Horiz. Length of Weir Sides = | 4.00 ✓ | N/A | feet | Overflow Grate Open Area w/o Debris = | 55.68 | N/A | ft² |
| Overflow Grate Type = | Type C Grate | N/A | | Overflow Grate Open Area w/ Debris = | 27.84 | N/A | ft² |
| Debris Clogging % = | 50% | N/A | % | | | | |

Calculated Parameters for Overflow Weir

User Input: Outlet Pipe w/ Flow Restriction Plate (Circular Orifice, Restrictor Plate, or Rectangular Orifice)

| | Zone 3 Restrictor | Not Selected | | | Zone 3 Restrictor | Not Selected | |
|---|---|---|---|---|---|---|---|
| Depth to Invert of Outlet Pipe = | 2.50 ✓ | N/A | ft (distance below basin bottom at Stage = 0 ft) | Outlet Orifice Area = | 7.28 | N/A | ft² |
| Outlet Pipe Diameter = | 48.00 ✓ | N/A | inches | Outlet Orifice Centroid = | 1.28 | N/A | feet |
| Restrictor Plate Height Above Pipe Invert = | 27.00 ✓ | | inches | Half-Central Angle of Restrictor Plate on Pipe = | 1.70 | N/A | radians |

Calculated Parameters for Outlet Pipe w/ Flow Restriction Plate

User Input: Emergency Spillway (Rectangular or Trapezoidal)

| | | | | |
|---|---|---|---|---|
| Spillway Invert Stage= | 12.50 ✓ | ft (relative to basin bottom at Stage = 0 ft) | Spillway Design Flow Depth= | 1.00 feet |
| Spillway Crest Length = | 170.00 ✓ | feet | Stage at Top of Freeboard = | 14.50 feet |
| Spillway End Slopes = | 6.00 ✓ | H:V | Basin Area at Top of Freeboard = | 5.21 acres |
| Freeboard above Max Water Surface = | 1.00 | feet | Basin Volume at Top of Freeboard = | 41.18 acre-ft |

Calculated Parameters for Spillway

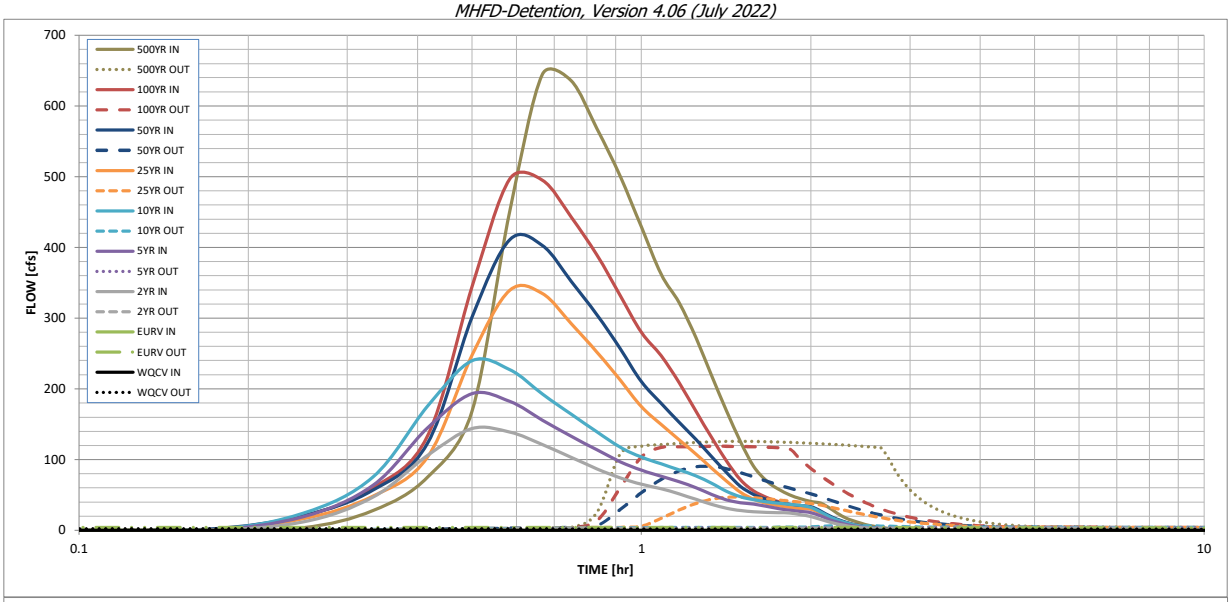
Routed Hydrograph Results

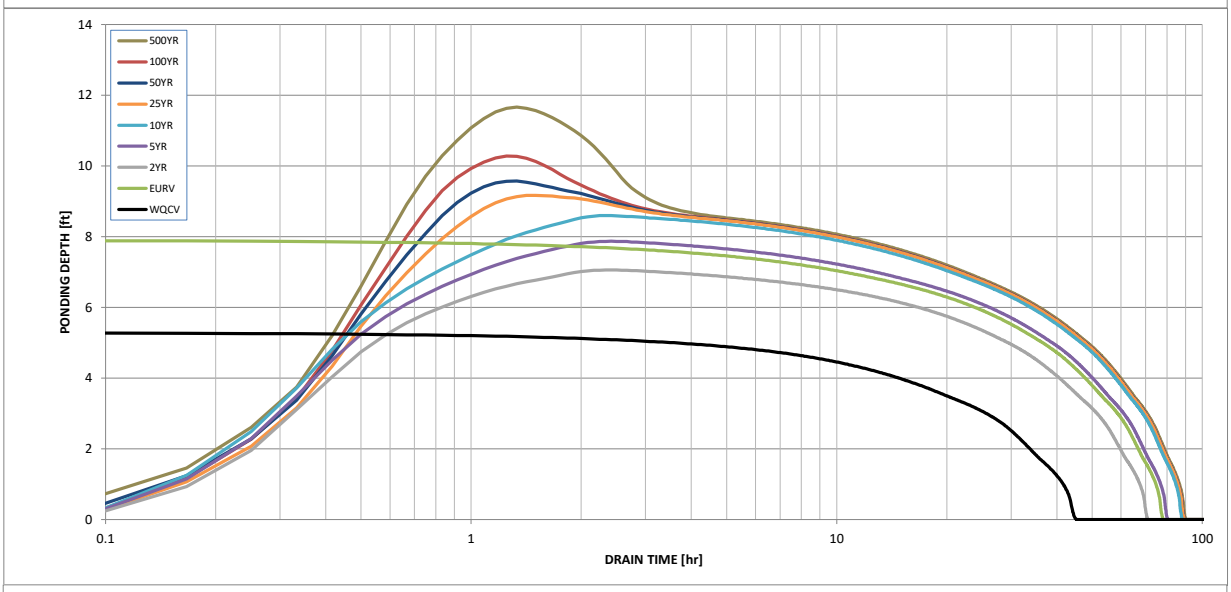
*The user can override the default CUHP hydrographs and runoff volumes by entering new values in the Inflow Hydrographs table (Columns W through AF).*

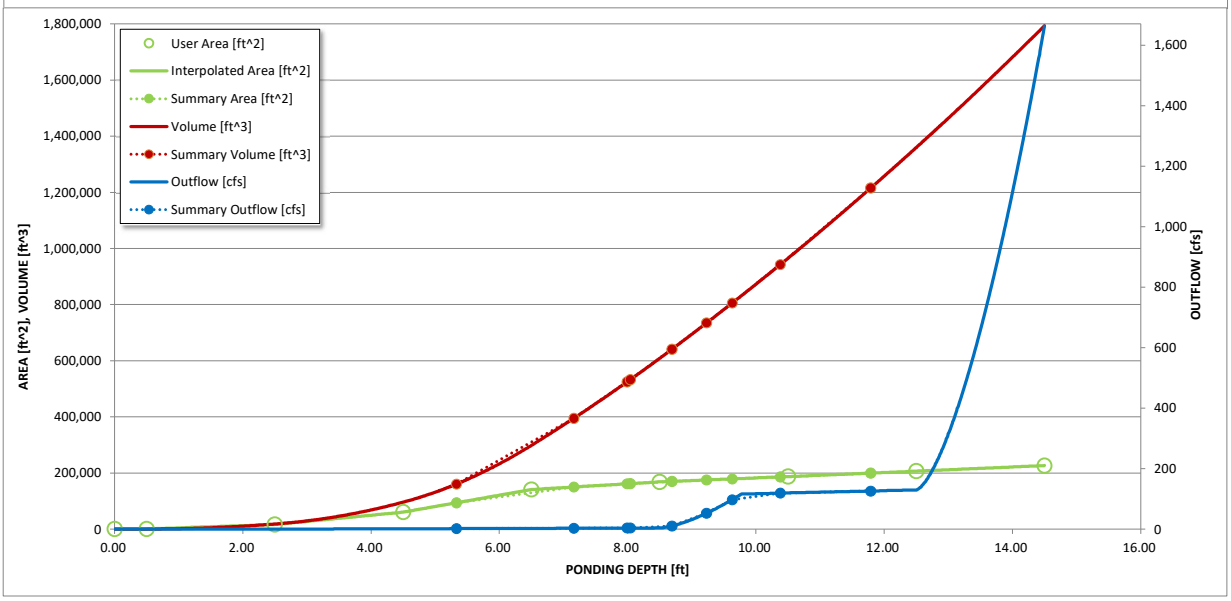
| Design Storm Return Period = | WQCV | EURV | 2 Year | 5 Year | 10 Year | 25 Year | 50 Year | 100 Year | 500 Year |
|---|---|---|---|---|---|---|---|---|---|
| One-Hour Rainfall Depth (in) = | N/A | N/A | 1.19 | 1.50 | 1.75 | 2.00 | 2.25 | 2.52 | 3.00 |
| CUHP Runoff Volume (acre-ft) = | 3.592 | 11.706 | 9.253 | 12.236 | 15.137 | 20.045 | 23.974 | 29.280 | 37.677 |
| Inflow Hydrograph Volume (acre-ft) = | N/A | N/A | 9.253 | 12.236 | 15.137 | 20.045 | 23.974 | 29.280 | 37.677 |
| CUHP Predevelopment Peak Q (cfs) = | N/A | N/A | 2.5 | 4.3 | 22.1 | 90.6 | 133.2 | 193.1 | 288.1 |
| OPTIONAL Override Predevelopment Peak Q (cfs) = | N/A | N/A | | | | | | | |
| Predevelopment Unit Peak Flow, q (cfs/acre) = | N/A | N/A | 0.01 | 0.02 | 0.10 | 0.43 | 0.63 | 0.91 | 1.36 |
| Peak Inflow Q (cfs) = | N/A | N/A | 143.7 | 193.1 | 239.7 | 339.3 | 410.9 | 496.7 | 644.7 |
| Peak Outflow Q (cfs) = | 2.1 | 4.0 | 3.4 | 4.0 | 6.7 | 46.9 | 90.4 | 118.8 | 125.8 |
| Ratio Peak Outflow to Predevelopment Q = | N/A | N/A | N/A | 0.9 | 0.3 | 0.5 | 0.7 | 0.6 | 0.4 |
| Structure Controlling Flow = | Plate | Plate | Plate | Plate | Overflow Weir 1 | Overflow Weir 1 | Overflow Weir 1 | Outlet Plate 1 | Outlet Plate 1 |
| Max Velocity through Grate 1 (fps) = | N/A | N/A | N/A | N/A | 0.0 | 0.8 | 1.5 | 2.0 | 2.2 |
| Max Velocity through Grate 2 (fps) = | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Time to Drain 97% of Inflow Volume (hours) = | 39 | 65 | 59 | 67 | 73 | 71 | 69 | 67 | 64 |
| Time to Drain 99% of Inflow Volume (hours) = | **42** | 71 | 65 | 74 | 80 | 79 | 78 | 77 | 76 |
| Maximum Ponding Depth (ft) = | 5.29 | 7.90 | 7.06 | 7.87 | 8.59 | 9.17 | 9.57 | 10.28 | 11.66 |
| Area at Maximum Ponding Depth (acres) = | 2.13 | 3.69 | 3.42 | 3.67 | 3.89 | 4.02 | 4.10 | 4.26 | 4.56 |
| Maximum Volume Stored (acre-ft) = | 3.608 | 11.717 | 8.696 | 11.569 | 14.335 | 16.590 | 18.214 | 21.181 | 27.308 |

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.06 (July 2022)*




| S-A-V-D Chart Axis Override | X-axis | Left Y-Axis | Right Y-Axis |
|---|---|---|---|
| minimum bound | | | |
| maximum bound | | | |

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*Outflow Hydrograph Workbook Filename:*

Inflow Hydrographs

The user can override the calculated inflow hydrographs from this workbook with inflow hydrographs developed in a separate program.

| | SOURCE | CUHP | CUHP | CUHP | CUHP | CUHP | CUHP | CUHP | CUHP | CUHP |
|---|---|---|---|---|---|---|---|---|---|---|
| Time Interval | TIME | WQCV [cfs] | EURV [cfs] | 2 Year [cfs] | 5 Year [cfs] | 10 Year [cfs] | 25 Year [cfs] | 50 Year [cfs] | 100 Year [cfs] | 500 Year [cfs] |
| 5.00 min | 0:00:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0:05:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 0:10:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.34 | 0.13 | 3.39 |
| | 0:15:00 | 0.00 | 0.00 | 11.65 | 19.15 | 23.83 | 16.06 | 20.69 | 19.72 | 27.90 |
| | 0:20:00 | 0.00 | 0.00 | 46.85 | 63.75 | 75.65 | 48.28 | 56.84 | 60.25 | 75.15 |
| | 0:25:00 | 0.00 | 0.00 | 106.07 | 144.99 | 175.45 | 103.46 | 122.86 | 133.31 | 168.33 |
| | 0:30:00 | 0.00 | 0.00 | 143.73 | 193.12 | 239.69 | 247.59 | 301.25 | 344.55 | 451.33 |
| | 0:35:00 | 0.00 | 0.00 | 138.94 | 182.21 | 227.19 | 339.27 | 410.94 | 496.71 | 644.73 |
| | 0:40:00 | 0.00 | 0.00 | 121.06 | 155.82 | 192.62 | 334.63 | 402.74 | 495.18 | 635.82 |
| | 0:45:00 | 0.00 | 0.00 | 103.22 | 132.94 | 164.08 | 292.18 | 351.96 | 442.95 | 568.16 |
| | 0:50:00 | 0.00 | 0.00 | 86.94 | 113.98 | 139.19 | 252.14 | 305.11 | 389.41 | 500.94 |
| | 0:55:00 | 0.00 | 0.00 | 74.00 | 96.99 | 117.48 | 212.59 | 256.95 | 332.11 | 428.69 |
| | 1:00:00 | 0.00 | 0.00 | 65.12 | 84.92 | 103.42 | 174.63 | 209.95 | 279.70 | 362.27 |
| | 1:05:00 | 0.00 | 0.00 | 58.95 | 76.44 | 94.01 | 149.83 | 179.66 | 247.17 | 322.10 |
| | 1:10:00 | 0.00 | 0.00 | 51.60 | 68.88 | 85.51 | 128.14 | 153.08 | 208.94 | 272.24 |
| | 1:15:00 | 0.00 | 0.00 | 43.69 | 60.14 | 76.99 | 107.82 | 128.33 | 168.10 | 218.36 |
| | 1:20:00 | 0.00 | 0.00 | 36.72 | 50.84 | 66.61 | 87.96 | 103.98 | 131.06 | 169.24 |
| | 1:25:00 | 0.00 | 0.00 | 31.17 | 43.17 | 55.03 | 69.86 | 81.75 | 98.12 | 125.49 |
| | 1:30:00 | 0.00 | 0.00 | 27.83 | 39.03 | 47.42 | 53.63 | 62.17 | 71.28 | 90.42 |
| | 1:35:00 | 0.00 | 0.00 | 26.22 | 36.96 | 43.23 | 43.84 | 50.55 | 55.51 | 70.02 |
| | 1:40:00 | 0.00 | 0.00 | 25.38 | 33.94 | 40.36 | 38.19 | 43.73 | 46.64 | 58.28 |
| | 1:45:00 | 0.00 | 0.00 | 24.88 | 30.76 | 38.27 | 34.76 | 39.53 | 40.62 | 50.18 |
| | 1:50:00 | 0.00 | 0.00 | 24.50 | 28.47 | 36.84 | 32.36 | 36.64 | 36.64 | 44.74 |
| | 1:55:00 | 0.00 | 0.00 | 22.27 | 26.79 | 35.21 | 30.84 | 34.83 | 33.88 | 40.92 |
| | 2:00:00 | 0.00 | 0.00 | 19.45 | 24.99 | 32.40 | 29.75 | 33.54 | 31.91 | 38.24 |
| | 2:05:00 | 0.00 | 0.00 | 15.47 | 20.13 | 25.81 | 24.31 | 27.35 | 25.70 | 30.64 |
| | 2:10:00 | 0.00 | 0.00 | 11.39 | 14.65 | 18.68 | 17.60 | 19.75 | 18.57 | 22.06 |
| | 2:15:00 | 0.00 | 0.00 | 8.35 | 10.68 | 13.53 | 12.76 | 14.30 | 13.48 | 15.98 |
| | 2:20:00 | 0.00 | 0.00 | 6.06 | 7.72 | 9.79 | 9.27 | 10.38 | 9.86 | 11.67 |
| | 2:25:00 | 0.00 | 0.00 | 4.35 | 5.42 | 6.97 | 6.58 | 7.35 | 7.01 | 8.29 |
| | 2:30:00 | 0.00 | 0.00 | 3.03 | 3.71 | 4.88 | 4.59 | 5.12 | 4.88 | 5.75 |
| | 2:35:00 | 0.00 | 0.00 | 2.06 | 2.56 | 3.40 | 3.25 | 3.62 | 3.45 | 4.07 |
| | 2:40:00 | 0.00 | 0.00 | 1.31 | 1.70 | 2.22 | 2.17 | 2.41 | 2.29 | 2.69 |
| | 2:45:00 | 0.00 | 0.00 | 0.74 | 1.03 | 1.29 | 1.30 | 1.44 | 1.36 | 1.59 |
| | 2:50:00 | 0.00 | 0.00 | 0.35 | 0.52 | 0.62 | 0.65 | 0.72 | 0.67 | 0.78 |
| | 2:55:00 | 0.00 | 0.00 | 0.13 | 0.18 | 0.20 | 0.22 | 0.24 | 0.22 | 0.25 |
| | 3:00:00 | 0.00 | 0.00 | 0.02 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:05:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:10:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:15:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:20:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:25:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:30:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:35:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:40:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:45:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:50:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 3:55:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:00:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:05:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:10:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:15:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:20:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:25:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:30:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:35:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:40:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:45:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:50:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 4:55:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:00:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:05:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:10:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:15:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:20:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:25:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:30:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:35:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:40:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:45:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:50:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 5:55:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | 6:00:00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

# DETENTION BASIN OUTLET STRUCTURE DESIGN

*MHFD-Detention, Version 4.06 (July 2022)*

Summary Stage-Area-Volume-Discharge Relationships

The user can create a summary S-A-V-D by entering the desired stage increments and the remainder of the table will populate automatically.
The user should graphically compare the summary S-A-V-D table to the full S-A-V-D table in the chart to confirm it captures all key transition points.

| Stage - Storage Description | Stage [ft] | Area [ft$^2$] | Area [acres] | Volume [ft$^3$] | Volume [ac-ft] | Total Outflow [cfs] |
|---|---|---|---|---|---|---|
| WQCV | 5.33 | 94,360 | 2.166 | 160,911 | 3.694 | 2.11 |
| 2-yr. | 7.16 | 150,514 | 3.455 | 395,261 | 9.074 | 3.46 |
| 5-yr. | 7.99 | 161,840 | 3.715 | 524,888 | 12.050 | 4.06 |
| EURV | 8.04 | 162,522 | 3.731 | 532,997 | 12.236 | 4.09 |
| 10-yr. | 8.69 | 170,576 | 3.916 | 641,442 | 14.725 | 10.87 |
| 25-yr. | 9.23 | 175,626 | 4.032 | 734,916 | 16.871 | 52.98 |
| 50-yr. | 9.63 | 179,367 | 4.118 | 805,915 | 18.501 | 97.83 |
| 100-yr. | 10.38 | 186,381 | 4.279 | 943,070 | 21.650 | 119.37 |
| 500-yr. | 11.79 | 200,023 | 4.592 | 1,215,457 | 27.903 | 126.42 |

For best results, include the stages of all grade slope changes (e.g. ISV and Floor) from the S-A-V table on Sheet 'Basin'.

Also include the inverts of all outlets (e.g. vertical orifice, overflow grate, and spillway, where applicable).

RETREAT AT TIMBERRIDGE FILING NO. 1 (SF199)

RETREAT AT TIMBERRIDGE FILING NO. 2 (SF212)

TRACT D
RETREAT AT TIMBERRIDGE FILING NO. 1 - POND 2

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

ANTICIPATED FUTURE BASIN TRIBUTARY TO POND FSD-16

REFERENCE "STERLING RANCH EAST PRELIM. PLAN FILINGS 1-4 - PRELIM. DRAINAGE REPORT" BASIN P1-F (SF224)

FUTURE STERLING RANCH ROAD (80' PUBLIC ROW)

P1-F1 60.6

P INT 25.8

F4-2 2.3

F4-1 7.8

PLANNED STERLING RANCH EAST FILING NO. 4 (SF224) UNPLATTED

F4-5 6.9

PLANNED STERLING RANCH EAST FILING NO. 4 (SF224) UNPLATTED

RAMS CREEK

F4-3 9.8

PLANNED STERLING RANCH EAST FILING NO. 4 (SF224) UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

P1-F2 11.5

F4-5 6.9

PLANNED STERLING RANCH EAST FILING NO. 4 (SF224) UNPLATTED

F4-6 13.3

F4-4 1.7

STERLING RANCH ROAD

STERLING RANCH ROAD (80' PUBLIC ROW)

OS-2 2.0

F4-7 7.8

PLANNED STERLING RANCH EAST FILING NO. 4 (SF224) UNPLATTED

TRACT E

LOT 76 LOT 75 LOT 74 LOT 53 LOT 54 LOT 55 LOT 56 LOT 57 LOT 58 LOT 59 LOT 60 LOT 61 LOT 62 LOT 63 LOT 64 LOT 65 LOT 66 LOT 67 LOT 68 LOT 69 LOT 70 LOT 71 LOT 72 LOT 73 LOT 77 LOT 78 LOT 79 LOT 80 LOT 81 LOT 82 LOT 83 LOT 84 LOT 85 LOT 86 LOT 87 LOT 88 LOT 89 LOT 90 LOT 91 LOT 92 LOT 93 LOT 94 LOT 95 LOT 96 LOT 97 LOT 98 LOT 99 LOT 100 LOT 101 LOT 102 LOT 103 LOT 104 LOT 105 LOT 106 LOT 107 LOT 108 LOT 109 LOT 110 LOT 111 LOT 112 LOT 113 LOT 114 LOT 115 LOT 116 LOT 117 LOT 118 LOT 119 LOT 120 LOT 121 LOT 122 LOT 123 LOT 124 LOT 125 LOT 126 LOT 127 LOT 128 LOT 129 LOT 130 LOT 131 LOT 132 LOT 133 LOT 134 LOT 135 LOT 136 LOT 137 LOT 138 LOT 139 LOT 140 LOT 141 LOT 142 LOT 143 LOT 144 LOT 145 LOT 146 LOT 147 LOT 148 LOT 149 LOT 150 LOT 151 LOT 152 LOT 153 LOT 154 LOT 155 LOT 156 LOT 157 LOT 158 LOT 159 LOT 160 LOT 161 LOT 162 LOT 163 LOT 164 LOT 165 LOT 166 LOT 167 LOT 168 LOT 169 LOT 170 LOT 171 LOT 172 LOT 173 LOT 174 LOT 175 LOT 176 LOT 177 LOT 178 LOT 179 LOT 180 LOT 181 LOT 182 LOT 183 LOT 184 LOT 185 LOT 186 LOT 187 LOT 188 LOT 189 LOT 190 LOT 191 LOT 192 LOT 193 LOT 194 LOT 195 LOT 196 LOT 197 LOT 198 LOT 1 LOT 2 LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 9 LOT 10 LOT 11 LOT 12 LOT 13 LOT 14 LOT 15 LOT 16 LOT 17 LOT 18 LOT 19 LOT 20 LOT 21 LOT 22 LOT 23 LOT 24 LOT 25 LOT 26 LOT 27 LOT 28 LOT 29 LOT 30 LOT 31 LOT 32 LOT 33 LOT 34 LOT 35 LOT 36 LOT 37 LOT 38 LOT 39 LOT 40 LOT 41 LOT 42 LOT 43 LOT 44 LOT 45 LOT 46 LOT 47 LOT 48 LOT 49 LOT 50 LOT 51 LOT 52

MINNEAPOLIS CT.

APPLETON DR.

VANCOUVER STREET

MISSOULA WAY

PARK TRACT G

TRACT D

GREAT FALLS DR.

GRAND FORKS WAY

SOUX FALLS WAY

ROCK SPRINGS CT.

EVANSTON PLACE

RAPID CITY PLACE

TRACT H

TRACT I
FOURSQUARE AT STERLING RANCH EAST FILING NO. 1 (POND FSD-16)

TRACT C

TRACT B

TRACT A

A1 5.7

A2 3.6

A3 1.5

B 4.6

C 1.6

D 8.7

E 2.6

F 2.0

G 2.8

H 2.2

I 2.7

J 4.2

K 1.7

L 2.6

M 0.62

N 0.30

O 6.2

OS-1 2.0

OS-3 3.5

BOULDER CITY DRIVE (60' PUBLIC ROW)

IDAHO FALLS DR. (60' PUBLIC ROW)

ESTES PARK PATH (60' PUBLIC ROW)

PAONIA SPRINGS PLACE (60' PUBLIC ROW)

FOURSQUARE AT STERLING RANCH EAST FILING NO. 1 (SF2236)

RIO RANCHO TRAIL (60' PUBLIC ROW)

MARICOPA CT. (60' PUBLIC ROW)

BRIARGATE PARKWAY (150' PUBLIC ROW)

STERLING RANCH ROAD (80' PUBLIC ROW)

FUTURE BRIARGATE PARKWAY (150' PUBLIC ROW)

VILLAGES AT STERLING RANCH EAST PUD PRELIM. PLAN (PUDSP228)

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FILING 6 BOUNDARY LINE

212.70 AC. (BASINS OS-1 – OS-3, A1 – J, L, N, O, P1-F1, P1-F2 AND P-INT)
AREA TREATED IN PROPOSED PERMANENT POND FSD-16

1.7 AC. (BASIN K)
AREA ROUTED TO AND TREATED IN EXISTING PERMANENT POND FSD-14A

0.62 AC. (BASIN M)
AREA TREATED BY TSB UNTIL FUTURE DOWNSTREAM PERMANENT POND IN PLACE.

# WATER QUALITY TREATMENT PLAN MAP

TSBs cannot provide permanent WQ treatment. Please provide an applicable exclusion for this basin or otherwise treat.

Now requesting 20% exclusion less than 1 ac.

N:\11360\REPORTS\PDR\SWQ Map.dwg, 1/31/2025 12:42:24 PM, [illegible]

**REFERENCE MATERIALS**

# STERLING RANCH MDDP AMENDMENT NO. 2 & PRELIMINARY DRAINAGE REPORT FOR STERLING RANCH EAST PRELIMINARY PLAN NO. 1

Prepared for:
**CLASSIC SRJ LAND, LLC**
2138 FLYING HORSE CLUB DRIVE
COLORADO SPRINGS CO 80921
(719) 592-9333

Prepared by:
**CLASSIC CONSULTING**
619 N. CASCADE AVE SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job No. 1183.22

PCD Project No.
SKP-22-004 / SP-22-004

## STERLING RANCH MDDP AMENDMENT NO. 2 & PRELIM. DRAINAGE REPORT FOR STERLING RANCH EAST PRELIMINARY PLAN NO. 1

**ENGINEER'S STATEMENT:**

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

Marc A. Whorton, Colorado P.E. #37155 — Date: 11/11/2022

**OWNER'S/DEVELOPER'S STATEMENT:**

I, the owner/developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: CLASSIC SRJ LAND, LLC

By: COREN J. MCRELAND

Title: VICE PRESIDENT

Address: 2138 Flying Horse Club Drive

Colorado Springs, CO 80921

**EL PASO COUNTY:**

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

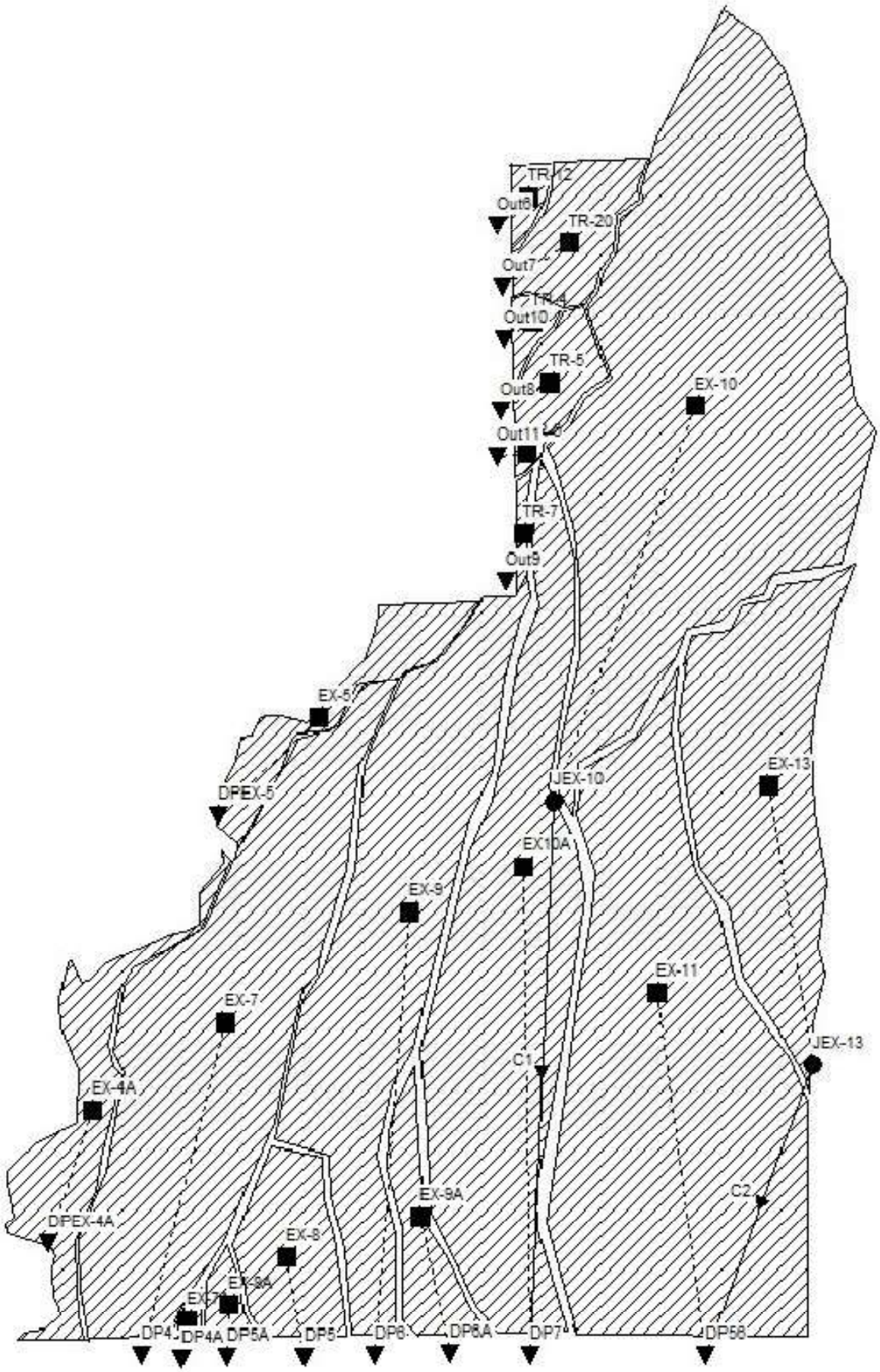
**APPROVED**
**Engineering Department**
*01/19/2023 5:04:07 PM*
*dsdnijkamp*
**EPC Department of Public Works**

*For* County Engineer, / ECM Administrator

Conditions:

Note: This report is acceptable until the version under review with SP-22-004 is approved, which will supersede this version.

# EXISTING CONDITIONS SWMM MODEL MAP



## STERLING RANCH EAST PRELIMINARY PLAN NO. 1
### Pre-Developed Surface Routing

| Design Point (South Bndy.) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|
| 4 | 46 | 105 |
| 4A | 1 | 5 |
| 5 | 5 | 23 |
| 5A | 2 | 9 |
| 6 | 59 | 122 |
| 6A | 7 | 19 |
| 7 | 110 | 249 |
| 56 | 60 | 160 |

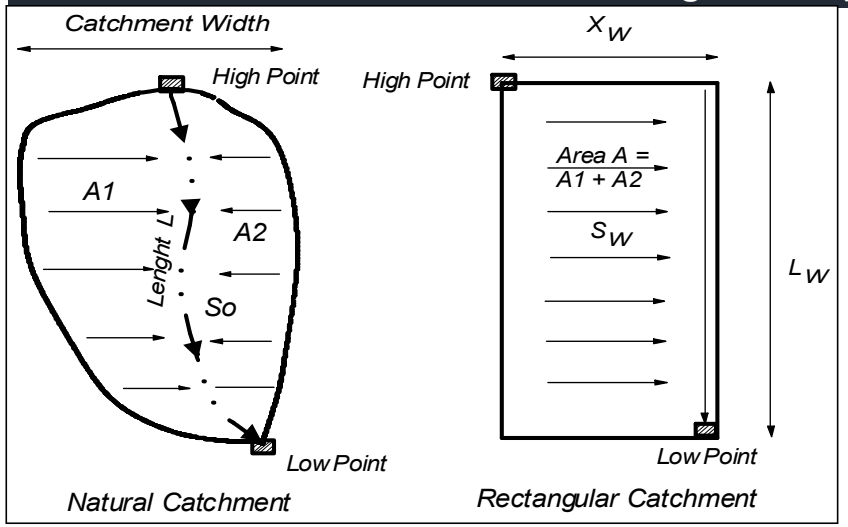
## STERLING RANCH EAST PRELIMINARY PLAN NO. 1
### Pre-Developed Subcatchment Runoff

| Subcatchment | Area (Ac.) | SWMM Imperv. (%) | *SWMM Width (Lw) (ft.) | *SWMM Slope (Sw) (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|---|---|
| EX-10 | 265.9 | 7% | 3365 | 3.41% | 105 | 222 |
| EX10A | 153.5 | 5% | 1857 | 4.05% | 46 | 103 |
| EX-11 + | 214.3 | 4% | 3255 | 3.01% | 54 | 129 |
| EX-13 + | 94.8 | 6% | 1877 | 3.97% | 36 | 85 |
| EX-4A | 44.2 | 8% | 3355 | 1.09% | 19 | 50 |
| EX-5 | 26.2 | 8% | 1959 | 1.65% | 12 | 32 |
| EX-7 | 152.8 | 5% | 2234 | 3.13% | 46 | 105 |
| EX-7A | 2.4 | 2% | 416 | 2.70% | 1 | 5 |
| EX-8 | 32.2 | 2% | 1679 | 1.47% | 5 | 23 |
| EX-8A | 6.6 | 2% | 698 | 1.80% | 2 | 9 |
| EX-9 | 139.3 | 8% | 1837 | 3.19% | 59 | 122 |
| EX-9A | 21.8 | 5% | 786 | 3.01% | 7 | 19 |
| TR-12 + | 4.7 | 5% | 544 | 4.13% | 2 | 9 |
| TR-20 + | 23.2 | 7% | 1388 | 3.21% | 10 | 32 |
| TR-4 + | 4.4 | 5% | 645 | 2.76% | 2 | 9 |
| TR-5 + | 13.7 | 5% | 990 | 2.70% | 5 | 17 |
| TR-6 + | 1.5 | 5% | 519 | 1.55% | 1 | 4 |
| TR-7 + | 2.6 | 5% | 233 | 5.84% | 1 | 5 |

* Reference SWMM Catchment Shape Parameter Finder for calculations

# CATCHMENT SHAPE PARAMETER FINDER

## Convert Natural Catchment to a Rectangular Shape




| | |
|---|---|
| Subcatchment Center | Z=0.5 |
| Side Collector | Z=1 |
| Skewed Location | 0.5<Z<1 |

Dimensionless Variables

$$Y = \frac{L}{L_w}; \qquad X = \frac{A}{L^2}$$

$$Y = (1.5 - Z)(2.286X - 0.286X^2)$$

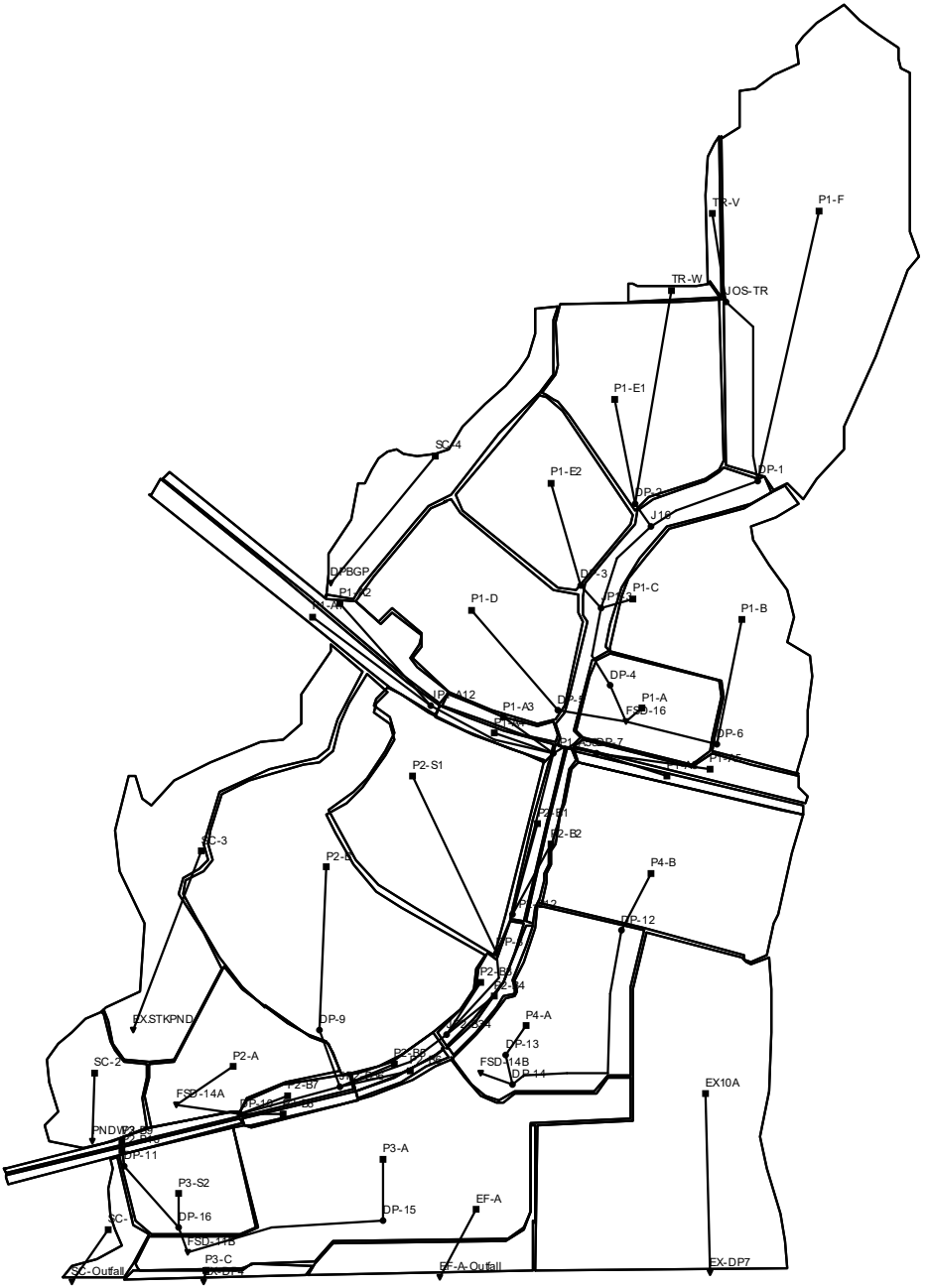
$$\frac{Lw}{L} = (1.5 - Z)[2.286(\frac{A}{L^2}) - 0.286(\frac{A}{L^2})^2]$$

$$S_o/S_w = A/(LL_w) + L_w/L$$

$$X_w = A/L_w$$

| Subarea ID | Area acre | A1 acre | A2 acre | L ft | High Pt Elev. ft | Low Pt Elev. ft | Z=Am/A | X=A/L² | Y=Lw/L | Lw ft | Xw ft | So % | So/Sw | Sw % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-7 | 152.80 | 82.00 | 70.80 | 6,430 | 7160.0 | 6997.0 | 0.54 | 0.16 | 0.35 | 2,234 | 2,980 | 2.53 | 0.81 | 3.13 |
| EX-9 | 139.30 | 65.00 | 74.30 | 7,190 | 7190.0 | 7026.0 | 0.53 | 0.12 | 0.26 | 1,837 | 3,302 | 2.28 | 0.71 | 3.19 |
| EX10A | 153.50 | 75.00 | 78.50 | 8,030 | 7,236 | 7,015 | 0.51 | 0.10 | 0.23 | 1,857 | 3,600 | 2.75 | 0.68 | 4.05 |
| EX10 | 265.90 | 120.00 | 145.90 | 7,280 | 7,380 | 7,148 | 0.55 | 0.22 | 0.46 | 3,365 | 3,442 | 3.19 | 0.94 | 3.41 |
| EX-11 | 214.30 | 100.00 | 114.30 | 6,140 | 7,192 | 7,008 | 0.53 | 0.25 | 0.53 | 3,255 | 2,867 | 3.00 | 1.00 | 3.01 |
| EX-13 | 94.80 | 47.00 | 47.80 | 4,900 | 7,232 | 7,070 | 0.50 | 0.17 | 0.38 | 1,877 | 2,200 | 3.31 | 0.83 | 3.97 |
| | | | | | | | | | | | | | | |
| TR-4 | 4.40 | 2.20 | 2.20 | 640 | 7,270 | 7,244 | 0.50 | 0.47 | 1.01 | 645 | 297 | 4.06 | 1.47 | 2.76 |
| TR-5 | 13.70 | 7.50 | 6.20 | 1,250 | 7,273 | 7,230 | 0.55 | 0.38 | 0.79 | 990 | 603 | 3.44 | 1.27 | 2.70 |
| TR-6 | 1.50 | 0.75 | 0.75 | 250 | 7,238 | 7,228 | 0.50 | 1.05 | 2.08 | 519 | 126 | 4.00 | 2.58 | 1.55 |
| TR-7 | 2.60 | 1.30 | 1.30 | 1,100 | 7,234 | 7,192 | 0.50 | 0.09 | 0.21 | 233 | 487 | 3.82 | 0.65 | 5.84 |
| TR-12 | 4.70 | 2.50 | 2.20 | 800 | 7,300 | 7,262 | 0.53 | 0.32 | 0.68 | 544 | 377 | 4.75 | 1.15 | 4.13 |
| TR-20 | 23.20 | 12.00 | 11.20 | 1,550 | 7,314 | 7,246 | 0.52 | 0.42 | 0.90 | 1,388 | 728 | 4.39 | 1.37 | 3.21 |
| | | | | | | | | | | | | | | |
| EX-4A | 44.20 | 22.10 | 22.10 | 750 | 7,044 | 7,001 | 0.50 | 3.42 | 4.47 | 3,355 | 574 | 5.73 | 5.24 | 1.09 |
| EX-5 | 26.20 | 13.10 | 13.10 | 1,200 | 7,186 | 7,144 | 0.50 | 0.79 | 1.63 | 1,959 | 583 | 3.50 | 2.12 | 1.65 |
| | | | | | | | | | | | | | | |
| EX-7A | 2.40 | 1.20 | 1.20 | 550 | 7,039 | 7,021 | 0.50 | 0.35 | 0.76 | 416 | 251 | 3.27 | 1.21 | 2.70 |
| EX-8A | 6.60 | 3.30 | 3.30 | 900 | 7,045 | 7,025 | 0.50 | 0.35 | 0.78 | 698 | 412 | 2.22 | 1.23 | 1.80 |
| EX-8A | 32.20 | 17.00 | 15.20 | 1,750 | 7,062 | 7,025 | 0.53 | 0.46 | 0.96 | 1,679 | 835 | 2.11 | 1.44 | 1.47 |
| EX-9A | 21.80 | 11.80 | 10.00 | 2,600 | 7,082 | 7,022 | 0.54 | 0.14 | 0.30 | 786 | 1,208 | 2.31 | 0.77 | 3.01 |

DEVELOPED CONDITIONS SWMM MODEL MAP



## STERLING RANCH EAST PRELIMINARY PLAN NO. 1
## Developed Subcatchment Runoff

| Subcatchment | Area (Ac.) | SWWM Imperv. (%) | *SWMM Width (Lw) (ft.) | *SWMM Slope (Sw) (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|---|---|
| EF-A | 8.2 | 15% | 1064 | 1.57% | 7 | 20 |
| EX10A + | 60.4 | 5% | 2452 | 1.79% | 18 | 50 |
| EX-9 + | 6.0 | 5% | 578 | 1.70% | 2 | 8 |
| EX-9A + | 12.7 | 5% | 1080 | 1.94% | 4 | 16 |
| P1-A | 12.7 | 8% | 1276 | 1.29% | 6 | 19 |
| P1-A1 | 5.0 | 45% | 258 | 1.66% | 11 | 21 |
| P1-A2 | 6.4 | 45% | 258 | 0.77% | 12 | 23 |
| P1-A3 | 1.8 | 50% | 196 | 1.17% | 5 | 9 |
| P1-A4 | 2.0 | 50% | 208 | 1.12% | 5 | 10 |
| P1-A5 | 5.7 | 45% | 417 | 1.38% | 13 | 25 |
| P1-A6 | 2.8 | 50% | 205 | 1.75% | 7 | 14 |
| P1-B (Dev.) | 35.5 | 38% | 873 | 1.36% | 55 | 108 |
| P1-B (Un-dev.) | 35.5 | 5% | 873 | 1.36% | 10 | 23 |
| P1-C | 8.9 | 50% | 581 | 3.69% | 23 | 46 |
| P1-D | 31.4 | 38% | 1033 | 1.27% | 53 | 102 |
| P1-E1 | 30.4 | 35% | 1148 | 1.56% | 50 | 97 |
| P1-E2 | 21.8 | 40% | 1048 | 1.23% | 41 | 80 |
| P1-F (Dev.) | 76.7 | 30% | 2322 | 2.18% | 111 | 215 |
| P1-F (Un-dev.) | 76.7 | 5% | 2322 | 2.18% | 22 | 59 |
| P2-A | 24.4 | 10% | 2164 | 2.11% | 15 | 43 |
| P2-B | 57.8 | 38% | 1215 | 1.64% | 88 | 173 |
| P2-B1 | 2.5 | 50% | 201 | 3.37% | 7 | 13 |
| P2-B10 | 1.7 | 50% | 187 | 3.43% | 5 | 10 |
| P2-B2 | 1.9 | 50% | 148 | 3.54% | 5 | 10 |
| P2-B3 | 2.8 | 45% | 245 | 2.15% | 7 | 13 |
| P2-B4 | 1.6 | 50% | 138 | 2.49% | 4 | 8 |
| P2-B5 | 1.9 | 45% | 230 | 1.86% | 5 | 9 |
| P2-B6 | 1.1 | 50% | 141 | 2.28% | 3 | 6 |
| P2-B7 | 2.5 | 45% | 272 | 1.78% | 6 | 12 |
| P2-B8 | 1.2 | 50% | 141 | 2.34% | 3 | 7 |
| P2-B9 | 2.0 | 50% | 226 | 3.27% | 5 | 11 |
| P2-S1 | 35.6 | 40% | 1756 | 1.44% | 68 | 133 |
| P3-A | 52.6 | 40% | 1290 | 1.37% | 85 | 166 |
| P3-C | 1.7 | 11% | 446 | 1.31% | 1 | 5 |
| P3-S2 | 11.9 | 40% | 1103 | 1.27% | 25 | 50 |
| P4-A | 25.8 | 35% | 920 | 1.21% | 41 | 80 |
| P4-B | 37.3 | 35% | 1773 | 1.34% | 63 | 123 |
| SC-1 + | 3.6 | 8% | 306 | 2.20% | 2 | 6 |
| SC-2 + | 10.8 | 8% | 1211 | 2.44% | 6 | 20 |
| SC-3 + | 27.2 | 8% | 616 | 2.68% | 12 | 26 |
| SC-4 + | 16.4 | 8% | 1918 | 1.48% | 8 | 27 |
| TR-V | 2.1 | 19% | 162 | 4.13% | 2 | 6 |
| TR-W | 1.4 | 38% | 90 | 1.30% | 3 | 5 |

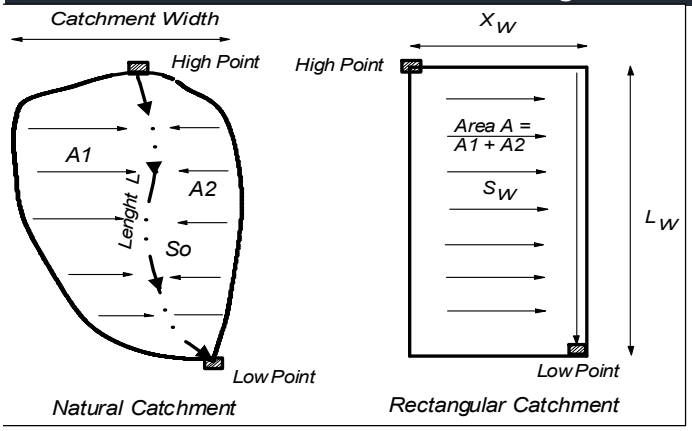
*** Reference SWMM Catchment Shape Parameter Finder for calculations**

**+ Basin not changed from pre-development conditions**

## STERLING RANCH EAST PRELIMINARY PLAN NO. 1
## Developed Surface Routing

| Design Point (On-Site) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|
| DP-1 | 112 | 219 |
| DP-2 | 53 | 103 |
| DP-3 | 41 | 80 |
| DP-4 | 218 | 379 |
| DP-5 | 53 | 102 |
| DP-6 | 55 | 108 |
| DP-7 | 20 | 39 |
| DP-8 | 68 | 133 |
| DP-9 | 88 | 173 |
| DP-10 | 223 | 441 |
| DP-11 | 10 | 21 |
| DP-12 | 63 | 123 |
| DP-13 | 41 | 80 |
| DP-14 | 97 | 189 |
| DP-15 | 85 | 166 |
| DP-16 | 34 | 69 |
| | | |
| Pond FSD-11B | 115 | 227 |
| Pond FSD-14A | 234 | 486 |
| Pond FSD-14B | 97 | 189 |
| Pond FSD-16 (Ultimate) | 323 | 499 |
| Pond FSD-16 (Interim) | 197 | 410 |
| | | |
| Design Point (South Bndy.) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
| 4 | 0.5 | 3.5 |
| 4A | 0.5 | 3.5 |
| 5 | 4 | 10 |
| 5A | 2 | 7 |
| 6 | 2.0 | 48.9 |
| 6A | 4 | 16 |
| 7 | 18 | 50 |

## Convert Natural Catchment to a Rectangular Shape




| | |
|---|---|
| Subcatchment Center | Z=0.5 |
| Side Collector | Z=1 |
| Skewed Location | 0.5<Z<1 |

Dimensionless Variables

$$Y = \frac{L}{L_w}; \qquad X = \frac{A}{L^2}$$

$$Y = (1.5 - Z)(2.286X - 0.286X^2)$$

$$\frac{Lw}{L} = (1.5 - Z)[2.286(\frac{A}{L^2}) - 0.286(\frac{A}{L^2})^2]$$

$$S_o/S_w = A/(LL_w) + L_w/L$$

$$X_w = A/L_w$$

| Subarea ID | Area acre | A1 acre | A2 acre | L ft | High Pt Elev. ft | Low Pt Elev. ft | Z=Am/A | X=A/L² | Y=Lw/L | Lw ft | Xw ft | So % | So/Sw | Sw % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EF-A | 8.20 | 4.10 | 4.10 | 260 | 7050.0 | 7028.0 | 0.50 | 5.28 | 4.09 | 1,064 | 336 | 8.46 | 5.38 | 1.57 |
| P3-C | 1.70 | 0.50 | 1.20 | 260 | 7027.0 | 7019.0 | 0.71 | 1.10 | 1.72 | 446 | 166 | 3.08 | 2.35 | 1.31 |
| | | | | | | | | | | | | | | |
| P1-A | 12.70 | 7.00 | 5.70 | 850 | 7,124 | 7,102 | 0.55 | 0.77 | 1.50 | 1,276 | 433 | 2.59 | 2.01 | 1.29 |
| P1-B | 35.50 | 10.00 | 25.50 | 3,100 | 7,160 | 7,124 | 0.72 | 0.16 | 0.28 | 873 | 1,770 | 1.16 | 0.85 | 1.36 |
| P1-C | 8.90 | 4.50 | 4.40 | 1,700 | 7,158 | 7,122 | 0.51 | 0.13 | 0.30 | 510 | 761 | 2.12 | 0.75 | 2.83 |
| P1-D | 31.40 | 14.00 | 17.40 | 2,800 | 7,136 | 7,106 | 0.55 | 0.17 | 0.37 | 1,033 | 1,324 | 1.07 | 0.84 | 1.27 |
| P1-E1 | 30.40 | 16.00 | 14.40 | 2,500 | 7,188 | 7,152 | 0.53 | 0.21 | 0.46 | 1,148 | 1,154 | 1.44 | 0.92 | 1.56 |
| P1-E2 | 21.80 | 11.00 | 10.80 | 2,000 | 7,158 | 7,134 | 0.50 | 0.24 | 0.52 | 1,048 | 906 | 1.20 | 0.98 | 1.23 |
| P1-F | 76.70 | 35.00 | 41.70 | 3,000 | 7,240 | 7,158 | 0.54 | 0.37 | 0.77 | 2,322 | 1,439 | 2.73 | 1.25 | 2.18 |
| TR-W | 1.40 | 0.70 | 0.70 | 90 | 7,192 | 7,182 | 0.50 | 7.53 | 1.00 | 90 | 678 | 11.11 | 8.53 | 1.30 |
| TR-V | 2.10 | 1.50 | 0.60 | 1,000 | 7,220 | 7,190 | 0.71 | 0.09 | 0.16 | 162 | 563 | 3.00 | 0.73 | 4.13 |
| P1-A1 | 5.00 | 3.10 | 1.90 | 2,400 | 7,134 | 7,112 | 0.62 | 0.04 | 0.08 | 182 | 1,199 | 0.92 | 0.58 | 1.59 |
| P1-A2 | 6.40 | 3.20 | 3.20 | 2,400 | 7,134 | 7,110 | 0.50 | 0.05 | 0.11 | 264 | 1,056 | 1.00 | 0.55 | 1.82 |
| P1-A3 | 1.80 | 0.70 | 1.10 | 800 | 7,110 | 7,103 | 0.61 | 0.12 | 0.25 | 196 | 400 | 0.88 | 0.74 | 1.17 |
| P1-A4 | 2.00 | 1.30 | 0.70 | 800 | 7,112 | 7,105 | 0.65 | 0.14 | 0.26 | 208 | 419 | 0.88 | 0.78 | 1.12 |
| P1-A5 | 5.70 | 3.00 | 2.70 | 1,300 | 7,114 | 7,100 | 0.53 | 0.15 | 0.32 | 417 | 595 | 1.08 | 0.78 | 1.38 |
| P1-A6 | 2.80 | 1.30 | 1.50 | 1,300 | 7,114 | 7,100 | 0.54 | 0.07 | 0.16 | 205 | 595 | 1.08 | 0.62 | 1.75 |
| | | | | | | | | | | | | | | |
| P2-A | 24.40 | 13.20 | 11.20 | 900 | 7,056 | 7,000 | 0.54 | 1.31 | 2.40 | 2,164 | 491 | 6.22 | 2.95 | 2.11 |
| P2-B | 57.80 | 18.50 | 39.30 | 3,800 | 7,106 | 7,052 | 0.68 | 0.17 | 0.32 | 1,215 | 2,072 | 1.42 | 0.87 | 1.64 |
| P2-S1 | 35.60 | 18.00 | 17.60 | 1,900 | 7,110 | 7,072 | 0.51 | 0.43 | 0.92 | 1,756 | 883 | 2.00 | 1.39 | 1.44 |
| P2-B1 | 2.50 | 1.50 | 1.00 | 1,100 | 7,102 | 7,077 | 0.60 | 0.09 | 0.18 | 201 | 541 | 2.27 | 0.67 | 3.37 |
| P2-B2 | 1.90 | 1.20 | 0.70 | 1,100 | 7,102 | 7,077 | 0.63 | 0.07 | 0.13 | 148 | 559 | 2.27 | 0.64 | 3.54 |
| P2-B3 | 2.80 | 1.70 | 1.10 | 1,000 | 7,077 | 7,061 | 0.61 | 0.12 | 0.25 | 245 | 498 | 1.60 | 0.74 | 2.15 |
| P2-B4 | 1.60 | 1.00 | 0.60 | 1,000 | 7,077 | 7,061 | 0.63 | 0.07 | 0.14 | 138 | 504 | 1.60 | 0.64 | 2.49 |
| P2-B5 | 1.90 | 1.20 | 0.70 | 700 | 7,061 | 7,050 | 0.63 | 0.17 | 0.33 | 230 | 360 | 1.57 | 0.84 | 1.86 |
| P2-B6 | 1.10 | 0.65 | 0.45 | 700 | 7,061 | 7,050 | 0.59 | 0.10 | 0.20 | 141 | 341 | 1.57 | 0.69 | 2.28 |
| P2-B7 | 2.50 | 1.60 | 0.90 | 770 | 7,050 | 7,038 | 0.64 | 0.18 | 0.35 | 272 | 401 | 1.56 | 0.87 | 1.78 |
| P2-B8 | 1.20 | 0.70 | 0.50 | 770 | 7,050 | 7,038 | 0.58 | 0.09 | 0.18 | 141 | 372 | 1.56 | 0.67 | 2.34 |
| P2-B9 | 2.00 | 1.00 | 1.00 | 870 | 7,038 | 7,018 | 0.50 | 0.12 | 0.26 | 226 | 386 | 2.30 | 0.70 | 3.27 |
| P2-B10 | 1.70 | 0.90 | 0.80 | 870 | 7,038 | 7,018 | 0.53 | 0.10 | 0.21 | 187 | 397 | 2.30 | 0.67 | 3.43 |
| P3-A | 1.70 | 0.90 | 0.80 | 870 | 7,038 | 7,018 | 0.53 | 0.10 | 0.21 | 187 | 397 | 2.30 | 0.67 | 3.43 |
| P3-S2 | 11.90 | 6.00 | 5.90 | 1,000 | 7,036 | 7,016 | 0.50 | 0.52 | 1.10 | 1,103 | 470 | 2.00 | 1.57 | 1.27 |
| P4-A | 25.80 | 20.00 | 5.80 | 1,950 | 7,078 | 7,052 | 0.78 | 0.30 | 0.47 | 920 | 1,222 | 1.33 | 1.10 | 1.21 |
| P4-B | 37.30 | 25.00 | 12.30 | 1,600 | 7,116 | 7,080 | 0.67 | 0.63 | 1.11 | 1,773 | 916 | 2.25 | 1.68 | 1.34 |
| SC-1 | 3.60 | 1.80 | 1.80 | 150 | 7,014 | 6,996 | 0.50 | 6.97 | 2.04 | 306 | 512 | 12.00 | 5.46 | 2.20 |
| SC-2 | 10.80 | 5.00 | 5.80 | 770 | 7040.0 | 7001.0 | 0.54 | 0.79 | 1.57 | 1,211 | 388 | 5.06 | 2.08 | 2.44 |
| SC-3 | 27.20 | 14.00 | 13.20 | 4,300 | 7100.0 | 7032.0 | 0.51 | 0.06 | 0.14 | 616 | 1,925 | 1.58 | 0.59 | 2.68 |
| SC-4 | 16.40 | 8.20 | 8.20 | 420 | 7,136 | 7,102 | 0.50 | 4.05 | 4.57 | 1,918 | 372 | 8.10 | 5.45 | 1.48 |
| EX-9 | 6.00 | 3.00 | 3.00 | 1,000 | 7,050 | 7,030 | 0.50 | 0.26 | 0.58 | 578 | 452 | 2.00 | 1.03 | 1.94 |
| EX-9A | 12.70 | 6.30 | 6.40 | 1,100 | 7,049 | 7,022 | 0.50 | 0.46 | 0.98 | 1,080 | 512 | 2.45 | 1.45 | 1.70 |

# PROPOSED PONDS
# EFFECTIVE IMPERVIOUS AREA CALCULATIONS

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**

**Pond FSD-16 Tributary Area**

(Full Build Out)

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| **P1-A** | 12.7 | N/A | 15% |
| **P1-B** | 35.5 | 7,500 | 55% |
| **P1-C** | 8.9 | N/A | 70% |
| **P1-D** | 31.4 | 6,500 | 60% |
| **P1-E1** | 30.4 | 8,500 | 50% |
| **P1-E2** | 21.8 | 7,500 | 55% |
| **P1-F** | 76.7 | 12,500 | 35% |
| **TR-V** | 2.1 | 17,500 | 27% |
| **TR-W** | 1.4 | 13,500 | 32% |
| **TOTAL** | **220.9** | | **46%** |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**

**Pond FSD-16 Tributary Area**

(Prelim. Plan 1 & Foursquare PUD Only)

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| **P1-A** | 12.7 | N/A | 15% |
| **P1-B** | 35.5 | Un dev. | 2% |
| **P1-C** | 8.9 | N/A | 70% |
| **P1-D** | 31.4 | 6,500 | 60% |
| **P1-E1** | 30.4 | 8,500 | 50% |
| **P1-E2** | 21.8 | 7,500 | 55% |
| **P1-F** | 76.7 | Un dev. | 2% |
| **TR-V** | 2.1 | 17,500 | 27% |
| **TR-W** | 1.4 | 13,500 | 32% |
| **TOTAL** | **220.9** | | **26%** |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**

**Pond FSD-14A Tributary Area**

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| **P1-A1** | 5.0 | N/A | 70% |
| **P1-A2** | 6.4 | N/A | 70% |
| **P1-A3** | 1.8 | N/A | 70% |
| **P1-A4** | 2.0 | N/A | 70% |
| **P1-A5** | 5.7 | N/A | 70% |
| **P1-A6** | 2.8 | N/A | 70% |
| **P2-S1** | 35.6 | School | 50% |
| **P2-A** | 24.4 | Park | 7% |
| **P2-B** | 57.8 | 7,000 | 57% |
| **P2-B1** | 2.5 | N/A | 50% |
| **P2-B2** | 1.9 | N/A | 70% |
| **P2-B3** | 2.8 | N/A | 50% |
| **P2-B4** | 1.6 | N/A | 70% |
| **P2-B5** | 1.9 | N/A | 50% |
| **P2-B6** | 1.1 | N/A | 70% |
| **P2-B7** | 2.5 | N/A | 25% |
| **P2-B8** | 1.2 | N/A | 70% |
| **TOTAL** | **157.0** | | **49%** |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**

**Pond FSD-14B Tributary Area**

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| **P4-A** | 25.8 | 6,500 | 60% |
| **P4-B** | 37.3 | 6,500 | 60% |
| **TOTAL** | **63.1** | | **60%** |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**

**Pond FSD-11B Tributary Area**

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| **P2-B9** | 2.0 | N/A | 70% |
| **P2-B10** | 1.7 | N/A | 70% |
| **P3-S2** | 11.9 | School | 65% |
| **P3-A** | 52.6 | 7,000 | 57% |
| **TOTAL** | **68.2** | | **59%** |

## STERLING RANCH EAST PRELIMINARY PLAN NO. 1

### Flow Comparison along South Boundary

| | This Report (SWMM 5.1) Pre-Dev. Conditions | | This Report (SWMM 5.1) Developed Conditions | | 2018 SR MDDP (HEC-HMS) Pre-Dev. Conditions | |
|---|---|---|---|---|---|---|
| **Design Point (South Bndy.)** | **Peak Runoff 5 yr. (CFS)** | **Peak Runoff 100 yr. (CFS)** | **Peak Runoff 5 yr. (CFS)** | **Peak Runoff 100 yr. (CFS)** | **Peak Runoff 5 yr. (CFS)** | **Peak Runoff 100 yr. (CFS)** |
| **4** | **46** | **105** | **0.5** | **3.5** | **21.5** | **107.4** |
| **4A** | **1** | **5** | **0.5** | **3.5** | | |
| **5** | **5** | **23** | **4** | **10** | **1.7** | **20.5** |
| **5A** | **2** | **9** | **2** | **7** | | |
| **6** | **59** | **122** | **2.0** | **48.9** | **23.9** | **125.2** |
| **6A** | **7** | **19** | **4** | **11** | | |
| **7** | **110** | **249** | **18** | **50** | **57.1** | **277.9** |
| **56** | **60** | **160** | **60** | **160** | **42.5** | **202.9** |

## Design Procedure Form: Runoff Reduction

UD-BMP (Version 3.07, March 2018) **Sheet 1 of 1**

**Designer:** Marc A. Whorton, P.E.
**Company:** Classic Consulting
**Date:** May 31, 2022
**Project:** Sterling Ranch East Preliminary Plan No. 1
**Location:** BASINS NOT TRIBUTARY TO PERMANENT SWQ FACILITY

### SITE INFORMATION (User Input in Blue Cells)

WQCV Rainfall Depth: 0.53 inches
Depth of Average Runoff Producing Storm, $d_6$ = 0.42 inches (for Watersheds Outside of the Denver Region, Figure 3-1 in USDCM Vol. 3)

| Area Type | UIA:RPA | UIA:RPA | UIA:RPA | UIA:RPA | UIA:RPA | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Area ID | EF-A | SC-3-1 | SC-3-2 | SC-4-1 | SC-4-2 | | | | | | | |
| Downstream Design Point ID | SC | SC | SC | SC | SC | | | | | | | |
| Downstream BMP Type | None | None | None | None | None | | | | | | | |
| DCIA ($ft^2$) | -- | -- | -- | -- | -- | | | | | | | |
| UIA ($ft^2$) | 40,000 | 26,790 | 19,924 | 30,053 | 48,697 | | | | | | | |
| RPA ($ft^2$) | 37,188 | 17,918 | 12,924 | 21,985 | 28,692 | | | | | | | |
| SPA ($ft^2$) | -- | -- | -- | -- | -- | | | | | | | |
| HSG A (%) | 0% | 0% | 0% | 0% | 0% | | | | | | | |
| HSG B (%) | 100% | 100% | 100% | 100% | 100% | | | | | | | |
| HSG C/D (%) | 0% | 0% | 0% | 0% | 0% | | | | | | | |
| Average Slope of RPA (ft/ft) | 0.020 | 0.040 | 0.030 | 0.040 | 0.040 | | | | | | | |
| UIA:RPA Interface Width (ft) | 800.00 | 700.00 | 400.00 | 800.00 | 1000.00 | | | | | | | |

### CALCULATED RUNOFF RESULTS

| Area ID | EF-A | SC-3-1 | SC-3-2 | SC-4-1 | SC-4-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| UIA:RPA Area ($ft^2$) | 77,188 | 44,708 | 32,848 | 52,038 | 77,389 | | | | | | | |
| L / W Ratio | 0.12 | 0.09 | 0.21 | 0.08 | 0.08 | | | | | | | |
| UIA / Area | 0.5182 | 0.5992 | 0.6066 | 0.5775 | 0.6292 | | | | | | | |
| Runoff (in) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | | | | | | | |
| Runoff ($ft^3$) | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| Runoff Reduction ($ft^3$) | 1433 | 960 | 714 | 1077 | 1745 | | | | | | | |

### CALCULATED WQCV RESULTS

| Area ID | EF-A | SC-3-1 | SC-3-2 | SC-4-1 | SC-4-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WQCV ($ft^3$) | 1628 | 1090 | 811 | 1223 | 1982 | | | | | | | |
| WQCV Reduction ($ft^3$) | 1628 | 1090 | 811 | 1223 | 1982 | | | | | | | |
| WQCV Reduction (%) | 100% | 100% | 100% | 100% | 100% | | | | | | | |
| Untreated WQCV ($ft^3$) | 0 | 0 | 0 | 0 | 0 | | | | | | | |

### CALCULATED DESIGN POINT RESULTS (sums results from all columns with the same Downstream Design Point ID)

| Downstream Design Point ID | SC | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DCIA ($ft^2$) | 0 | | | | | | | | | | | |
| UIA ($ft^2$) | 165,464 | | | | | | | | | | | |
| RPA ($ft^2$) | 118,707 | | | | | | | | | | | |
| SPA ($ft^2$) | 0 | | | | | | | | | | | |
| Total Area ($ft^2$) | 284,171 | | | | | | | | | | | |
| Total Impervious Area ($ft^2$) | 165,464 | | | | | | | | | | | |
| WQCV ($ft^3$) | 6,734 | | | | | | | | | | | |
| WQCV Reduction ($ft^3$) | 6,734 | | | | | | | | | | | |
| WQCV Reduction (%) | 100% | | | | | | | | | | | |
| Untreated WQCV ($ft^3$) | 0 | | | | | | | | | | | |

### CALCULATED SITE RESULTS (sums results from all columns in worksheet)

| | |
|---|---|
| Total Area ($ft^2$) | 284,171 |
| Total Impervious Area ($ft^2$) | 165,464 |
| WQCV ($ft^3$) | 6,734 |
| WQCV Reduction ($ft^3$) | 6,734 |
| WQCV Reduction (%) | 100% |
| Untreated WQCV ($ft^3$) | 0 |

SEE SHEET 4

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Developed Subcatchment Runoff**

| Subcatchment | Area (Ac.) | SWWM Imperv. (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|
| EF-A | 8.2 | 15% | 7 | 20 |
| EX10A ++ | 60.4 | 5% | 18 | 50 |
| EX-9 ++ | 6.0 | 5% | 2 | 8 |
| EX-9A ++ | 12.7 | 5% | 4 | 16 |
| P1-A | 12.7 | 8% | 6 | 19 |
| P1-A1 | 5.0 | 70% | 15 | 29 |
| P1-A2 | 6.4 | 70% | 16 | 32 |
| P1-A3 | 1.8 | 70% | 6 | 12 |
| P1-A4 | 2.0 | 70% | 7 | 13 |
| P1-A5 | 5.7 | 70% | 18 | 35 |
| P1-A6 | 2.8 | 70% | 9 | 18 |
| P1-B (Dev.) | 35.5 | 55% | 71 | 140 |
| P1-B (Un-dev.) | 35.5 | 5% | 10 | 23 |
| P1-C | 8.9 | 70% | 31 | 59 |
| P1-D | 31.4 | 60% | 72 | 142 |
| P1-E1 | 30.4 | 50% | 66 | 128 |
| P1-E2 | 21.8 | 55% | 53 | 102 |
| P1-F (Dev.) | 76.7 | 35% | 125 | 243 |
| P1-F (Un-dev.) | 76.7 | 5% | 22 | 59 |
| P2-A | 24.4 | 7% | 11 | 37 |
| P2-B | 57.8 | 57% | 114 | 229 |
| P2-B1 | 2.5 | 50% | 7 | 13 |
| P2-B10 | 1.7 | 70% | 6 | 12 |
| P2-B2 | 1.9 | 70% | 7 | 13 |
| P2-B3 | 2.8 | 50% | 7 | 14 |
| P2-B4 | 1.6 | 70% | 6 | 11 |
| P2-B5 | 1.9 | 50% | 5 | 10 |
| P2-B6 | 1.1 | 70% | 4 | 8 |
| P2-B7 | 2.5 | 25% | 3 | 8 |
| P2-B8 | 1.2 | 70% | 4 | 8 |
| P2-B9 | 2.0 | 70% | 7 | 14 |
| P2-S1 | 35.6 | 50% | 82 | 158 |
| P3-A | 52.6 | 57% | 107 | 213 |
| P3-C | 1.7 | 11% | 1 | 5 |
| P3-S2 | 11.9 | 50% | 30 | 59 |
| P4-A | 25.8 | 57% | 59 | 115 |
| P4-B | 37.3 | 60% | 97 | 188 |
| SC-1 + | 3.6 | 8% | 2 | 6 |
| SC-2 + | 10.8 | 8% | 6 | 20 |
| SC-3 + | 27.2 | 8% | 12 | 26 |
| SC-4 + | 16.4 | 8% | 8 | 27 |
| TR-V | 2.1 | 27% | 3 | 7 |
| TR-W | 1.4 | 32% | 2 | 5 |

+ Basin not changed from pre-development conditions
++ Remaining undeveloped portion of the pre-development Basin

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Developed Surface Routing**

| Design Point (On-Site) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|
| DP-1 | 127 | 248 |
| DP-2 | 69 | 133 |
| DP-3 | 53 | 102 |
| DP-4 | 167 | 376 |
| DP-5 | 72 | 142 |
| DP-6 | 71 | 140 |
| DP-7 | 28 | 53 |
| DP-8 | 82 | 158 |
| DP-9 | 114 | 229 |
| DP-10 | 282 | 456 |
| DP-11 | 14 | 26 |
| DP-12 | 97 | 188 |
| DP-13 | 59 | 115 |
| DP-14 | 101 | 193 |
| DP-15 | 107 | 213 |
| DP-16 | 43 | 84 |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pre-Developed Subcatchment Runoff**

| Subcatchment | Area (Ac.) | SWMM Imperv. (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|
| EX-10 | 265.9 | 7% | 105 | 222 |
| EX10A | 153.5 | 5% | 46 | 103 |
| EX-11 | 214.3 | 4% | 54 | 129 |
| EX-13 | 94.8 | 6% | 36 | 85 |
| EX-4A | 44.2 | 8% | 19 | 50 |
| EX-5 | 26.2 | 8% | 12 | 32 |
| EX-7 | 152.8 | 5% | 46 | 105 |
| EX-7A | 2.4 | 2% | 1 | 5 |
| EX-8 | 32.2 | 2% | 5 | 23 |
| EX-8A | 6.6 | 2% | 2 | 9 |
| EX-9 | 139.3 | 8% | 59 | 122 |
| EX-9A | 21.8 | 5% | 7 | 19 |
| TR-12 | 4.7 | 5% | 2 | 9 |
| TR-20 | 23.2 | 7% | 10 | 32 |
| TR-4 | 4.4 | 5% | 2 | 9 |
| TR-5 | 13.7 | 5% | 5 | 17 |
| TR-6 | 1.5 | 5% | 1 | 4 |
| TR-7 | 2.6 | 5% | 1 | 5 |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pond FSD-16 Tributary Area**
(Prelim. Plan 1 & Foursquare PUD Only)

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| P1-A | 12.7 | N/A | 8% |
| P1-B | 35.5 | Un dev. | 2% |
| P1-C | 8.9 | N/A | 70% |
| P1-D | 31.4 | 6,500 | 60% |
| P1-E1 | 30.4 | 8,500 | 50% |
| P1-E2 | 21.8 | 7,500 | 55% |
| P1-F | 76.7 | Un dev. | 2% |
| TR-V | 2.1 | 17,500 | 27% |
| TR-W | 1.4 | 13,500 | 32% |
| TOTAL | 220.9 | | 26% |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pond FSD-16 Tributary Area**
(Full Build Out)

| Subcatchment | Area (Ac.) | Avg. Lot size (AC) | Effective Imperv. (%) |
|---|---|---|---|
| P1-A | 12.7 | N/A | 8% |
| P1-B | 35.5 | 7,500 | 55% |
| P1-C | 8.9 | N/A | 70% |
| P1-D | 31.4 | 6,500 | 60% |
| P1-E1 | 30.4 | 8,500 | 50% |
| P1-E2 | 21.8 | 7,500 | 55% |
| P1-F | 76.7 | 12,500 | 35% |
| TR-V | 2.1 | 17,500 | 27% |
| TR-W | 1.4 | 13,500 | 32% |
| TOTAL | 220.9 | | 46% |

**POND FSD-16** (EDB)
(FULL BUILD-OUT)

TRIB. AREA = 220.9 AC.
WQCV = 3.60 AC.-FT.
EURV = 7.70 AC.-FT.
100 YR. = 10.26 AC.-FT.
TOTAL = 21.56 AC.-FT.

INFLOW: (SWWM MODEL)
Q5 = 307 CFS
Q100 = 496 CFS

OUTFLOW: (MHFD-DETENTION)
Q5 = 3.6 CFS
Q100 = 117.4 CFS

**POND FSD-16** (EDB)
(PRELIM. PLAN 1 & FOURSQUARE PUD)

TRIB. AREA = 220.9 AC.
WQCV = 2.55 AC.-FT.
EURV = 3.04 AC.-FT.
100 YR. = 5.92 AC.-FT.
TOTAL = 11.51 AC.-FT.

INFLOW: (SWWM MODEL)
Q5 = 197 CFS
Q100 = 410 CFS

OUTFLOW: (MHFD-DETENTION)
Q5 = 2.5 CFS
Q100 = 66.0 CFS

FOURSQUARE AT STERLING RANCH PRELIMINARY PLAN AREA

**LEGEND**

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | 6910 |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| HISTORIC EAST FORK BASIN BOUNDARY (NOT USED IN BASIN SIZING) | |
| DESIGN POINT | 15 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| PROPOSED DIRECTION OF FLOW | |
| PROPOSED STORM SEWER | |
| PROPOSED STORM SEWER PER JR ENG. PLANS | |
| PROPOSED POND OUTFALL PER JR ENG. PLANS | |

SCALE: 1" = 100'

SEE SHEET 6

CLASSIC CONSULTING ENGINEERS & SURVEYORS
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

FOURSQUARE AT STERLING RANCH
PRELIMINARY PLAN / PUD
PRELIMINARY DRAINAGE REPORT
DEVELOPED DRAINAGE MAP

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 9-30-22 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 7 OF 7 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.20 |

N:\1183\07\REPORTS\PRELIMINARY DRAINAGE REPORT\1820 FOR DM SITE.dwg, 3/9/2023 5:06:30 PM, 1:1

# FINAL DRAINAGE REPORT
# FOR
# STERLING RANCH EAST FILING NO. 2
# &
# FOURSQUARE AT STERLING RANCH EAST FILING NO. 1

**August 2024**

Prepared for:
**CLASSIC SRJ LAND, LLC**
2138 Flying Horse Club Dr.
COLORADO SPRINGS CO 80921
(719) 592-9333

Prepared by:
**CLASSIC CONSULTING ENGINEERS & SURVEYORS**
619 N. CASCADE AVENUE, SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job no. 2183.23
PCD File # SF2236 & SF2237

**ENGINEER'S STATEMENT:**

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the El Paso County for drainage reports and said report is in conformity with the master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors, or omissions on my part in preparing this report.

COLORADO LICENSED DAVID LEE GIBSON 46477 PROFESSIONAL ENGINEER

David L Gibson, Colorado P.E. #46477 — Date: 08-23-2024

**DEVELOPER'S STATEMENT:**

I, the developer, have read and will comply with all of the requirements specified in this drainage report and plan.

Business Name: Classic SRJ Land, LLC

By:

Title: VICE PRESIDENT

Address: 2138 Flying Horse Club Dr.

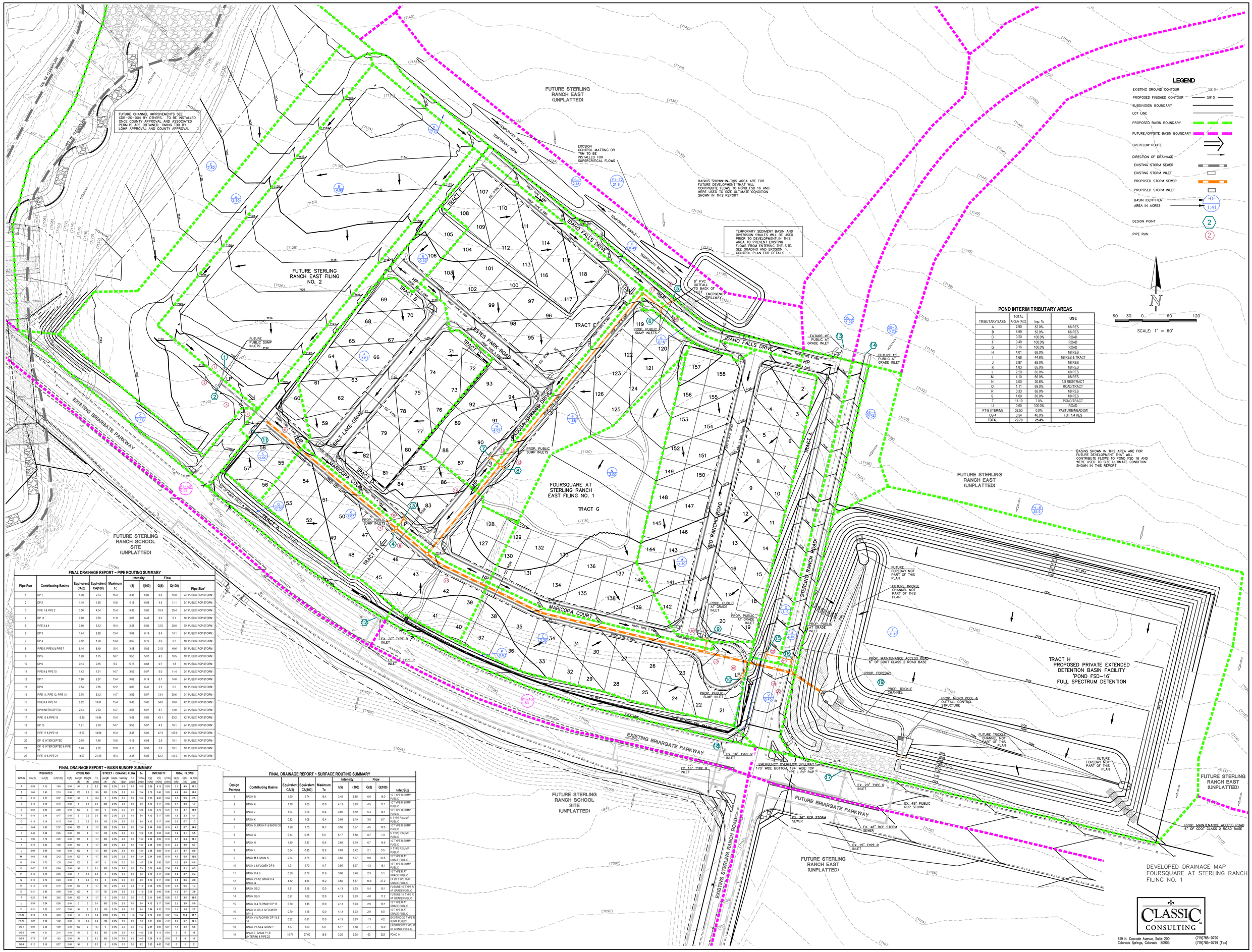
Colorado Springs, CO 80921

**EL PASO COUNTY ONLY:**

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

For County Engineer / ECM Administrator — Date

Conditions:




**POND INTERIM TRIBUTARY AREAS**

| TRIBUTARY BASIN | TOTAL AREA (AC) | Imp. % | USE |
|---|---|---|---|
| A | 2.90 | 52.0% | 1/6 RES |
| B | 4.99 | 52.0% | 1/6 RES |
| D | 0.20 | 100.0% | ROAD |
| F | 0.49 | 100.0% | ROAD |
| G | 0.16 | 100.0% | ROAD |
| H | 4.01 | 65.0% | 1/8 RES |
| I | 1.68 | 44.6% | 1/8 RES & TRACT |
| J | 3.87 | 65.0% | 1/8 RES |
| K | 1.83 | 65.0% | 1/8 RES |
| L | 2.20 | 65.0% | 1/8 RES |
| M | 4.10 | 65.0% | 1/8 RES |
| N | 3.00 | 30.8% | 1/8 RES/TRACT |
| O | 1.11 | 69.0% | ROAD/TRACT |
| R | 0.33 | 65.0% | 1/8 RES |
| S | 1.00 | 65.0% | 1/8 RES |
| T | 11.19 | 7.0% | POND/TRACT |
| U | 0.60 | 100.0% | ROAD |
| P1-8 (ITERIM) | 35.50 | 0.0% | PASTURE/MEADOW |
| OS-4 | 0.54 | 40.0% | FUT 1/4 RES |
| **TOTAL** | **79.70** | **25.4%** | |

**FINAL DRAINAGE REPORT - PIPE ROUTING SUMMARY**

| Pipe Run | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Pipe Size* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | DP 1 | 1.90 | 2.74 | 15.4 | 3.48 | 5.85 | 6.6 | 16.0 | 24" PUBLIC RCP STORM |
| 2 | DP 2 | 1.10 | 1.60 | 10.0 | 4.13 | 6.93 | 4.5 | 11.1 | 24" PUBLIC RCP STORM |
| 3 | PIPE 1 & PIPE 2 | 3.00 | 4.34 | 15.4 | 3.48 | 5.85 | 10.4 | 25.4 | 24" PUBLIC RCP STORM |
| 4 | DP 11 | 0.60 | 0.78 | 11.9 | 3.86 | 6.48 | 2.3 | 5.1 | 18" PUBLIC RCP STORM |
| 5 | PIPE 3 & 4 | 3.60 | 5.12 | 15.4 | 3.48 | 5.85 | 12.5 | 30.0 | 30" PUBLIC RCP STORM |
| 6 | DP 3 | 1.74 | 2.28 | 13.4 | 3.69 | 6.19 | 6.4 | 14.1 | 24" PUBLIC RCP STORM |
| 7 | DP 4 | 0.82 | 1.08 | 13.4 | 3.69 | 6.19 | 3.0 | 6.7 | 18" PUBLIC RCP STORM |
| 8 | PIPE 5, PIPE 6 & PIPE 7 | 6.16 | 8.49 | 15.4 | 3.48 | 5.85 | 21.5 | 49.6 | 36" PUBLIC RCP STORM |
| 9 | DP 5 | 1.28 | 1.75 | 14.7 | 3.56 | 5.97 | 4.5 | 10.5 | 18" PUBLIC RCP STORM |
| 10 | DP 6 | 0.14 | 0.15 | 5.0 | 5.17 | 8.68 | 0.7 | 1.3 | 18" PUBLIC RCP STORM |
| 11 | PIPE 9 & PIPE 10 | 1.42 | 1.91 | 14.7 | 3.56 | 5.97 | 5.0 | 11.4 | 24" PUBLIC RCP STORM |
| 12 | DP 7 | 1.80 | 2.37 | 13.4 | 3.69 | 6.19 | 6.7 | 14.6 | 24" PUBLIC RCP STORM |
| 13 | DP 8 | 0.54 | 0.85 | 12.2 | 3.83 | 6.42 | 2.1 | 5.5 | 18" PUBLIC RCP STORM |
| 14 | PIPE 11, PIPE 12, PIPE 13 | 3.76 | 5.12 | 14.7 | 3.56 | 5.97 | 13.4 | 30.6 | 24" PUBLIC RCP STORM |
| 15 | PIPE 8 & PIPE 14 | 9.92 | 13.61 | 15.4 | 3.48 | 5.85 | 34.6 | 79.6 | 42" PUBLIC RCP STORM |
| 16 | DP 9 INTERCEPTED | 2.44 | 2.33 | 14.7 | 3.56 | 5.97 | 8.7 | 13.9 | 24" PUBLIC RCP STORM |
| 17 | PIPE 15 & PIPE 16 | 12.36 | 15.94 | 15.4 | 3.48 | 5.85 | 43.1 | 93.2 | 42" PUBLIC RCP STORM |
| 18 | DP 10 | 1.21 | 2.70 | 14.7 | 3.56 | 5.97 | 4.3 | 16.1 | 24" PUBLIC RCP STORM |
| 19 | PIPE 17 & PIPE 18 | 13.57 | 18.64 | 15.4 | 3.48 | 5.85 | 47.3 | 109.0 | 42" PUBLIC RCP STORM |
| 20 | DP 15 INTERCEPTED | 0.70 | 1.46 | 10.0 | 4.13 | 6.93 | 2.9 | 10.1 | 18" PUBLIC RCP STORM |
| 21 | DP 16 INTERCEPTED & PIPE 20 | 1.40 | 2.62 | 10.0 | 4.13 | 6.93 | 5.8 | 18.1 | 18" PUBLIC RCP STORM |
| 22 | PIPE 19 & PIPE 21 | 14.97 | 21.26 | 15.4 | 3.48 | 5.85 | 52.2 | 124.3 | 48" PUBLIC RCP STORM |

**FINAL DRAINAGE REPORT - BASIN RUNOFF SUMMARY**

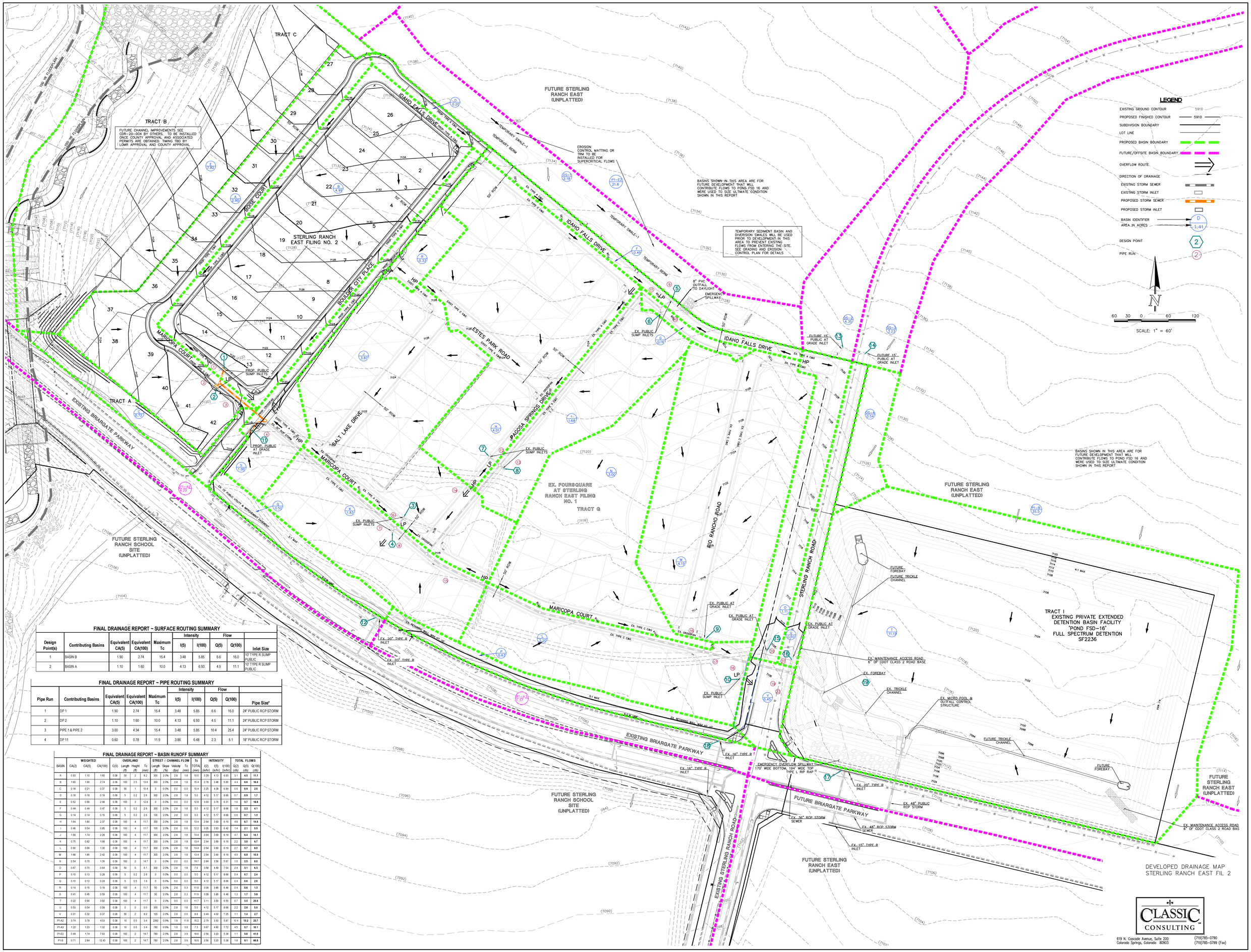
| BASIN | WEIGHTED CA(5) | WEIGHTED CA(100) | OVERLAND C(5) | OVERLAND Length (ft) | OVERLAND Height (ft) | OVERLAND Tc (min) | STREET / CHANNEL FLOW Length (ft) | STREET / CHANNEL FLOW Slope (%) | STREET / CHANNEL FLOW Velocity (fps) | STREET / CHANNEL FLOW Tc (min) | Tc TOTAL (min) | INTENSITY I(5) (in/hr) | INTENSITY I(100) (in/hr) | TOTAL FLOWS Q(5) (cfs) | TOTAL FLOWS Q(10) (cfs) | TOTAL FLOWS Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0.63 | 1.16 | 1.00 | 0.08 | 50 | 2 | 8.2 | 300 | 3.0% | 2.8 | 1.8 | 10.3 | 3.29 | 4.13 | 5.65 | 11.7 |
| B | 1.90 | 1.90 | 2.74 | 0.08 | 50 | 2.5 | 13.6 | 300 | 2.0% | 2.8 | 1.8 | 15.4 | 2.79 | 3.48 | 5.45 | 4.4 | 16.0 |
| C | 0.18 | 0.21 | 0.37 | 0.08 | 50 | 1 | 10.4 | 0 | 0.0% | 0.0 | 0.0 | 10.4 | 3.25 | 4.06 | 6.54 | 0.6 | 0.9 | 2.5 |
| D | 0.18 | 0.18 | 0.19 | 0.08 | 5 | 0.2 | 2.6 | 300 | 2.0% | 2.8 | 1.8 | 5.5 | 4.12 | 5.17 | 8.68 | 0.7 | 0.9 | 1.7 |
| E | 0.52 | 0.99 | 2.98 | 0.08 | 100 | 3 | 12.8 | 0 | 0.0% | 0.0 | 0.0 | 12.8 | 3.00 | 3.76 | 6.31 | 1.6 | 3.7 | 10.8 |
| F | 0.44 | 0.44 | 0.47 | 0.08 | 5 | 0.2 | 2.6 | 300 | 2.0% | 2.8 | 1.8 | 5.0 | 4.12 | 5.17 | 8.68 | 1.8 | 2.3 | 4.1 |
| G | 0.14 | 0.14 | 0.15 | 0.08 | 5 | 0.2 | 2.6 | 100 | 2.0% | 2.8 | 0.6 | 5.0 | 4.12 | 5.17 | 8.68 | 0.6 | 0.7 | 1.3 |
| H | 1.64 | 1.80 | 2.37 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.8 | 6.7 | 14.8 |
| I | 0.46 | 0.54 | 0.65 | 0.08 | 100 | 4 | 11.7 | 100 | 2.0% | 2.8 | 0.6 | 12.2 | 3.05 | 3.83 | 6.42 | 1.4 | 2.1 | 5.5 |
| J | 1.59 | 1.74 | 2.28 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.7 | 6.4 | 14.1 |
| K | 0.75 | 0.82 | 1.08 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 2.2 | 3.0 | 6.7 |
| L | 0.90 | 0.99 | 1.30 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 2.7 | 3.7 | 8.0 |
| M | 1.66 | 1.85 | 2.42 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.9 | 6.8 | 15.0 |
| N | 0.54 | 0.70 | 1.35 | 0.08 | 100 | 2 | 14.7 | 0 | 0.0% | 0.0 | 0.0 | 14.7 | 2.84 | 3.56 | 5.97 | 1.5 | 2.5 | 8.0 |
| O | 0.67 | 0.70 | 0.84 | 0.08 | 50 | 5 | 6.1 | 300 | 2.0% | 2.8 | 1.8 | 7.9 | 3.58 | 4.48 | 7.54 | 2.4 | 3.1 | 6.3 |
| P | 0.10 | 0.13 | 0.28 | 0.08 | 5 | 0.2 | 2.6 | 0 | 0.0% | 0.0 | 0.0 | 5.0 | 4.12 | 5.17 | 8.68 | 0.4 | 0.7 | 2.4 |
| Q | 0.10 | 0.12 | 0.24 | 0.08 | 5 | 0.5 | 1.9 | 0 | 0.0% | 0.0 | 0.0 | 5.0 | 4.12 | 5.17 | 8.68 | 0.4 | 0.6 | 2.0 |
| R | 0.14 | 0.15 | 0.19 | 0.08 | 100 | 4 | 11.7 | 50 | 2.0% | 2.8 | 0.3 | 11.9 | 3.08 | 3.86 | 6.48 | 0.4 | 0.6 | 1.3 |
| S | 0.22 | 0.40 | 0.53 | 0.08 | 100 | 4 | 11.7 | 50 | 2.0% | 2.8 | 0.3 | 11.9 | 3.08 | 3.86 | 6.48 | 0.8 | 1.3 | 3.4 |
| T | 0.22 | 0.90 | 3.92 | 0.08 | 100 | 4 | 11.7 | 0 | 2.0% | 0.0 | 0.0 | 11.7 | 3.11 | 3.90 | 6.55 | 0.7 | 3.5 | 25.6 |
| U | 0.53 | 0.54 | 0.58 | 0.08 | 0 | 0 | 0.0 | 300 | 2.0% | 2.8 | 1.8 | 5.0 | 4.12 | 5.17 | 8.68 | 2.2 | 2.8 | 5.0 |
| V | 0.31 | 0.32 | 0.37 | 0.08 | 50 | 2 | 8.2 | 100 | 2.0% | 2.8 | 0.6 | 8.8 | 3.44 | 4.32 | 7.25 | 1.1 | 1.4 | 2.7 |
| P1-A2 | 3.74 | 3.78 | 4.03 | 0.08 | 10 | 0.5 | 3.4 | 2350 | 0.9% | 1.9 | 11.8 | 15.2 | 2.79 | 3.50 | 5.87 | 10.4 | 13.2 | 23.7 |
| P1-A3 | 1.22 | 1.23 | 1.32 | 0.08 | 10 | 0.5 | 3.4 | 760 | 0.9% | 1.9 | 3.9 | 7.3 | 3.67 | 4.60 | 7.72 | 4.5 | 5.7 | 10.5 |
| OS-1 | 0.50 | 0.85 | 1.09 | 0.08 | 100 | 2 | 14.7 | 0 | 0.0% | 0.0 | 0.0 | 14.7 | 2.84 | 3.56 | 5.97 | 1.4 | 2.3 | 6.5 |
| OS-2 | 1.00 | 1.31 | 2.19 | 0.08 | 50 | 2 | 8.2 | 300 | 2.0% | 2.8 | 1.8 | 10.0 | 3.29 | 4.13 | 6.93 | 3 | 5 | 15 |
| OS-3 | 0.74 | 0.97 | 1.62 | 0.08 | 50 | 2 | 8.2 | 300 | 2.0% | 2.8 | 1.8 | 10.0 | 3.29 | 4.13 | 6.93 | 2 | 4 | 11 |
| OS-4 | 0.12 | 0.16 | 0.27 | 0.08 | 50 | 2 | 8.2 | 0 | 0.0% | 0.0 | 0.0 | 8.2 | 3.53 | 4.42 | 7.42 | 0 | 1 | 2 |

**FINAL DRAINAGE REPORT - SURFACE ROUTING SUMMARY**

| Design Point(s) | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Inlet Size |
|---|---|---|---|---|---|---|---|---|---|
| 1 | BASIN B | 1.90 | 2.74 | 15.4 | 3.48 | 5.85 | 6.6 | 16.0 | 10' TYPE R SUMP PUBLIC |
| 2 | BASIN A | 1.10 | 1.60 | 10.0 | 4.13 | 6.93 | 4.5 | 11.1 | 10' TYPE R SUMP PUBLIC |
| 3 | BASIN J | 1.74 | 2.28 | 13.4 | 3.69 | 6.19 | 6.4 | 14.1 | 10' TYPE R SUMP PUBLIC |
| 4 | BASIN K | 0.82 | 1.08 | 13.4 | 3.69 | 6.19 | 3.0 | 6.7 | 2' TYPE R SUMP PUBLIC |
| 5 | BASIN C, BASIN F & BASIN OS | 1.28 | 1.75 | 14.7 | 3.56 | 5.97 | 4.5 | 10.5 | 10' TYPE R SUMP PUBLIC |
| 6 | BASIN G | 0.14 | 0.15 | 5.0 | 5.17 | 8.68 | 0.7 | 1.3 | 5' TYPE R SUMP PUBLIC |
| 7 | BASIN H | 1.80 | 2.37 | 13.4 | 3.69 | 6.19 | 6.7 | 14.6 | 10' TYPE R SUMP PUBLIC |
| 8 | BASIN I | 0.54 | 0.85 | 12.2 | 3.83 | 6.42 | 2.1 | 5.5 | 5' TYPE R SUMP PUBLIC |
| 9 | BASIN M & BASIN N | 2.54 | 3.76 | 14.7 | 3.56 | 5.97 | 9.0 | 22.5 | 15' TYPE R AT GRADE PUBLIC |
| 10 | BASIN L & FLOWBY DP 9 | 1.21 | 2.70 | 14.7 | 3.56 | 5.97 | 4.3 | 16.1 | 10' TYPE R SUMP PUBLIC |
| 11 | BASIN R & S | 0.60 | 0.78 | 11.9 | 3.86 | 6.48 | 2.3 | 5.1 | 10' TYPE R AT GRADE PUBLIC |
| 12 | BASIN P1-A2, BASIN C & BASIN Q | 4.12 | 4.64 | 15.2 | 3.50 | 5.87 | 14.4 | 27.2 | EX 20' TYPE R AT GRADE PUBLIC |
| 13 | BASIN OS-2 | 1.31 | 2.18 | 10.0 | 4.13 | 6.93 | 5.4 | 15.1 | FUTURE 10' TYPE R AT GRADE PUBLIC |
| 14 | BASIN OS-3 | 0.97 | 1.62 | 10.0 | 4.13 | 6.93 | 4.0 | 11.2 | FUTURE 15' TYPE R AT GRADE PUBLIC |
| 15 | BASIN O & FLOWBY DP 13 | 0.70 | 1.46 | 10.0 | 4.13 | 6.93 | 2.9 | 10.1 | 15' TYPE R AT GRADE PUBLIC |
| 16 | BASIN U, OS-4, & FLOWBY DP 14 | 0.70 | 1.16 | 10.0 | 4.13 | 6.93 | 2.9 | 8.0 | 15' TYPE R AT GRADE PUBLIC |
| 17 | BASIN V & FLOWBY DP 15 & 16 | 0.32 | 0.61 | 10.0 | 4.13 | 6.93 | 1.3 | 4.2 | EXISTING 20' TYPE R SUMP PUBLIC |
| 18 | BASIN P1-A3 & BASIN P | 1.37 | 1.60 | 5.0 | 5.17 | 8.68 | 7.1 | 13.9 | EXISTING 20' TYPE R AT GRADE PUBLIC |
| 19 | BASIN T, BASIN P1-B (INTERIM) & PIPE 22 | 18.71 | 37.60 | 18.6 | 3.20 | 5.38 | 60 | 202 | POND IN |

DEVELOPED DRAINAGE MAP
FOURSQUARE AT STERLING RANCH
FILING NO. 1

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)




**FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY**

| Design Point(s) | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Inlet Size |
|---|---|---|---|---|---|---|---|---|---|
| 1 | BASIN B | 1.90 | 2.74 | 15.4 | 3.48 | 5.85 | 6.6 | 16.0 | 10' TYPE R SUMP PUBLIC |
| 2 | BASIN A | 1.10 | 1.60 | 10.0 | 4.13 | 6.93 | 4.5 | 11.1 | 10' TYPE R SUMP PUBLIC |

**FINAL DRAINAGE REPORT ~ PIPE ROUTING SUMMARY**

| Pipe Run | Contributing Basins | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Pipe Size* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | DP 1 | 1.90 | 2.74 | 15.4 | 3.48 | 5.85 | 6.6 | 16.0 | 24" PUBLIC RCP STORM |
| 2 | DP 2 | 1.10 | 1.60 | 10.0 | 4.13 | 6.93 | 4.5 | 11.1 | 24" PUBLIC RCP STORM |
| 3 | PIPE 1 & PIPE 2 | 3.00 | 4.34 | 15.4 | 3.48 | 5.85 | 10.4 | 25.4 | 24" PUBLIC RCP STORM |
| 4 | DP 11 | 0.60 | 0.78 | 11.9 | 3.86 | 6.48 | 2.3 | 5.1 | 18" PUBLIC RCP STORM |

**FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY**

| BASIN | WEIGHTED CA(2) | WEIGHTED CA(5) | WEIGHTED CA(100) | OVERLAND C(5) | OVERLAND Length (ft) | OVERLAND Height (ft) | OVERLAND Tc (min) | STREET / CHANNEL FLOW Length (ft) | STREET / CHANNEL FLOW Slope (%) | STREET / CHANNEL FLOW Velocity (fps) | STREET / CHANNEL FLOW Tc (min) | Tc TOTAL (min) | INTENSITY I(2) (in/hr) | INTENSITY I(5) (in/hr) | INTENSITY I(100) (in/hr) | TOTAL FLOWS Q(2) (cfs) | TOTAL FLOWS Q(5) (cfs) | TOTAL FLOWS Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0.93 | 1.10 | 1.60 | 0.08 | 50 | 2 | 8.2 | 300 | 2.0% | 2.8 | 1.8 | 10.0 | 3.29 | 4.13 | 6.93 | 3.1 | **4.5** | **11.1** |
| B | 1.60 | 1.90 | 2.74 | 0.08 | 100 | 2.5 | 13.6 | 300 | 2.0% | 2.8 | 1.8 | 15.4 | 2.78 | 3.48 | 5.85 | 4.4 | **6.6** | **16.0** |
| C | 0.18 | 0.21 | 0.37 | 0.08 | 50 | 1 | 10.4 | 0 | 0.0% | 0.0 | 0.0 | 10.4 | 3.25 | 4.08 | 6.84 | 0.6 | **0.9** | **2.5** |
| D | 0.18 | 0.18 | 0.19 | 0.08 | 5 | 0.2 | 2.6 | 300 | 2.0% | 2.8 | 1.8 | 5.0 | 4.12 | 5.17 | 8.68 | 0.7 | **0.9** | **1.7** |
| E | 0.52 | 0.99 | 2.98 | 0.08 | 100 | 3 | 12.8 | 0 | 0.0% | 0.0 | 0.0 | 12.8 | 3.00 | 3.76 | 6.31 | 1.6 | **3.7** | **18.8** |
| F | 0.44 | 0.44 | 0.47 | 0.08 | 5 | 0.2 | 2.6 | 300 | 2.0% | 2.8 | 1.8 | 5.0 | 4.12 | 5.17 | 8.68 | 1.8 | **2.3** | **4.1** |
| G | 0.14 | 0.14 | 0.15 | 0.08 | 5 | 0.2 | 2.6 | 100 | 2.0% | 2.8 | 0.6 | 5.0 | 4.12 | 5.17 | 8.68 | 0.6 | **0.7** | **1.3** |
| H | 1.64 | 1.80 | 2.37 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.8 | **6.7** | **14.6** |
| I | 0.46 | 0.54 | 0.85 | 0.08 | 100 | 4 | 11.7 | 100 | 2.0% | 2.8 | 0.6 | 12.2 | 3.05 | 3.83 | 6.42 | 1.4 | **2.1** | **5.5** |
| J | 1.59 | 1.74 | 2.28 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.7 | **6.4** | **14.1** |
| K | 0.75 | 0.82 | 1.08 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 2.2 | **3.0** | **6.7** |
| L | 0.90 | 0.99 | 1.30 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 2.7 | **3.7** | **8.0** |
| M | 1.68 | 1.85 | 2.42 | 0.08 | 100 | 4 | 11.7 | 300 | 2.0% | 2.8 | 1.8 | 13.4 | 2.94 | 3.69 | 6.19 | 4.9 | **6.8** | **15.0** |
| N | 0.54 | 0.70 | 1.35 | 0.08 | 100 | 2 | 14.7 | 0 | 0.0% | 0.0 | 0.0 | 14.7 | 2.84 | 3.56 | 5.97 | 1.5 | **2.5** | **8.0** |
| O | 0.67 | 0.70 | 0.84 | 0.08 | 50 | 5 | 6.1 | 300 | 2.0% | 2.8 | 1.8 | 7.9 | 3.58 | 4.49 | 7.54 | 2.4 | **3.1** | **6.3** |
| P | 0.10 | 0.13 | 0.28 | 0.08 | 5 | 0.2 | 2.6 | 0 | 0.0% | 0.0 | 0.0 | 5.0 | 4.12 | 5.17 | 8.68 | 0.4 | **0.7** | **2.4** |
| Q | 0.10 | 0.12 | 0.24 | 0.08 | 5 | 0.5 | 1.9 | 0 | 0.0% | 0.0 | 0.0 | 5.0 | 4.12 | 5.17 | 8.68 | 0.4 | **0.6** | **2.0** |
| R | 0.14 | 0.15 | 0.19 | 0.08 | 100 | 4 | 11.7 | 50 | 2.0% | 2.8 | 0.3 | 11.9 | 3.08 | 3.86 | 6.48 | 0.4 | **0.6** | **1.3** |
| S | 0.41 | 0.45 | 0.59 | 0.08 | 100 | 4 | 11.7 | 50 | 2.0% | 2.8 | 0.3 | 11.9 | 3.08 | 3.86 | 6.48 | 1.3 | **1.7** | **3.8** |
| T | 0.22 | 0.90 | 3.92 | 0.08 | 100 | 4 | 11.7 | 0 | 2.0% | 0.0 | 0.0 | 11.7 | 3.11 | 3.90 | 6.55 | 0.7 | **3.5** | **25.6** |
| U | 0.53 | 0.54 | 0.56 | 0.08 | 0 | 0 | 0.0 | 300 | 2.0% | 2.8 | 1.8 | 5.0 | 4.12 | 5.17 | 8.68 | 2.2 | **2.8** | **5.0** |
| V | 0.31 | 0.32 | 0.37 | 0.08 | 50 | 2 | 8.2 | 100 | 2.0% | 2.8 | 0.6 | 8.8 | 3.44 | 4.32 | 7.25 | 1.1 | **1.4** | **2.7** |
| P1-A2 | 3.74 | 3.78 | 4.03 | 0.08 | 10 | 0.5 | 3.4 | 2260 | 0.9% | 1.9 | 11.8 | 15.2 | 2.79 | 3.50 | 5.87 | 10.4 | **13.2** | **23.7** |
| P1-A3 | 1.22 | 1.23 | 1.32 | 0.08 | 10 | 0.5 | 3.4 | 780 | 0.9% | 1.9 | 3.9 | 7.3 | 3.67 | 4.60 | 7.72 | 4.5 | **5.7** | **10.1** |
| P1-E2 | 0.44 | 1.74 | 7.63 | 0.08 | 100 | 2 | 14.7 | 780 | 2.0% | 2.8 | 3.9 | 18.6 | 2.56 | 3.20 | 5.38 | 1.1 | **5.6** | **41.0** |
| P1-B | 0.71 | 2.84 | 12.43 | 0.08 | 100 | 2 | 14.7 | 780 | 2.0% | 2.8 | 3.9 | 18.6 | 2.56 | 3.20 | 5.38 | 1.8 | **9.1** | **66.8** |


CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200
Colorado Springs, Colorado 80903
(719)785-0790
(719)785-0799 (Fax)

## LEGEND

BASIN ID — SC3-77

DESIGN POINT — 87

REACH IDENTIFIER — RT-17A

PROPERTY BNDRY

BASIN BOUNDARY

FLOW DIRECTION

STORM SEWER

FULL SPECTRUM DETENTION POND — FSD16

DETENTION POND — PNDW3

DETENTION POND — PND-E7

SAND CREEK/EAST FORK BASIN PER DBPS

SAND CREEK/EAST FORK BASIN BOUNDARY PER ACTUAL CONTOURS

INTERBASIN TRANSFER FROM EAST FORK TO SAND CREEK PER DBPS (198.2 AC)

INTERBASIN TRANSFER FROM EAST FORK TO SAND CREEK PER ACTUAL CONTOURS (267.3 AC)

AMENDMENT AREA

## REVISED BASIN HYDROLOGY PER SKETCH PLAN AMENDMENT

| BASIN | IMP % | AREA (AC.) | AREA (SQ.MI.) | $Q_2$ (CFS) | $Q_5$ (CFS) | $Q_{10}$ (CFS) | $Q_{25}$ (CFS) | $Q_{50}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|
| SC3-21 | 16.4 | 23.3 | 0.036 | 4.7 | 10.3 | 17.5 | 26.4 | 33.5 | 42.2 |
| SC3-23 | 46.3 | 14.5 | 0.023 | 10.2 | 15.6 | 21.2 | 27.8 | 33.9 | 40.7 |
| SCE-1 | 27.0 | 64.4 | 0.101 | 22.5 | 40.6 | 61.9 | 87.6 | 109.3 | 134.9 |
| SCE-3 | 46.3 | 67.5 | 0.105 | 40.1 | 61.5 | 83.5 | 109.4 | 133.3 | 159.8 |

## REVISED DETENTION/SWQ PER SKETCH PLAN AMENDMENT

| POND FSD-E1 | $Q_2$ | $Q_5$ | $Q_{10}$ | $Q_{25}$ | $Q_{50}$ | $Q_{100}$ |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 22.5 | 40.6 | 61.9 | 87.6 | 109.33 | 134.9 |
| ALLOWABLE RELEASE (CFS) | 0.7 | 11.0 | 22.1 | 50.9 | 65.7 | 84.1 |
| MODELED RELEASE (CFS) | 0.4 | 9.0 | 18.5 | 38.1 | 52.0 | 60.7 |
| STORED VOLUME (AC.-FT) | 1.732 | 2.398 | 2.828 | 3.513 | 3.956 | 4.771 |

| POND FSD-E2 | $Q_2$ | $Q_5$ | $Q_{10}$ | $Q_{25}$ | $Q_{50}$ | $Q_{100}$ |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 40.1 | 61.5 | 83.5 | 109.4 | 133.3 | 159.8 |
| ALLOWABLE RELEASE (CFS) | 0.6 | 9.5 | 19.2 | 45.5 | 59.8 | 77.6 |
| MODELED RELEASE (CFS) | 0.6 | 8.1 | 18.1 | 36.4 | 50.4 | 72.1 |
| STORED VOLUME (AC.-FT) | 3.014 | 3.977 | 4.493 | 5.233 | 5.705 | 6.377 |

## REVISED DETENTION/SWQ PER SKETCH PLAN AMENDMENT

| POND FSD21 | $Q_2$ | $Q_5$ | $Q_{10}$ | $Q_{25}$ | $Q_{50}$ | $Q_{100}$ |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 4.7 | 10.3 | 17.5 | 26.4 | 33.5 | 42.2 |
| ALLOWABLE RELEASE (CFS) | 0.3 | 4.0 | 8.0 | 18.3 | 23.7 | 30.3 |
| MODELED RELEASE (CFS) | 0.1 | 3.1 | 7.0 | 15.9 | 21.5 | 29.8 |
| STORED VOLUME (AC.-FT) | 0.415 | 0.621 | 0.731 | 0.917 | 1.015 | 1.145 |

| POND FSD23 | $Q_2$ | $Q_5$ | $Q_{10}$ | $Q_{25}$ | $Q_{50}$ | $Q_{100}$ |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 10.2 | 15.6 | 21.2 | 27.8 | 33.9 | 40.7 |
| ALLOWABLE RELEASE (CFS) | 0.2 | 2.4 | 4.9 | 11.2 | 14.5 | 18.6 |
| MODELED RELEASE (CFS) | 0.2 | 1.4 | 3.4 | 8.2 | 11.9 | 17.6 |
| STORED VOLUME (AC.-FT) | 0.630 | 0.849 | 0.955 | 1.125 | 1.228 | 1.364 |

BASIN AND FLOWS REMAIN CONSISTENT WITH MDDP. REFERENCE "PDR FOR STERLING RANCH EAST PRELIM. PLAN NO. 1" APPROVED JAN. 2023

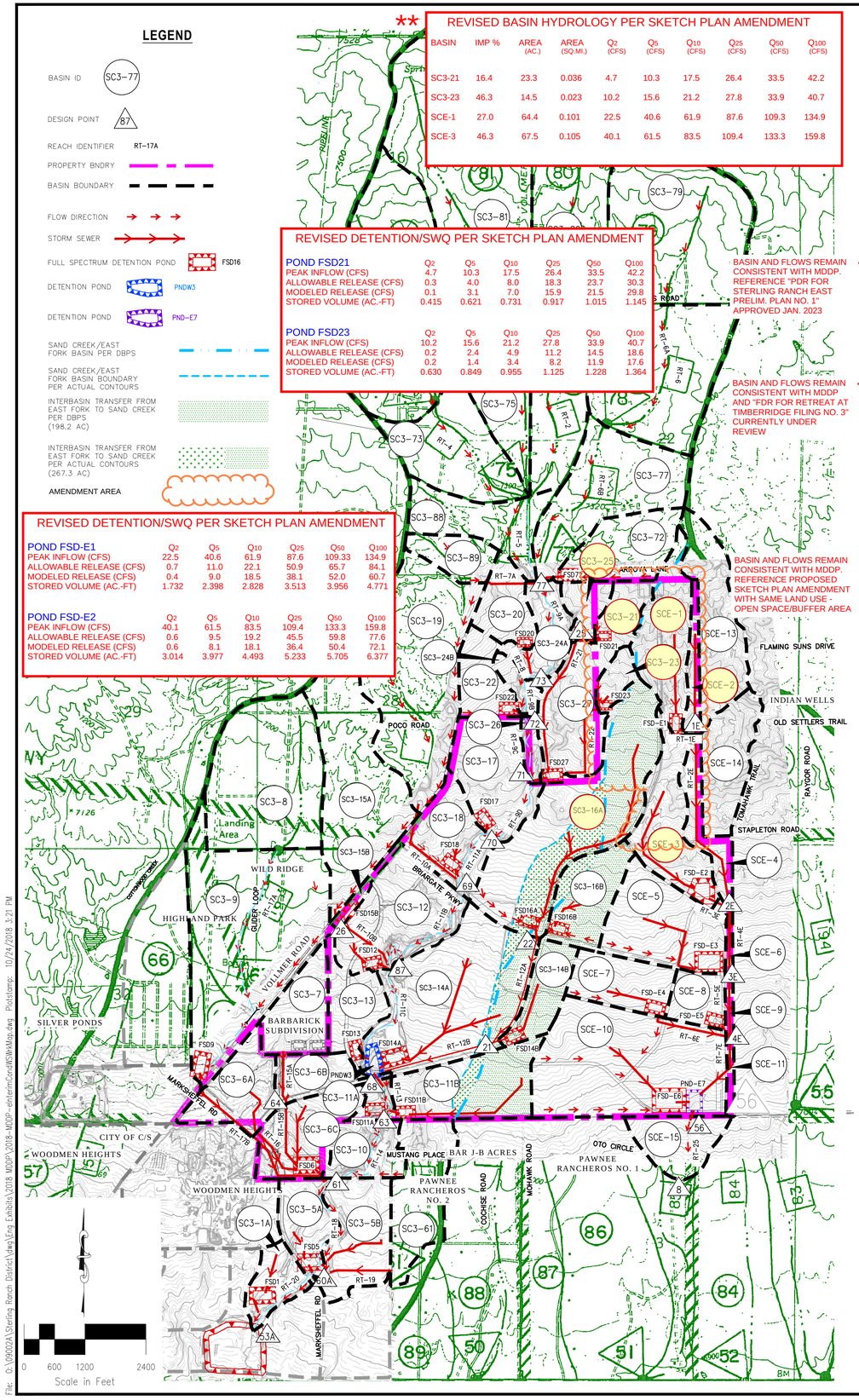
BASIN AND FLOWS REMAIN CONSISTENT WITH MDDP AND "FDR FOR RETREAT AT TIMBERRIDGE FILING NO. 3" CURRENTLY UNDER REVIEW

BASIN AND FLOWS REMAIN CONSISTENT WITH MDDP. REFERENCE PROPOSED SKETCH PLAN AMENDMENT WITH SAME LAND USE - OPEN SPACE/BUFFER AREA

REVISED BASIN FLOWS PER SKETCH PLAN AMENDMENT SEE TABLE ABOVE

REVISED BASIN FLOWS PER SKETCH PLAN AMENDMENT SEE TABLE ABOVE

REVISED BASIN FLOWS PER SKETCH PLAN AMENDMENT SEE TABLE ABOVE




## BASIN SUMMARY

| BASIN | CN | AREA (ACRES) | AREA (SQ MI) | $Q_2$ (CFS) | $Q_5$ (CFS) | $Q_{10}$ (CFS) | $Q_{25}$ (CFS) | $Q_{50}$ (CFS) | $Q_{100}$ (CFS) |
|---|---|---|---|---|---|---|---|---|---|
| SC3-1A | 73 | 27.8 | 0.044 | 16.3 | 23.3 | 33.0 | 45.8 | 57.1 | 68.9 |
| SC3-5A | 84 | 39.1 | 0.061 | 40.6 | 53.7 | 71.0 | 92.4 | 110.6 | 129.1 |
| SC3-5B | 81 | 63.0 | 0.098 | 53.8 | 73.0 | 98.5 | 130.8 | 158.6 | 187.0 |
| SC3-6A | 88 | 49.3 | 0.077 | 61.4 | 79.3 | 102.2 | 130.1 | 153.6 | 177.1 |
| SC3-6B | 85 | 30.9 | 0.048 | 32.9 | 43.4 | 57.0 | 73.9 | 88.2 | 102.7 |
| SC3-6C | 82 | 58.0 | 0.091 | 53.9 | 72.5 | 97.1 | 128.0 | 154.5 | 181.5 |
| SC3-7 | 88 | 45.7 | 0.071 | 54.0 | 69.9 | 90.3 | 115.2 | 136.2 | 157.2 |
| SC3-8 | 62 | 143.4 | 0.224 | 25.4 | 42.1 | 66.7 | 100.7 | 132.3 | 166.2 |
| SC3-9 | 66 | 217.4 | 0.340 | 45.8 | 71.5 | 108.6 | 158.9 | 204.9 | 254.0 |
| SC3-10 | 63 | 36.0 | 0.056 | 7.6 | 12.3 | 19.4 | 29.1 | 38.0 | 47.7 |
| SC3-11A | 70 | 10.7 | 0.017 | 5.3 | 7.8 | 11.3 | 15.9 | 20.0 | 24.3 |
| SC3-11B | 80 | 76.6 | 0.120 | 59.4 | 81.3 | 110.8 | 148.1 | 180.5 | 213.7 |
| SC3-12 | 81 | 88.2 | 0.138 | 77.8 | 105.6 | 142.5 | 189.1 | 229.1 | 270.0 |
| SC3-13 | 85 | 41.0 | 0.064 | 43.9 | 57.8 | 76.0 | 98.5 | 117.6 | 136.9 |
| SC3-14A | 79 | 164.9 | 0.258 | 127.6 | 175.4 | 239.8 | 321.9 | 393.2 | 466.3 |
| SC3-14B | 77 | 34.7 | 0.054 | 24.6 | 34.3 | 47.4 | 64.2 | 79.0 | 94.1 |
| SC3-15A | 62 | 139.7 | 0.218 | 21.3 | 35.5 | 56.3 | 85.3 | 112.1 | 141.0 |
| SC3-15B | 87 | 7.9 | 0.012 | 10.8 | 14.0 | 18.2 | 23.3 | 27.6 | 31.9 |
| SC3-16A | 74 | 168.1 | 0.263 | 84.4 | 120.4 | 170.0 | 234.8 | 292.2 | 351.8 |
| SC3-16B | 78 | 50.7 | 0.079 | 39.0 | 53.7 | 73.6 | 99.0 | 121.1 | 143.8 |
| SC3-17 | 73 | 70.6 | 0.110 | 41.8 | 59.6 | 85.2 | 119.0 | 149.1 | 180.6 |
| SC3-18 | 81 | 53.8 | 0.084 | 49.3 | 67.1 | 91.0 | 121.2 | 147.3 | 174.0 |
| SC3-19 | 62 | 184.0 | 0.287 | 28.8 | 47.7 | 75.7 | 114.4 | 150.2 | 188.8 |
| SC3-20 | 65 | 34.2 | 0.053 | 9.9 | 15.5 | 23.8 | 35.1 | 45.5 | 56.6 |
| SC3-21 | 66 | 23.3 | 0.036 | 7.0 | 10.8 | 16.3 | 23.7 | 30.4 | 37.5 |
| SC3-22 | 65 | 33.9 | 0.053 | 9.4 | 14.8 | 22.5 | 32.9 | 42.5 | 52.6 |
| SC3-23 | 67 | 14.5 | 0.023 | 5.5 | 8.3 | 12.4 | 18.0 | 23.0 | 28.4 |
| SC3-24A | 65 | 35.7 | 0.056 | 13.0 | 20.4 | 31.1 | 45.7 | 59.0 | 73.2 |
| SC3-24B | 65 | 12.2 | 0.019 | 3.4 | 5.3 | 8.1 | 11.8 | 15.2 | 18.9 |
| SC3-25 | 66 | 19.0 | 0.030 | 5.8 | 8.9 | 13.4 | 19.5 | 25.1 | 31.0 |
| SC3-26 | 63 | 10.0 | 0.016 | 2.5 | 4.0 | 6.2 | 9.2 | 12.1 | 15.1 |
| SC3-27 | 71 | 70.0 | 0.109 | 35.1 | 51.2 | 73.8 | 103.7 | 130.3 | 158.3 |
| SC3-61 | 63 | 65.5 | 0.102 | 13.7 | 22.0 | 34.4 | 51.6 | 67.6 | 84.8 |
| SC3-72 | 64 | 56.2 | 0.088 | 12.8 | 20.2 | 31.4 | 46.7 | 60.9 | 76.0 |
| SC3-73 | 63 | 90.0 | 0.141 | 16.4 | 26.4 | 41.3 | 62.1 | 81.3 | 102.0 |
| SC3-74 | 63 | 119.7 | 0.187 | 22.3 | 36.5 | 57.3 | 85.9 | 112.3 | 140.7 |
| SC3-75 | 63 | 79.3 | 0.124 | 13.1 | 21.5 | 33.7 | 50.5 | 66.1 | 82.8 |
| SC3-76 | 63 | 86.4 | 0.135 | 14.2 | 23.1 | 36.4 | 54.6 | 71.4 | 89.6 |
| SC3-77 | 62 | 106.9 | 0.167 | 16.6 | 27.6 | 43.8 | 66.2 | 87.0 | 109.4 |
| SC3-78 | 63 | 155.6 | 0.243 | 28.1 | 45.3 | 70.6 | 106.2 | 139.1 | 174.5 |
| SC3-79 | 63 | 189.0 | 0.295 | 34.9 | 57.0 | 89.5 | 134.3 | 175.6 | 220.1 |
| SC3-80 | 63 | 147.7 | 0.231 | 27.3 | 44.3 | 69.6 | 104.5 | 136.8 | 171.4 |
| SC3-81 | 62 | 262.9 | 0.411 | 42.6 | 70.2 | 111.0 | 167.4 | 219.6 | 275.7 |
| SC3-82 | 62 | 117.8 | 0.184 | 20.0 | 33.2 | 52.8 | 80.0 | 105.1 | 132.3 |
| SC3-88 | 62 | 60.2 | 0.094 | 10.5 | 17.4 | 27.6 | 41.8 | 54.9 | 69.0 |
| SC3-89 | 62 | 27.5 | 0.043 | 6.1 | 10 | 15.7 | 23.6 | 30.8 | 38.6 |
| SCE-1 | 65 | 64.4 | 0.101 | 23.3 | 35.9 | 53.8 | 79.1 | 102.4 | 127.4 |
| SCE-2 | 64 | 15.0 | 0.023 | 4.4 | 7.0 | 10.8 | 15.9 | 20.7 | 25.7 |
| SCE-3 | 70 | 67.5 | 0.105 | 30.6 | 45.2 | 65.9 | 93.3 | 118.0 | 143.9 |
| SCE-4 | 70 | 29.5 | 0.046 | 13.3 | 19.6 | 28.6 | 40.6 | 257.8 | 62.6 |
| SCE-5 | 87 | 85.5 | 0.134 | 100.4 | 130.6 | 169.6 | 217.4 | 257.8 | 298.4 |
| SCE-6 | 64 | 3.8 | 0.006 | 1.6 | 2.5 | 3.7 | 5.4 | 7.0 | 8.6 |
| SCE-7 | 89 | 44.9 | 0.070 | 58.9 | 75.5 | 96.6 | 122.2 | 143.7 | 165.2 |
| SCE-8 | 92 | 25.5 | 0.040 | 38.6 | 48.4 | 60.7 | 75.4 | 87.7 | 99.9 |
| SCE-9 | 64 | 4.0 | 0.006 | 1.5 | 2.4 | 3.6 | 5.3 | 6.8 | 8.5 |
| SCE-10 | 83 | 174.3 | 0.272 | 7.6 | 189.4 | 19.4 | 29.1 | 398.9 | 467.5 |
| SCE-11 | 64 | 5.8 | 0.009 | 2.3 | 3.6 | 5.5 | 8.0 | 10.3 | 12.8 |
| SCE-13 | 63 | 78.6 | 0.123 | 19.6 | 31.3 | 48.7 | 73.1 | 95.7 | 120.0 |
| SCE-14 | 63 | 52.5 | 0.082 | 13.2 | 21.2 | 33.3 | 49.9 | 65.2 | 81.7 |
| SCE-15 | 51 | 39.7 | 0.062 | 2.2 | 5.1 | 10.1 | 17.7 | 25.1 | 33.4 |

## DESIGN POINT SUMMARY

| DESIGN POINT | AREA (SQ MI) | $Q_2$ (CFS) | $Q_5$ (CFS) | $Q_{10}$ (CFS) | $Q_{25}$ (CFS) | $Q_{50}$ (CFS) | $Q_{100}$ (CFS) | LOCATION |
|---|---|---|---|---|---|---|---|---|
| DP-74 | 0.371 | 39.3 | 65.3 | 104.8 | 158.9 | 209.1 | 262.8 | |
| DP-75 | 1.413 | 141.2 | 235.1 | 376.6 | 566.6 | 750.9 | 950.5 | |
| DP-77 | 2.343 | 209.9 | 351.9 | 580.6 | 886.6 | 1168.4 | 1467.7 | ARROYA LANE X-ING |
| DP-78 | 0.538 | 59.7 | 98.4 | 154.0 | 232.6 | 306.2 | 385.3 | |
| DP-73 | 2.471 | 207.5 | 354.3 | 588.5 | 897.1 | 1187.2 | 1506.7 | |
| DP-72 | 2.543 | 206.2 | 352.5 | 586.7 | 897.2 | 1195.3 | 1518.6 | POCO ROAD X-ING |
| DP-71 | 2.757 | 205.9 | 349.3 | 610.5 | 932.4 | 1226.9 | 1612.2 | STERLING RANCH NORTHERN BNDRY |
| DP-70 | 2.867 | 205.3 | 349.8 | 614.0 | 940.1 | 1260.8 | 1657.6 | |
| DP-69 | 3.238 | 212.7 | 366.6 | 653.7 | 1010.6 | 1364.1 | 1775.7 | BRIARGATE PARKWAY X-ING |
| DP-87 | 3.594 | 216.9 | 374.6 | 681.9 | 1072.1 | 1471.5 | 1905.9 | |
| DP-68 | 4.312 | 214.6 | 374.5 | 714.9 | 1187.6 | 1674.9 | 2204.1 | UPSTREAM OF POND W3 |
| DP-64 | 0.119 | 85.9 | 112.1 | 145.9 | 187.5 | 222.6 | 258.0 | |
| DP-63 | 4.449 | 154.4 | 201.0 | 375.7 | 815.9 | 1112.1 | 1385.1 | STERLING RANCH SOUTHERN BNDRY |
| DP-61 | 5.356 | 156.6 | 223.9 | 428.0 | 928.2 | 1287.3 | 1620.1 | COLORADO SPRINGS/EL PASO BNDRY |
| DP-60A | 5.617 | 161.6 | 224.8 | 439.1 | 950.4 | 1320.5 | 1661.8 | MARKSHEFFEL X-ING |
| DP-53A | 5.661 | 161.6 | 225.7 | 441.8 | 951.1 | 1326.0 | 1668.9 | SAND CREEK AND POND 3 |
| DP-1E | 0.247 | 23.9 | 38.3 | 70.1 | 132.8 | 173.0 | 220.9 | |
| DP-2E | 0.486 | 48.9 | 76.8 | 123.0 | 228.7 | 319.7 | 419.4 | |
| DP-3E | 0.626 | 48.5 | 75.7 | 122.2 | 271.1 | 387.1 | 500.1 | |
| DP-4E | 0.745 | 48.1 | 76.2 | 122.4 | 286.9 | 407.3 | 534.8 | |
| DP-56 | 1.017 | 23.1 | 35.3 | 71.5 | 108.3 | 152.1 | 196.4 | NEAR SE PROP CORNER |
| DP-8 | 1.079 | 24.1 | 37.2 | 73.5 | 111.3 | 155.4 | 200.7 | BELOW SE PROP CORNER |
| DP-21 | 0.396 | 0.6 | 8.8 | 17.8 | 57.1 | 116.8 | 174.9 | |
| DP-22 | 0.342 | 0.6 | 8.8 | 17.6 | 56.8 | 105.1 | 156.4 | |
| DP-25 | 0.066 | 5.9 | 9.1 | 16.3 | 35.1 | 46.4 | 58.2 | |
| DP-26 | 0.012 | 0.1 | 1.1 | 3.2 | 7.3 | 9.5 | 12.0 | |

## DESIGN POINT SUMMARY ( VOLUME)

| DESIGN POINT | AREA (SQ MI) | $V_2$ (AC-FT) | $V_5$ (AC-FT) | $V_{10}$ (AC-FT) | $V_{25}$ (AC-FT) | $V_{50}$ (AC-FT) | $V_{100}$ (AC-FT) | LOCATION |
|---|---|---|---|---|---|---|---|---|
| DP-74 | 0.371 | 5.9 | 9.0 | 13.6 | 19.8 | 25.5 | 31.6 | |
| DP-75 | 1.413 | 22.7 | 34.5 | 51.7 | 75.4 | 97.1 | 120.5 | |
| DP-77 | 2.343 | 37.7 | 57.4 | 85.9 | 125.1 | 161.1 | 199.9 | ARROYA LANE X-ING |
| DP-78 | 0.538 | 8.9 | 13.5 | 20.1 | 29.3 | 37.7 | 46.7 | |
| DP-73 | 2.471 | 40.0 | 60.8 | 91.0 | 132.5 | 170.7 | 211.7 | |
| DP-72 | 2.543 | 41.3 | 62.9 | 94.0 | 136.8 | 176.2 | 218.5 | POCO ROAD X-ING |
| DP-71 | 2.757 | 46.3 | 70.0 | 104.3 | 151.3 | 194.5 | 240.8 | STERLING RANCH NORTHERN BNDRY |
| DP-70 | 2.867 | 49.5 | 74.5 | 110.6 | 160.1 | 205.4 | 254.0 | |
| DP-69 | 3.238 | 57.5 | 86.1 | 127.4 | 183.8 | 235.3 | 290.6 | BRIARGATE PARKWAY X-ING |
| DP-87 | 3.594 | 66.5 | 98.9 | 145.6 | 209.1 | 267.1 | 329.1 | |
| DP-68 | 4.312 | 81.8 | 123.7 | 183.9 | 264.9 | 338.0 | 415.8 | UPSTREAM OF POND W3 |
| DP-64 | 0.119 | 7.0 | 9.1 | 11.8 | 15.2 | 18.1 | 21.1 | |
| DP-63 | 4.449 | 85.6 | 129.5 | 192.3 | 276.7 | 352.8 | 433.5 | STERLING RANCH SOUTHERN BNDRY |
| DP-61 | 5.356 | 103.7 | 157.8 | 235.1 | 338.4 | 431.3 | 529.8 | COLORADO SPRINGS/EL PASO BNDRY |
| DP-60A | 5.617 | 111.0 | 168.6 | 250.4 | 359.5 | 457.7 | 561.5 | MARKSHEFFEL X-ING |
| DP-53A | 5.661 | 112.0 | 170.0 | 252.6 | 362.6 | 461.7 | 566.5 | SAND CREEK AND POND 3 |
| DP-1E | 0.247 | 3.1 | 5.2 | 8.4 | 12.7 | 16.6 | 20.9 | |
| DP-2E | 0.480 | 6.1 | 10.4 | 16.9 | 25.7 | 33.7 | 42.2 | |
| DP-3E | 0.620 | 7.0 | 13.7 | 23.4 | 36.1 | 47.4 | 59.3 | |
| DP-4E | 0.736 | 7.6 | 15.6 | 27.2 | 43.0 | 57.2 | 72.0 | |
| DP-56 | 1.017 | 7.7 | 16.1 | 28.6 | 51.3 | 71.7 | 92.9 | NEAR SE PROP CORNER |
| DP-8 | 1.079 | 8.0 | 16.7 | 26.6 | 53.0 | 74.0 | 95.9 | BELOW SE PROP CORNER |
| DP-21 | 0.396 | 6.3 | 11.3 | 18.3 | 27.5 | 35.6 | 44.0 | |
| DP-22 | 0.736 | 6.3 | 10.7 | 16.7 | 24.6 | 31.5 | 38.7 | |
| DP-25 | 1.017 | 1.3 | 1.9 | 2.8 | 4.1 | 5.2 | 6.4 | |
| DP-26 | 1.079 | 0.7 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1 | |

## WATER QUALITY & DETENTION POND SUMMARY

FSD1

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 16.3 | 23.3 | 33.0 | 45.8 | 57.1 | 68.9 |
| ALLOWABLE RELEASE (CFS) | 0.1 | 1.7 | 3.3 | 10.9 | 17.5 | 25.5 |
| MODELED RELEASE (CFS) | 0.1 | 1.6 | 3.2 | 10.9 | 17.4 | 25.4 |
| STORED VOLUME (AC-FT) | 2.4 | 2.6 | 3.0 | 3.6 | 1.9 | 2.2 |

FSD5

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 40.6 | 53.7 | 71.0 | 92.4 | 110.6 | 129.1 |
| ALLOWABLE RELEASE (CFS) | 0.1 | 1.4 | 2.6 | 11.3 | 19.8 | 30.2 |
| MODELED RELEASE (CFS) | 0.1 | 1.4 | 2.6 | 11.2 | 19.7 | 30.1 |
| STORED VOLUME (AC-FT) | 3.0 | 3.2 | 3.8 | 4.1 | 4.7 | 5.2 |

FSD6

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 196.5 | 258.5 | 339.1 | 438.7 | 523.3 | 608.6 |
| ALLOWABLE RELEASE (CFS) | 0.5 | 7.6 | 14.6 | 58.4 | 99.6 | 149.7 |
| MODELED RELEASE (CFS) | 0.5 | 7.5 | 14.5 | 58.2 | 99.6 | 149.6 |
| STORED VOLUME (AC-FT) | 15.5 | 16.4 | 18.7 | 20.8 | 23.3 | 26.0 |

FSD9

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 64.6 | 105.6 | 169.5 | 252.3 | 327.1 | 410.1 |
| ALLOWABLE RELEASE (CFS) | 1.7 | 24.9 | 49.8 | 141.1 | 207.2 | 290.0 |
| MODELED RELEASE (CFS) | 1.7 | 24.9 | 49.8 | 141.1 | 207.0 | 289.9 |
| STORED VOLUME (AC-FT) | 8.7 | 8.7 | 9.6 | 10.8 | 12.3 | 13.8 |

FSD11A

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 5.3 | 7.8 | 11.3 | 15.9 | 20.0 | 24.3 |
| ALLOWABLE RELEASE (CFS) | 0.1 | 1.6 | 3.2 | 7.5 | 9.7 | 12.4 |
| MODELED RELEASE (CFS) | 0.2 | 0.9 | 3.0 | 7.5 | 9.7 | 12.3 |
| STORED VOLUME (AC-FT) | 0.3 | 0.3 | 0.4 | 0.4 | 0.5 | 0.6 |

FSD11B

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 59.4 | 81.3 | 110.8 | 148.1 | 180.5 | 213.7 |
| ALLOWABLE RELEASE (CFS) | 0.3 | 4.5 | 8.7 | 29.6 | 47.7 | 69.6 |
| MODELED RELEASE (CFS) | 0.3 | 4.5 | 8.6 | 29.5 | 47.7 | 69.5 |
| STORED VOLUME (AC-FT) | 4.8 | 4.9 | 5.5 | 6.4 | 7.3 | 8.2 |

FSD12

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 77.8 | 105.6 | 142.5 | 189.1 | 229.1 | 270.0 |
| ALLOWABLE RELEASE (CFS) | 0.9 | 13.2 | 26.7 | 62.0 | 80.2 | 103.2 |
| MODELED RELEASE (CFS) | 0.9 | 9.0 | 26.7 | 61.9 | 80.1 | 103.1 |
| STORED VOLUME (AC-FT) | 5.2 | 5.5 | 5.8 | 6.7 | 7.8 | 8.9 |

FSD13

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 43.9 | 57.8 | 76.0 | 98.5 | 117.6 | 136.9 |
| ALLOWABLE RELEASE (CFS) | 0.4 | 6.1 | 12.3 | 28.6 | 37.0 | 47.6 |
| MODELED RELEASE (CFS) | 0.4 | 4.2 | 12.3 | 28.6 | 36.9 | 47.2 |
| STORED VOLUME (AC-FT) | 3.1 | 3.1 | 3.3 | 3.8 | 4.4 | 5.0 |

FSD14A

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 127.6 | 175.4 | 239.8 | 321.9 | 393.2 | 466.3 |
| ALLOWABLE RELEASE (CFS) | 0.5 | 7.5 | 14.4 | 56.2 | 95.2 | 142.4 |
| MODELED RELEASE (CFS) | 0.5 | 7.5 | 14.4 | 56.2 | 95.1 | 142.2 |
| STORED VOLUME (AC-FT) | 9.9 | 10.6 | 11.9 | 13.5 | 15.3 | 17.3 |

FSD14B

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 24.6 | 34.3 | 47.4 | 64.2 | 79.0 | 94.1 |
| ALLOWABLE RELEASE (CFS) | 0.0 | 0.3 | 0.5 | 5.7 | 11.8 | 19.3 |
| MODELED RELEASE (CFS) | 0.0 | 0.3 | 0.5 | 4.5 | 11.8 | 19.3 |
| STORED VOLUME (AC-FT) | 1.9 | 2.5 | 3.3 | 3.5 | 3.5 | 3.8 |

FSD15B

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 10.8 | 14.0 | 18.2 | 23.3 | 27.6 | 31.9 |
| ALLOWABLE RELEASE (CFS) | 0.1 | 1.6 | 3.2 | 7.3 | 9.5 | 12.0 |
| MODELED RELEASE (CFS) | 0.1 | 1.1 | 3.2 | 7.3 | 9.5 | 12.0 |
| STORED VOLUME (AC-FT) | 0.6 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 |

FSD16A

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 84.4 | 120.4 | 170.0 | 234.8 | 292.2 | 351.8 |
| ALLOWABLE RELEASE (CFS) | 0.6 | 8.8 | 17.3 | 56.2 | 88.4 | 128.3 |
| MODELED RELEASE (CFS) | 0.6 | 8.8 | 17.3 | 56.2 | 88.3 | 128.3 |
| STORED VOLUME (AC-FT) | 7.6 | 7.7 | 8.9 | 10.4 | 12.1 | 13.8 |

## SAND CREEK FLOW COMPARISON CHART

| DESIGN POINT | AREA (SQ MI) | $Q_{100}$ (CFS) | DESCRIPTION |
|---|---|---|---|
| DP-77 | 2.343 | 1468 | PROPOSED CONDITION |
| | 2.91 | 2262 | SAND CREEK DBPS |
| | | 2600 | FEMA |
| DP-71 | 2.757 | 1612 | PROPOSED CONDITION |
| | | 2260 | SAND CREEK DBPS |
| DP-63 | 4.449 | 1385 | PROPOSED CONDITION |
| | 4.33 | 2630 | SAND CREEK DBPS |
| | | 2600 | FEMA |
| DP-60A | 5.661 | 1662 | PROPOSED CONDITION |
| | 5.38 | 3295 | SAND CREEK DBPS |

## EFSC DBPS DESIGN POINT SUMMARY (PEAK FLOW)

| DBPS DESIGN POINT | AREA (SQ MI) | $Q_{10}$ (CFS) (EXIST) | $Q_{100}$ (CFS) (EXIST) | AREA (SQ MI) | $Q_{10}$ (CFS) (PROP) | $Q_{100}$ (CFS) (PROP) |
|---|---|---|---|---|---|---|
| DP-50 | 0.32 | 47.0 | 195.7 | 0.32 | 146.7 | 370.3 |
| DP-51 (BASIN 86) | 0.33 | 17.7 | 74.1 | 0.33 | 110.0 | 233.5 |
| DP-52 | 1.67 | 80.5 | 456.5 | 1.67 | 1207.9 | 2123.0 |
| DP-56 | 0.79 | 63.6 | 265.0 | 0.79 | 513.0 | 908.2 |

Values reported from SCDBPS, (DP 50, 51, 52 Not analyzed as a part of this study)
DBPS Reach 85(Basin91)=Q10=28.8cfs_Q100=115.2cfs / Q10=345.7cfs_Q100=588.9cfs
(EXISTING) (PROPOSED)

## WATER QUALITY & DETENTION POND SUMMARY

FSD16B

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 39.0 | 53.7 | 73.6 | 99.0 | 121.1 | 143.8 |
| ALLOWABLE RELEASE (CFS) | 0.0 | 0.4 | 0.7 | 8.3 | 17.2 | 28.2 |
| MODELED RELEASE (CFS) | 0.0 | 0.4 | 0.7 | 7.9 | 17.2 | 28.1 |
| STORED VOLUME (AC-FT) | 3.0 | 3.9 | 5.1 | 5.1 | 5.3 | 5.8 |

FSD17

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 41.8 | 59.6 | 85.2 | 119.0 | 149.1 | 180.6 |
| ALLOWABLE RELEASE (CFS) | 0.7 | 11.1 | 22.5 | 52.0 | 67.2 | 86.3 |
| MODELED RELEASE (CFS) | 0.7 | 8.4 | 22.4 | 52.0 | 67.2 | 86.1 |
| STORED VOLUME (AC-FT) | 2.6 | 2.6 | 2.8 | 3.4 | 4.0 | 4.7 |

FSD18

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 49.3 | 67.1 | 91.0 | 121.2 | 147.3 | 174.0 |
| ALLOWABLE RELEASE (CFS) | 0.6 | 9.2 | 18.4 | 42.2 | 54.6 | 69.9 |
| MODELED RELEASE (CFS) | 0.6 | 6.3 | 18.4 | 42.2 | 54.6 | 69.6 |
| STORED VOLUME (AC-FT) | 3.2 | 3.2 | 3.4 | 4.0 | 4.7 | 5.3 |

FSD20

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---|---|---|---|
| PEAK INFLOW (CFS) | 9.9 | 15.5 | 23.8 | 35.1 | 45.5 | 56.6 |
| ALLOWABLE RELEASE (CFS) | 0.4 | 5.5 | 11.1 | 25.7 | 33.2 | 42.5 |
| MODELED RELEASE (CFS) | 0.4 | 2.8 | 10.9 | 25.7 | 33.0 | 42.4 |
| STORED VOLUME (AC-FT) | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.2 |

FSD21 REVISED FSD DESIGN PER SKETCH PLAN AMENDMENT - SEE TABLE LEFT

| STORM EVENT (YR) | 2 | 5 | 10 | 25 | 50 | 100 |
|---|---|---|---

# PRELIMINARY DRAINAGE REPORT
# FOR
# STERLING RANCH EAST FILING NO. 6
# PRELIMINARY PLAN
# AND
# FINAL DRAINAGE REPORT
# FOR EARLY GRADING

Prepared for:
**CLASSIC SRJ LAND, LLC**
2138 FLYING HORSE CLUB DRIVE
COLORADO SPRINGS CO 80921
(719) 592-9333

Prepared by:
**CLASSIC CONSULTING**
619 N. CASCADE AVE SUITE 200
COLORADO SPRINGS CO 80903
(719) 785-0790

Job No. 1183.60

PCD Project No. SP244

MATCH LINE SEE SHEET 4

## PRELIMINARY DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Interim)

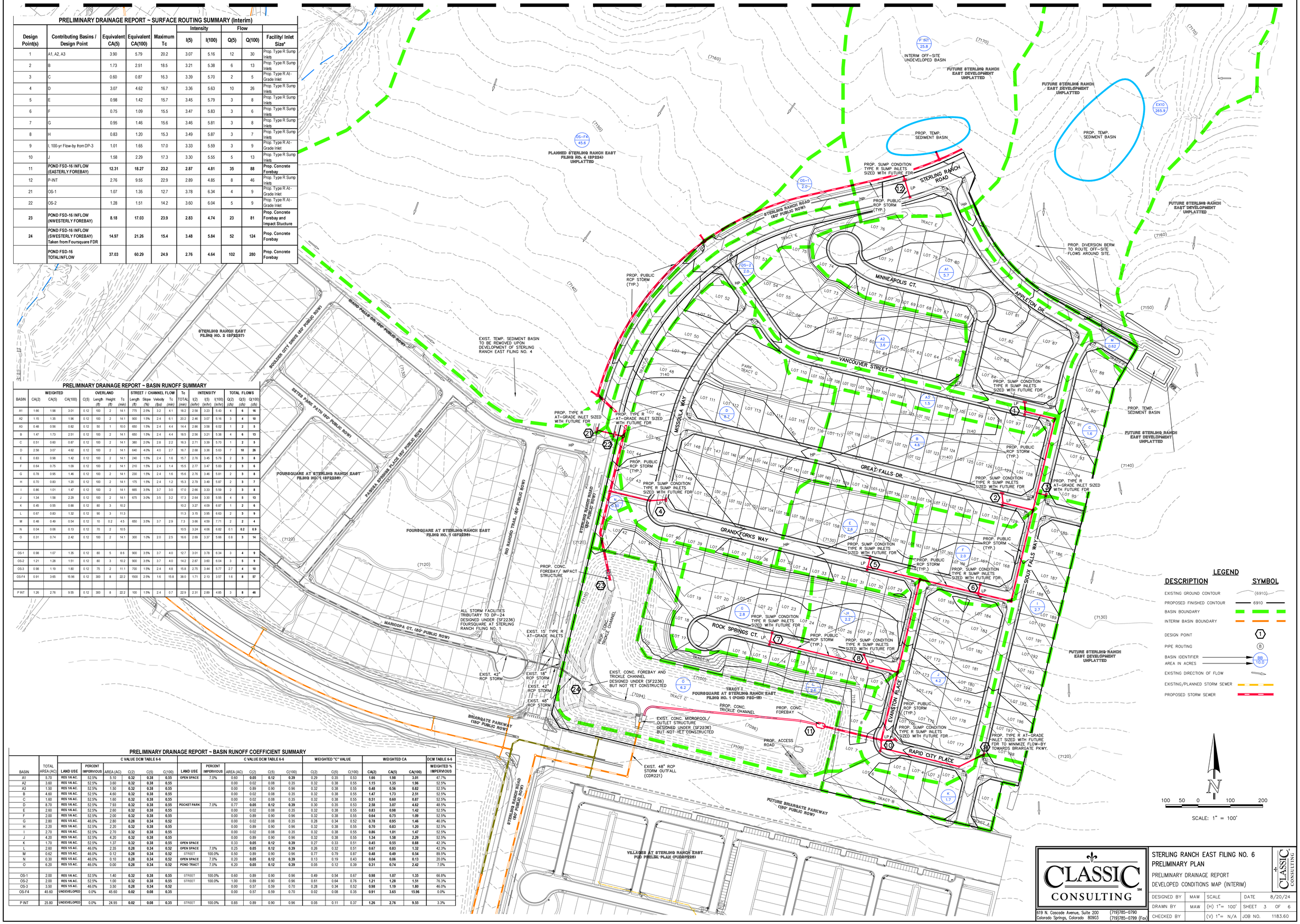
| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A1, A2, A3 | 3.90 | 5.79 | 20.2 | 3.07 | 5.16 | 12 | 30 | Prop. Type R Sump Inlets |
| 2 | B | 1.73 | 2.51 | 18.5 | 3.21 | 5.38 | 6 | 13 | Prop. Type R Sump Inlets |
| 3 | C | 0.60 | 0.87 | 16.3 | 3.39 | 5.70 | 2 | 5 | Prop. Type R At-Grade Inlet |
| 4 | D | 3.07 | 4.62 | 16.7 | 3.36 | 5.63 | 10 | 26 | Prop. Type R Sump Inlets |
| 5 | E | 0.98 | 1.42 | 15.7 | 3.45 | 5.79 | 3 | 8 | Prop. Type R Sump Inlets |
| 6 | F | 0.75 | 1.09 | 15.5 | 3.47 | 5.83 | 3 | 6 | Prop. Type R Sump Inlets |
| 7 | G | 0.95 | 1.46 | 15.6 | 3.46 | 5.81 | 3 | 8 | Prop. Type R Sump Inlets |
| 8 | H | 0.83 | 1.20 | 15.3 | 3.49 | 5.87 | 3 | 7 | Prop. Type R Sump Inlets |
| 9 | I, 100-yr Flow-by from DP-3 | 1.01 | 1.65 | 17.0 | 3.33 | 5.59 | 3 | 9 | Prop. Type R At-Grade Inlet |
| 10 | J | 1.58 | 2.29 | 17.3 | 3.30 | 5.55 | 5 | 13 | Prop. Type R Sump Inlets |
| 11 | **POND FSD-16 INFLOW (EASTERLY FOREBAY)** | **12.31** | **18.27** | **23.2** | **2.87** | **4.81** | **35** | **88** | **Prop. Concrete Forebay** |
| 12 | P-INT | 2.76 | 9.55 | 22.9 | 2.89 | 4.85 | 8 | 46 | Prop. Type R Sump Inlets |
| 21 | OS-1 | 1.07 | 1.35 | 12.7 | 3.78 | 6.34 | 4 | 9 | Prop. Type R At-Grade Inlet |
| 22 | OS-2 | 1.28 | 1.51 | 14.2 | 3.60 | 6.04 | 5 | 9 | Prop. Type R At-Grade Inlet |
| **23** | **POND FSD-16 INFLOW (NWESTERLY FOREBAY)** | **8.18** | **17.03** | **23.9** | **2.83** | **4.74** | **23** | **81** | **Prop. Concrete Forebay and Impact Stucture** |
| **24** | **POND FSD-16 INFLOW (SWESTERLY FOREBAY) Taken from Foursquare FDR** | **14.97** | **21.26** | **15.4** | **3.48** | **5.84** | **52** | **124** | **Prop. Concrete Forebay** |
| | **POND FSD-16 TOTALINFLOW** | **37.03** | **60.29** | **24.9** | **2.76** | **4.64** | **102** | **280** | **Prop. Concrete Forebay** |

## PRELIMINARY DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED CA(2) | WEIGHTED CA(5) | WEIGHTED CA(100) | OVERLAND C(5) | OVERLAND Length (ft) | OVERLAND Height (ft) | OVERLAND Tc (min) | STREET / CHANNEL FLOW Length (ft) | STREET / CHANNEL FLOW Slope (%) | STREET / CHANNEL FLOW Velocity (fps) | STREET / CHANNEL FLOW Tc (min) | Tc TOTAL (min) | INTENSITY I(2) (in/hr) | INTENSITY I(5) (in/hr) | INTENSITY I(100) (in/hr) | TOTAL FLOWS Q(2) (cfs) | TOTAL FLOWS Q(5) (cfs) | TOTAL FLOWS Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 1.66 | 1.98 | 3.01 | 0.12 | 100 | 2 | 14.1 | 775 | 2.5% | 3.2 | 4.1 | 18.2 | 2.58 | 3.23 | 5.43 | 4 | **6** | **16** |
| A2 | 1.15 | 1.35 | 1.96 | 0.12 | 100 | 2 | 14.1 | 900 | 1.5% | 2.4 | 6.1 | 20.2 | 2.46 | 3.07 | 5.16 | 3 | **4** | **10** |
| A3 | 0.48 | 0.56 | 0.82 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.86 | 3.58 | 6.02 | 1 | **2** | **5** |
| B | 1.47 | 1.73 | 2.51 | 0.12 | 100 | 2 | 14.1 | 650 | 1.5% | 2.4 | 4.4 | 18.5 | 2.56 | 3.21 | 5.38 | 4 | **6** | **13** |
| C | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 380 | 2.0% | 2.8 | 2.2 | 16.3 | 2.71 | 3.39 | 5.70 | 1 | **2** | **5** |
| D | 2.58 | 3.07 | 4.62 | 0.12 | 100 | 2 | 14.1 | 640 | 4.0% | 4.0 | 2.7 | 16.7 | 2.68 | 3.36 | 5.63 | 7 | **10** | **26** |
| E | 0.83 | 0.98 | 1.42 | 0.12 | 100 | 2 | 14.1 | 240 | 1.5% | 2.4 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 2 | **3** | **8** |
| F | 0.64 | 0.75 | 1.09 | 0.12 | 100 | 2 | 14.1 | 210 | 1.5% | 2.4 | 1.4 | 15.5 | 2.77 | 3.47 | 5.83 | 2 | **3** | **6** |
| G | 0.78 | 0.95 | 1.46 | 0.12 | 100 | 2 | 14.1 | 230 | 1.5% | 2.4 | 1.6 | 15.6 | 2.76 | 3.46 | 5.81 | 2 | **3** | **8** |
| H | 0.70 | 0.83 | 1.20 | 0.12 | 100 | 2 | 14.1 | 175 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.87 | 2 | **3** | **7** |
| I | 0.86 | 1.01 | 1.47 | 0.12 | 100 | 2 | 14.1 | 665 | 3.5% | 3.7 | 3.0 | 17.0 | 2.66 | 3.33 | 5.59 | 2 | **3** | **8** |
| J | 1.34 | 1.58 | 2.29 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 4 | **5** | **13** |
| K | 0.45 | 0.55 | 0.88 | 0.12 | 80 | 3 | 10.2 | | | | | 10.2 | 3.27 | 4.09 | 6.87 | 1 | **2** | **6** |
| L | 0.67 | 0.83 | 1.32 | 0.12 | 90 | 3 | 11.3 | | | | | 11.3 | 3.15 | 3.95 | 6.63 | 2 | **3** | **9** |
| M | 0.48 | 0.49 | 0.54 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | **2** | **4** |
| N | 0.04 | 0.06 | 0.13 | 0.12 | 70 | 2 | 10.5 | | | | | 10.5 | 3.24 | 4.06 | 6.82 | 0.1 | **0.2** | **0.9** |
| O | 0.31 | 0.74 | 2.42 | 0.12 | 100 | 2 | 14.1 | 300 | 1.0% | 2.0 | 2.5 | 16.6 | 2.69 | 3.37 | 5.66 | 0.8 | **3** | **14** |
| | | | | | | | | | | | | | | | | | | |
| OS-1 | 0.98 | 1.07 | 1.35 | 0.12 | 80 | 5 | 8.6 | 900 | 3.5% | 3.7 | 4.0 | 12.7 | 3.01 | 3.78 | 6.34 | 3 | **4** | **9** |
| OS-2 | 1.21 | 1.28 | 1.51 | 0.12 | 80 | 3 | 10.2 | 900 | 3.5% | 3.7 | 4.0 | 14.2 | 2.87 | 3.60 | 6.04 | 3 | **5** | **9** |
| OS-3 | 0.98 | 1.19 | 1.80 | 0.12 | 75 | 2 | 11.1 | 700 | 1.5% | 2.4 | 4.8 | 15.8 | 2.75 | 3.44 | 5.77 | 2.7 | **4** | **10** |
| OS-F4 | 0.91 | 3.65 | 15.96 | 0.12 | 300 | 8 | 22.2 | 1500 | 2.0% | 1.6 | 15.8 | 38.0 | 1.71 | 2.13 | 3.57 | 1.6 | **8** | **57** |
| | | | | | | | | | | | | | | | | | | |
| P INT | 1.26 | 2.76 | 9.55 | 0.12 | 300 | 8 | 22.2 | 100 | 1.5% | 2.4 | 0.7 | 22.9 | 2.31 | 2.89 | 4.85 | 3 | **8** | **46** |

## PRELIMINARY DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | C VALUE DCM TABLE 6-6 LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | C VALUE DCM TABLE 6-6 LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | WEIGHTED "C" VALUE C(2) | WEIGHTED "C" VALUE C(5) | WEIGHTED "C" VALUE C(100) | WEIGHTED CA CA(2) | WEIGHTED CA CA(5) | WEIGHTED CA CA(100) | DCM TABLE 6-6 WEIGHTED % IMPERVIOUS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 5.70 | **RES 1/6 AC.** | 52.5% | 5.10 | **0.32** | **0.38** | **0.55** | **OPEN SPACE** | 7.0% | 0.60 | **0.05** | **0.12** | **0.39** | 0.29 | 0.35 | 0.53 | **1.66** | **1.98** | **3.01** | 47.7% |
| A2 | 3.60 | **RES 1/6 AC.** | 52.5% | 3.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **1.15** | **1.35** | **1.96** | 52.5% |
| A3 | 1.50 | **RES 1/6 AC.** | 52.5% | 1.50 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.48** | **0.56** | **0.82** | 52.5% |
| B | 4.60 | **RES 1/6 AC.** | 52.5% | 4.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **1.47** | **1.73** | **2.51** | 52.5% |
| C | 1.60 | **RES 1/6 AC.** | 52.5% | 1.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.51** | **0.60** | **0.87** | 52.5% |
| D | 8.70 | **RES 1/6 AC.** | 52.5% | 7.93 | **0.32** | **0.38** | **0.55** | **POCKET PARK** | 7.0% | 0.77 | **0.05** | **0.12** | **0.39** | 0.30 | 0.35 | 0.53 | **2.58** | **3.07** | **4.62** | 48.5% |
| E | 2.60 | **RES 1/6 AC.** | 52.5% | 2.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.83** | **0.98** | **1.42** | 52.5% |
| F | 2.00 | **RES 1/6 AC.** | 52.5% | 2.00 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.64** | **0.75** | **1.09** | 52.5% |
| G | 2.80 | **RES 1/6 AC.** | 46.0% | 2.80 | **0.28** | **0.34** | **0.52** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | **0.78** | **0.95** | **1.46** | 46.0% |
| H | 2.20 | **RES 1/6 AC.** | 52.5% | 2.20 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.70** | **0.83** | **1.20** | 52.5% |
| I | 2.70 | **RES 1/6 AC.** | 52.5% | 2.70 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.86** | **1.01** | **1.47** | 52.5% |
| J | 4.20 | **RES 1/6 AC.** | 52.5% | 4.20 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **1.34** | **1.58** | **2.29** | 52.5% |
| K | 1.70 | **RES 1/6 AC.** | 52.5% | 1.37 | **0.32** | **0.38** | **0.55** | **OPEN SPACE** | | 0.33 | **0.05** | **0.12** | **0.39** | 0.27 | 0.33 | 0.51 | **0.45** | **0.55** | **0.88** | 42.3% |
| L | 2.60 | **RES 1/6 AC.** | 46.0% | 2.35 | **0.28** | **0.34** | **0.52** | **OPEN SPACE** | 7.0% | 0.25 | **0.05** | **0.12** | **0.39** | 0.26 | 0.32 | 0.51 | **0.67** | **0.83** | **1.32** | 42.3% |
| M | 0.62 | **RES 1/5 AC.** | 46.0% | 0.12 | **0.28** | **0.34** | **0.52** | STREET | 100.0% | 0.50 | 0.89 | 0.90 | 0.96 | 0.77 | 0.79 | 0.87 | **0.48** | **0.49** | **0.54** | 89.5% |
| N | 0.30 | **RES 1/5 AC.** | 46.0% | 0.10 | **0.28** | **0.34** | **0.52** | **OPEN SPACE** | 7.0% | 0.20 | **0.05** | **0.12** | **0.39** | 0.13 | 0.19 | 0.43 | **0.04** | **0.06** | **0.13** | 20.0% |
| O | 6.20 | **RES 1/5 AC.** | 46.0% | 0.00 | **0.28** | **0.34** | **0.52** | **POND TRACT** | 7.0% | 6.20 | **0.05** | **0.12** | **0.39** | 0.05 | 0.12 | 0.39 | **0.31** | **0.74** | **2.42** | 7.0% |
| | | | | | | | | | | | | | | | | | | | | |
| OS-1 | 2.00 | **RES 1/6 AC.** | 52.5% | 1.40 | **0.32** | **0.38** | **0.55** | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | 0.49 | 0.54 | 0.67 | **0.98** | **1.07** | **1.35** | 66.8% |
| OS-2 | 2.00 | **RES 1/6 AC.** | 52.5% | 1.00 | **0.32** | **0.38** | **0.55** | STREET | 100.0% | 1.00 | 0.89 | 0.90 | 0.96 | 0.61 | 0.64 | 0.76 | **1.21** | **1.28** | **1.51** | 76.3% |
| OS-3 | 3.50 | **RES 1/5 AC.** | 46.0% | 3.50 | **0.28** | **0.34** | **0.52** | | | 0.00 | 0.57 | 0.59 | 0.70 | 0.28 | 0.34 | 0.52 | **0.98** | **1.19** | **1.80** | 46.0% |
| OS-F4 | 45.60 | **UNDEVELOPED** | 0.0% | 45.60 | **0.02** | **0.08** | **0.35** | | | 0.00 | 0.57 | 0.59 | 0.70 | 0.02 | 0.08 | 0.35 | **0.91** | **3.65** | **15.96** | 0.0% |
| | | | | | | | | | | | | | | | | | | | | |
| P INT | 25.80 | **UNDEVELOPED** | 0.0% | 24.95 | **0.02** | **0.08** | **0.35** | STREET | 100.0% | 0.85 | 0.89 | 0.90 | 0.96 | 0.05 | 0.11 | 0.37 | **1.26** | **2.76** | **9.55** | 3.3% |




## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'


CLASSIC CONSULTING SM
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)


STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (INTERIM)

CLASSIC CONSULTING

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 8/20/24 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 3 OF 6 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

N:\1183A\REPORTS\PDR\1183A0 DM - INTERIM.dwg, 3/26/2025 3:36:28 PM, 1:1

RETREAT AT TIMBERRIDGE FILING NO. 1 (SF199)

RETREAT AT TIMBERRIDGE FILING NO. 2 (SF212)

TRACT D
RETREAT AT TIMBERRIDGE FILING NO. 1 - POND 2

EXIST. TEMP. SEDIMENT BASIN TO BE REMOVED UPON DEVELOPMENT OF STERLING RANCH EAST FILING NO. 4

EXIST. NATURAL SWALE TO BE REMOVED UPON DEVELOPMENT OF STERLING RANCH EAST FILING NO. 4

EXIST. NATURAL SWALE TO CONTINUE SOUTH WITHIN BASIN P1-F1 UPON FUTURE DEVELOPMENT

(7190)

P INT
25.8

INTERIM OFF-SITE UNDEVELOPED BASIN

PLANNED STERLING RANCH EAST FILING NO. 4 (SP224) UNPLATTED

OS-FA
45.6

PLANNED STERLING RANCH EAST FILING NO. 4 (SP224) UNPLATTED

(7180)

SAND CREEK

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

EXIP
265.9

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

MATCH LINE SEE SHEET 3

## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'

CLASSIC CONSULTING
619 N. Cascade Avenue, Suite 200 (719)785-0790
Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (INTERIM)

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 8/20/24 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 4 OF 6 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

N:\1183\0\REPORTS\VOR\1183R0 DM - INTERIM.dwg, 3/26/2025 3:57:01 PM, 1:1

MATCH LINE SEE SHEET 6

## PRELIMINARY DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A1, A2, A3 | 3.90 | 5.79 | 20.2 | 3.07 | 5.16 | 12 | 30 | Prop. Type R Sump Inlets |
| 2 | B | 1.73 | 2.51 | 18.5 | 3.21 | 5.38 | 6 | 13 | Prop. Type R Sump Inlets |
| 3 | C | 0.60 | 0.87 | 16.3 | 3.39 | 5.70 | 2 | 5 | Prop. Type R At-Grade Inlet |
| 4 | D | 3.07 | 4.62 | 16.7 | 3.36 | 5.63 | 10 | 26 | Prop. Type R Sump Inlets |
| 5 | E | 0.98 | 1.42 | 15.7 | 3.45 | 5.79 | 3 | 8 | Prop. Type R Sump Inlets |
| 6 | F | 0.75 | 1.09 | 15.5 | 3.47 | 5.83 | 3 | 6 | Prop. Type R Sump Inlets |
| 7 | G | 0.95 | 1.46 | 15.6 | 3.46 | 5.81 | 3 | 8 | Prop. Type R Sump Inlets |
| 8 | H | 0.83 | 1.20 | 15.3 | 3.49 | 5.87 | 3 | 7 | Prop. Type R Sump Inlets |
| 9 | I, 100-yr Flow-by from DP-3 | 1.01 | 1.65 | 17.0 | 3.33 | 5.59 | 3 | 9 | Prop. Type R At-Grade Inlet |
| 10 | J | 1.58 | 2.29 | 17.3 | 3.30 | 5.55 | 5 | 13 | Prop. Type R Sump Inlets |
| 11 | **POND FSD-16 INFLOW (EASTERLY FOREBAY)** | **12.31** | **18.27** | **23.2** | **2.87** | **4.81** | **35** | **88** | **Prop. Concrete Forebay** |
| 12 | P1-F2 | 3.68 | 5.88 | 18.6 | 3.20 | 5.37 | 12 | 32 | Prop. Type R Sump Inlets |
| 13 | F4-1 | 2.93 | 4.25 | 17.6 | 3.28 | 5.51 | 10 | 23 | Prop. Type R Sump Inlets |
| 14 | F4-2 | 0.86 | 1.25 | 15.9 | 3.43 | 5.76 | 3 | 7 | Prop. Type R Sump Inlet |
| 15 | F4-3 | 2.73 | 4.77 | 17.9 | 3.25 | 5.46 | 9 | 26 | Prop. Type R Sump Inlets |
| 16 | F4-4 | 0.64 | 0.93 | 14.0 | 3.62 | 6.08 | 2 | 6 | Prop. Type R Sump Inlets |
| 17 | F4-5 | 2.59 | 3.76 | 25.1 | 2.75 | 4.61 | 7 | 17 | Prop. Type R Sump Inlets |
| 18 | F4-6 | 4.99 | 7.25 | 19.2 | 3.15 | 5.29 | 16 | 38 | Prop. Type R Sump Inlets |
| 19 | F4-7 | 2.93 | 4.25 | 19.5 | 3.13 | 5.25 | 9 | 22 | Prop. Type R Sump Inlets |
| 20 | OS-3 | 1.19 | 1.80 | 15.8 | 3.44 | 5.77 | 4 | 10 | Prop. 10' At-Grade Type R Inlet |
| 21 | OS-1 | 1.07 | 1.35 | 12.7 | 3.78 | 6.34 | 4 | 9 | Prop. Type R At-Grade Inlet |
| 22 | OS-2 | 1.28 | 1.51 | 14.2 | 3.60 | 6.04 | 5 | 9 | Prop. Type R At-Grade Inlet |
| **23** | **POND FSD-16 INFLOW (NWESTERLY FOREBAY)** | **49.47** | **72.84** | **26.1** | **2.69** | **4.51** | **133** | **329** | **Prop. Concrete Forebay and Impact Stucture** |
| **24** | **POND FSD-16 INFLOW (SWESTERLY FOREBAY) Taken from Foursquare FDR** | **14.97** | **21.26** | **15.4** | **3.48** | **5.84** | **52** | **124** | **Prop. Concrete Forebay** |
| | **POND FSD-16 TOTALINFLOW** | **78.33** | **116.11** | **27.1** | **2.63** | **4.42** | **206** | **513** | **Prop. Concrete Forebay** |

## PRELIMINARY DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | CA(2) | WEIGHTED CA(5) | WEIGHTED CA(100) | OVERLAND C(5) | OVERLAND Length (ft) | OVERLAND Height (ft) | OVERLAND Tc (min) | STREET / CHANNEL FLOW Length (ft) | STREET / CHANNEL FLOW Slope (%) | STREET / CHANNEL FLOW Velocity (fps) | STREET / CHANNEL FLOW Tc (min) | Tc TOTAL (min) | INTENSITY I(2) (in/hr) | INTENSITY I(5) (in/hr) | INTENSITY I(100) (in/hr) | TOTAL FLOWS Q(2) (cfs) | TOTAL FLOWS Q(5) (cfs) | TOTAL FLOWS Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 1.66 | 1.98 | 3.01 | 0.12 | 100 | 2 | 14.1 | 775 | 2.5% | 3.2 | 4.1 | 18.2 | 2.58 | 3.23 | 5.43 | 4 | **6** | **16** |
| A2 | 1.15 | 1.35 | 1.96 | 0.12 | 100 | 2 | 14.1 | 900 | 1.5% | 2.4 | 6.1 | 20.2 | 2.46 | 3.07 | 5.16 | 3 | **4** | **10** |
| A3 | 0.48 | 0.56 | 0.82 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.99 | 3.58 | 6.02 | 1 | **2** | **5** |
| B | 1.47 | 1.73 | 2.51 | 0.12 | 100 | 2 | 14.1 | 650 | 1.5% | 2.4 | 4.4 | 18.5 | 2.56 | 3.21 | 5.38 | 4 | **6** | **13** |
| C | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 380 | 2.0% | 2.8 | 2.2 | 16.3 | 2.71 | 3.39 | 5.70 | 1 | **2** | **5** |
| D | 2.58 | 3.07 | 4.62 | 0.12 | 100 | 2 | 14.1 | 640 | 4.0% | 4.0 | 2.7 | 16.7 | 2.68 | 3.36 | 5.63 | 7 | **10** | **26** |
| E | 0.83 | 0.98 | 1.42 | 0.12 | 100 | 2 | 14.1 | 240 | 1.5% | 2.4 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 2 | **3** | **8** |
| F | 0.64 | 0.75 | 1.09 | 0.12 | 100 | 2 | 14.1 | 210 | 1.5% | 2.4 | 1.4 | 15.5 | 2.77 | 3.47 | 5.83 | 2 | **3** | **6** |
| G | 0.78 | 0.95 | 1.46 | 0.12 | 100 | 2 | 14.1 | 230 | 1.5% | 2.4 | 1.6 | 15.6 | 2.76 | 3.46 | 5.81 | 2 | **3** | **8** |
| H | 0.70 | 0.83 | 1.20 | 0.12 | 100 | 2 | 14.1 | 175 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.87 | 2 | **3** | **7** |
| I | 0.86 | 1.01 | 1.47 | 0.12 | 100 | 2 | 14.1 | 665 | 3.5% | 3.7 | 3.0 | 17.0 | 2.66 | 3.33 | 5.59 | 2 | **3** | **8** |
| J | 1.34 | 1.58 | 2.29 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 4 | **5** | **13** |
| K | 0.45 | 0.55 | 0.88 | 0.12 | 80 | 3 | 10.2 | | | | | 10.2 | 3.27 | 4.09 | 6.87 | 1 | **2** | **6** |
| L | 0.67 | 0.83 | 1.32 | 0.12 | 90 | 3 | 11.3 | | | | | 11.3 | 3.15 | 3.95 | 6.63 | 2 | **3** | **9** |
| M | 0.48 | 0.49 | 0.54 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | **2** | **4** |
| N | 0.04 | 0.06 | 0.13 | 0.12 | 70 | 2 | 10.5 | | | | | 10.5 | 3.24 | 4.06 | 6.82 | 0.1 | **0.2** | **0.9** |
| O | 0.31 | 0.74 | 2.42 | 0.12 | 100 | 2 | 14.1 | 300 | 1.0% | 2.0 | 2.5 | 16.6 | 2.69 | 3.37 | 5.66 | 0.8 | **3** | **14** |
| | | | | | | | | | | | | | | | | | | |
| F4-1 | 2.50 | 2.93 | 4.25 | 0.12 | 100 | 2 | 14.1 | 670 | 2.5% | 3.2 | 3.5 | 17.6 | 2.62 | 3.28 | 5.51 | 7 | **10** | **23** |
| F4-2 | 0.74 | 0.86 | 1.25 | 0.12 | 100 | 2 | 14.1 | 350 | 2.5% | 3.2 | 1.8 | 15.9 | 2.74 | 3.43 | 5.76 | 2 | **3** | **7** |
| F4-3 | 2.14 | 2.73 | 4.77 | 0.12 | 100 | 2 | 14.1 | 730 | 2.5% | 3.2 | 3.8 | 17.9 | 2.60 | 3.25 | 5.46 | 6 | **9** | **26** |
| F4-4 | 0.54 | 0.64 | 0.93 | 0.12 | 50 | 1 | 10.0 | 770 | 2.5% | 3.2 | 4.1 | 14.0 | 2.89 | 3.62 | 6.08 | 2 | **2** | **6** |
| F4-5 | 2.21 | 2.59 | 3.76 | 0.12 | 100 | 2 | 14.1 | 2100 | 2.5% | 3.2 | 11.1 | 25.1 | 2.20 | 2.75 | 4.61 | 5 | **7** | **17** |
| F4-6 | 4.26 | 4.99 | 7.25 | 0.12 | 100 | 2 | 14.1 | 870 | 2.0% | 2.8 | 5.1 | 19.2 | 2.52 | 3.15 | 5.29 | 11 | **16** | **38** |
| F4-7 | 2.50 | 2.93 | 4.25 | 0.12 | 100 | 2 | 14.1 | 1070 | 2.7% | 3.3 | 5.4 | 19.5 | 2.50 | 3.13 | 5.25 | 6 | **9** | **22** |
| | | | | | | | | | | | | | | | | | | |
| OS-1 | 0.98 | 1.07 | 1.35 | 0.12 | 80 | 5 | 8.6 | 900 | 3.5% | 3.7 | 4.0 | 12.7 | 3.01 | 3.78 | 6.34 | 3 | **4** | **9** |
| OS-2 | 1.21 | 1.28 | 1.51 | 0.12 | 80 | 3 | 10.2 | 900 | 3.5% | 3.7 | 4.0 | 14.2 | 2.87 | 3.60 | 6.04 | 3 | **5** | **9** |
| OS-3 | 0.98 | 1.19 | 1.80 | 0.12 | 75 | 2 | 11.1 | 700 | 1.5% | 2.4 | 4.8 | 15.8 | 2.75 | 3.44 | 5.77 | 2.7 | **4** | **10** |
| OS-F4 | 0.91 | 3.65 | 15.96 | 0.12 | 300 | 8 | 22.2 | 1500 | 2.5% | 1.6 | 15.8 | 38.0 | 1.71 | 2.13 | 3.57 | 1.6 | **8** | **57** |
| | | | | | | | | | | | | | | | | | | |
| P1-F1 | 19.39 | 22.73 | 33.03 | 0.12 | 100 | 2 | 14.1 | 2000 | 1.5% | 2.4 | 13.6 | 27.7 | 2.08 | 2.60 | 4.37 | 40 | **59** | **144** |
| P1-F2 | 3.01 | 3.68 | 5.88 | 0.12 | 100 | 2 | 14.1 | 850 | 2.5% | 3.2 | 4.5 | 18.6 | 2.56 | 3.20 | 5.37 | 8 | **12** | **32** |
| P INT | 1.26 | 2.76 | 9.55 | 0.12 | 300 | 8 | 22.2 | 100 | 1.5% | 2.4 | 0.7 | 22.9 | 2.31 | 2.89 | 4.85 | 3 | **8** | **46** |

## PRELIMINARY DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | C VALUE DCM TABLE 6-5 LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | C VALUE DCM TABLE 6-5 LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | WEIGHTED "C" VALUE C(2) | C(5) | C(100) | WEIGHTED CA CA(2) | CA(5) | CA(100) | DCM TABLE 6-5 WEIGHTED % IMPERVIOUS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A1 | 5.70 | RES 1/8 AC. | 52.5% | 5.10 | **0.32** | **0.38** | **0.55** | OPEN SPACE | 7.0% | 0.60 | **0.05** | **0.12** | **0.39** | 0.29 | 0.35 | 0.53 | **1.66** | **1.98** | **3.01** | 47.7% |
| A2 | 3.60 | RES 1/8 AC. | 52.5% | 3.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **1.15** | **1.35** | **1.96** | 52.5% |
| A3 | 1.50 | RES 1/8 AC. | 52.5% | 1.50 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.48** | **0.56** | **0.82** | 52.5% |
| B | 4.60 | RES 1/8 AC. | 52.5% | 4.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **1.47** | **1.73** | **2.51** | 52.5% |
| C | 1.60 | RES 1/8 AC. | 52.5% | 1.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.51** | **0.60** | **0.87** | 52.5% |
| D | 8.70 | RES 1/8 AC. | 52.5% | 7.93 | **0.32** | **0.38** | **0.55** | POCKET PARK | 7.0% | 0.77 | **0.05** | **0.12** | **0.39** | 0.30 | 0.35 | 0.53 | **2.58** | **3.07** | **4.62** | 48.5% |
| E | 2.60 | RES 1/8 AC. | 52.5% | 2.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.83** | **0.98** | **1.42** | 52.5% |
| F | 2.00 | RES 1/8 AC. | 52.5% | 2.00 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.64** | **0.75** | **1.09** | 52.5% |
| G | 2.80 | RES 1/5 AC. | 46.0% | 2.80 | **0.28** | **0.34** | **0.52** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | **0.78** | **0.95** | **1.46** | 46.0% |
| H | 2.20 | RES 1/8 AC. | 52.5% | 2.20 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.70** | **0.83** | **1.20** | 52.5% |
| I | 2.70 | RES 1/8 AC. | 52.5% | 2.70 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.86** | **1.01** | **1.47** | 52.5% |
| J | 4.20 | RES 1/8 AC. | 52.5% | 4.20 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **1.34** | **1.58** | **2.29** | 52.5% |
| K | 1.70 | RES 1/2 AC. | 52.5% | 1.37 | **0.32** | **0.38** | **0.55** | OPEN SPACE | | 0.33 | **0.05** | **0.12** | **0.39** | 0.27 | 0.33 | 0.51 | **0.45** | **0.55** | **0.88** | 42.3% |
| L | 2.60 | RES 1/2 AC. | 46.0% | 2.35 | **0.28** | **0.34** | **0.52** | OPEN SPACE | 7.0% | 0.25 | **0.05** | **0.12** | **0.39** | 0.26 | 0.32 | 0.51 | **0.67** | **0.83** | **1.32** | 42.3% |
| M | 0.62 | RES 1/5 AC. | 46.0% | 0.12 | **0.28** | **0.34** | **0.52** | STREET | 100.0% | 0.50 | 0.89 | 0.90 | 0.96 | 0.77 | 0.79 | 0.87 | **0.48** | **0.49** | **0.54** | 89.5% |
| N | 0.30 | RES 1/5 AC. | 46.0% | 0.10 | **0.28** | **0.34** | **0.52** | OPEN SPACE | 7.0% | 0.20 | **0.05** | **0.12** | **0.39** | 0.13 | 0.19 | 0.43 | **0.04** | **0.06** | **0.13** | 20.0% |
| O | 6.20 | RES 1/5 AC. | 46.0% | 0.00 | **0.28** | **0.34** | **0.52** | POND TRACT | 7.0% | 6.20 | **0.05** | **0.12** | **0.39** | 0.05 | 0.12 | 0.39 | **0.31** | **0.74** | **2.42** | 7.0% |
| | | | | | | | | | | | | | | | | | | | | |
| F4-1 | 7.80 | RES 1/8 AC. | 52.5% | 7.80 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **2.50** | **2.93** | **4.25** | 52.5% |
| F4-2 | 2.30 | RES 1/8 AC. | 52.5% | 2.30 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **0.74** | **0.86** | **1.25** | 52.5% |
| F4-3 | 9.80 | RES 1/8 AC. | 52.5% | 6.10 | **0.32** | **0.38** | **0.55** | OPEN SPACE | 7.0% | 3.70 | **0.05** | **0.12** | **0.39** | 0.22 | 0.28 | 0.49 | **2.14** | **2.73** | **4.77** | 35.3% |
| F4-4 | 1.70 | RES 1/8 AC. | 52.5% | 1.70 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **0.54** | **0.64** | **0.93** | 52.5% |
| F4-5 | 6.90 | RES 1/8 AC. | 52.5% | 6.90 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **2.21** | **2.59** | **3.76** | 52.5% |
| F4-6 | 13.30 | RES 1/8 AC. | 52.5% | 13.30 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | **4.26** | **4.99** | **7.25** | 52.5% |
| F4-7 | 7.80 | RES 1/8 AC. | 52.5% | 7.80 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | **2.50** | **2.93** | **4.25** | 52.5% |
| | | | | | | | | | | | | | | | | | | | | |
| OS-1 | 2.00 | RES 1/8 AC. | 52.5% | 1.40 | **0.32** | **0.38** | **0.55** | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | 0.49 | 0.54 | 0.67 | **0.98** | **1.07** | **1.35** | 66.8% |
| OS-2 | 2.00 | RES 1/8 AC. | 52.5% | 1.00 | **0.32** | **0.38** | **0.55** | STREET | 100.0% | 1.00 | 0.89 | 0.90 | 0.96 | 0.61 | 0.64 | 0.76 | **1.21** | **1.28** | **1.51** | 76.3% |
| OS-3 | 3.50 | RES 1/5 AC. | 46.0% | 3.50 | **0.28** | **0.34** | **0.52** | | | 0.00 | 0.57 | 0.59 | 0.70 | 0.28 | 0.34 | 0.52 | **0.98** | **1.19** | **1.80** | 46.0% |
| OS-F4 | 45.60 | UNDEVELOPED | 0.0% | 45.60 | **0.02** | **0.08** | **0.35** | | | 0.00 | 0.57 | 0.59 | 0.70 | 0.02 | 0.08 | 0.35 | **0.91** | **3.65** | **15.96** | 0.0% |
| | | | | | | | | | | | | | | | | | | | | |
| P1-F1 | 60.60 | RES 1/8 AC. | 52.5% | 60.60 | **0.32** | **0.38** | **0.55** | | | 0.00 | 0.57 | 0.59 | 0.70 | 0.32 | 0.38 | 0.55 | **19.39** | **22.73** | **33.03** | 52.5% |
| P1-F2 | 11.50 | RES 1/8 AC. | 52.5% | 9.00 | **0.32** | **0.38** | **0.55** | OPEN SPACE | 7.0% | 2.50 | **0.05** | **0.12** | **0.39** | 0.26 | 0.32 | 0.51 | **3.01** | **3.68** | **5.88** | 42.6% |
| P INT | 25.80 | UNDEVELOPED | 0.0% | 24.95 | **0.02** | **0.08** | **0.35** | STREET | 100.0% | 0.85 | 0.89 | 0.90 | 0.96 | 0.05 | 0.11 | 0.37 | **1.26** | **2.76** | **9.55** | 3.3% |

## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB / 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'

CLASSIC CONSULTING

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STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (ULTIMATE)

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 8/20/24 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 5 OF 6 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

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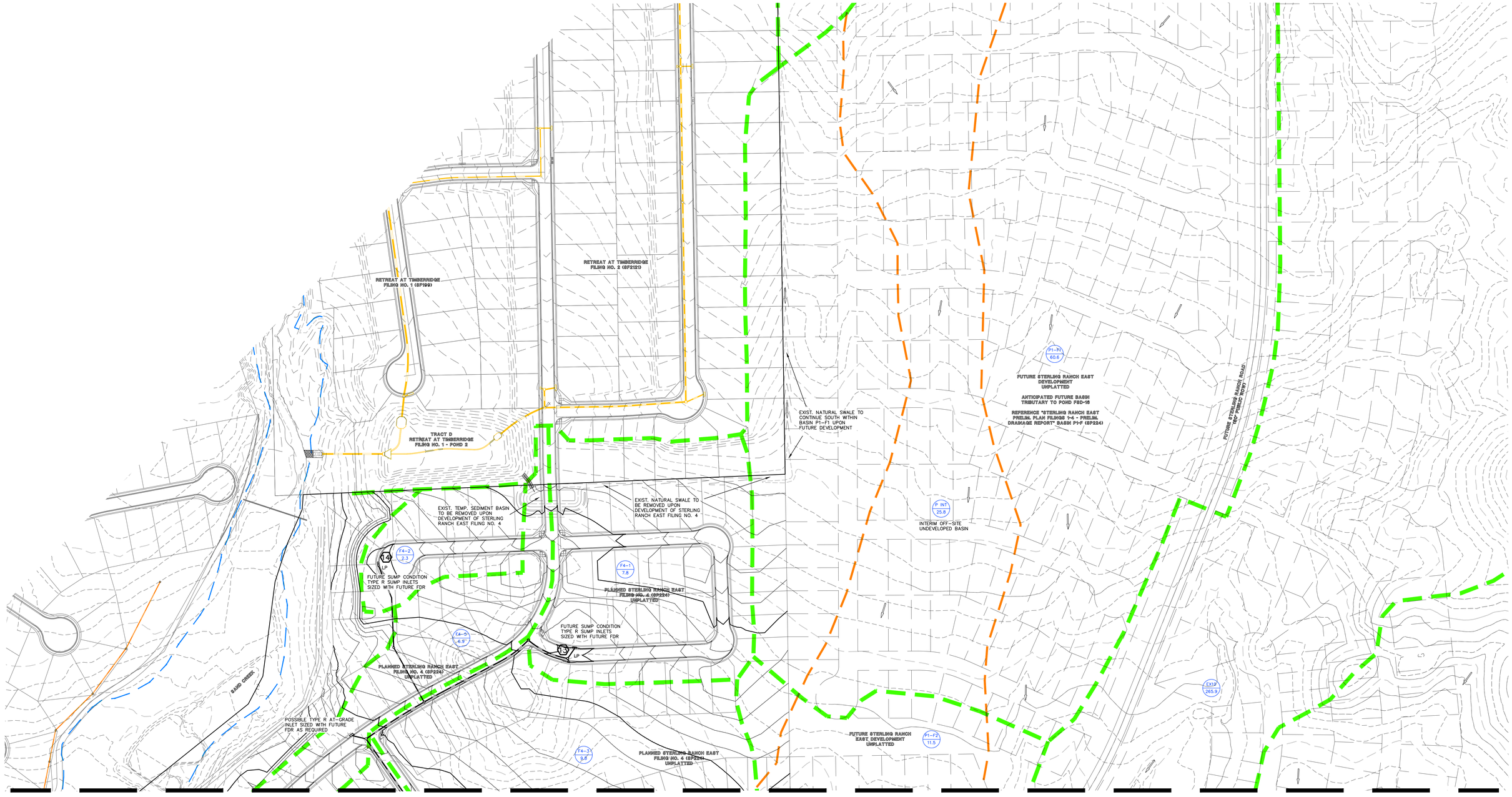


## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'

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STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (ULTIMATE)

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 8/20/24 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 6 OF 6 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

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**DRAINAGE MAPS**

CLASSIC SM
CONSULTING
ENGINEERS & SURVEYORS

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pre-Developed Subcatchment Runoff**

| Subcatchment | Area (Ac.) | SWMM Imperv. (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|
| EX-10 | 265.9 | 7% | 105 | 222 |
| EX10A | 153.5 | 5% | 46 | 103 |
| EX-11 * | 214.3 | 4% | 54 | 129 |
| EX-13 * | 94.8 | 6% | 36 | 85 |
| EX-4A | 44.2 | 8% | 19 | 50 |
| EX-5 | 26.2 | 8% | 12 | 32 |
| EX-7 | 152.8 | 5% | 46 | 105 |
| EX-7A | 2.4 | 2% | 1 | 5 |
| EX-8 | 32.2 | 2% | 5 | 23 |
| EX-8A | 6.6 | 2% | 2 | 9 |
| EX-9 | 139.3 | 8% | 59 | 122 |
| EX-9A | 21.8 | 5% | 7 | 19 |
| TR-12 * | 4.7 | 5% | 2 | 9 |
| TR-20 * | 23.2 | 7% | 10 | 32 |
| TR-4 * | 4.4 | 5% | 2 | 9 |
| TR-5 * | 13.7 | 5% | 5 | 17 |
| TR-6 * | 1.5 | 5% | 1 | 4 |
| TR-7 * | 2.6 | 5% | 1 | 5 |

* Basins with no change upon developed condition

Now see revised map

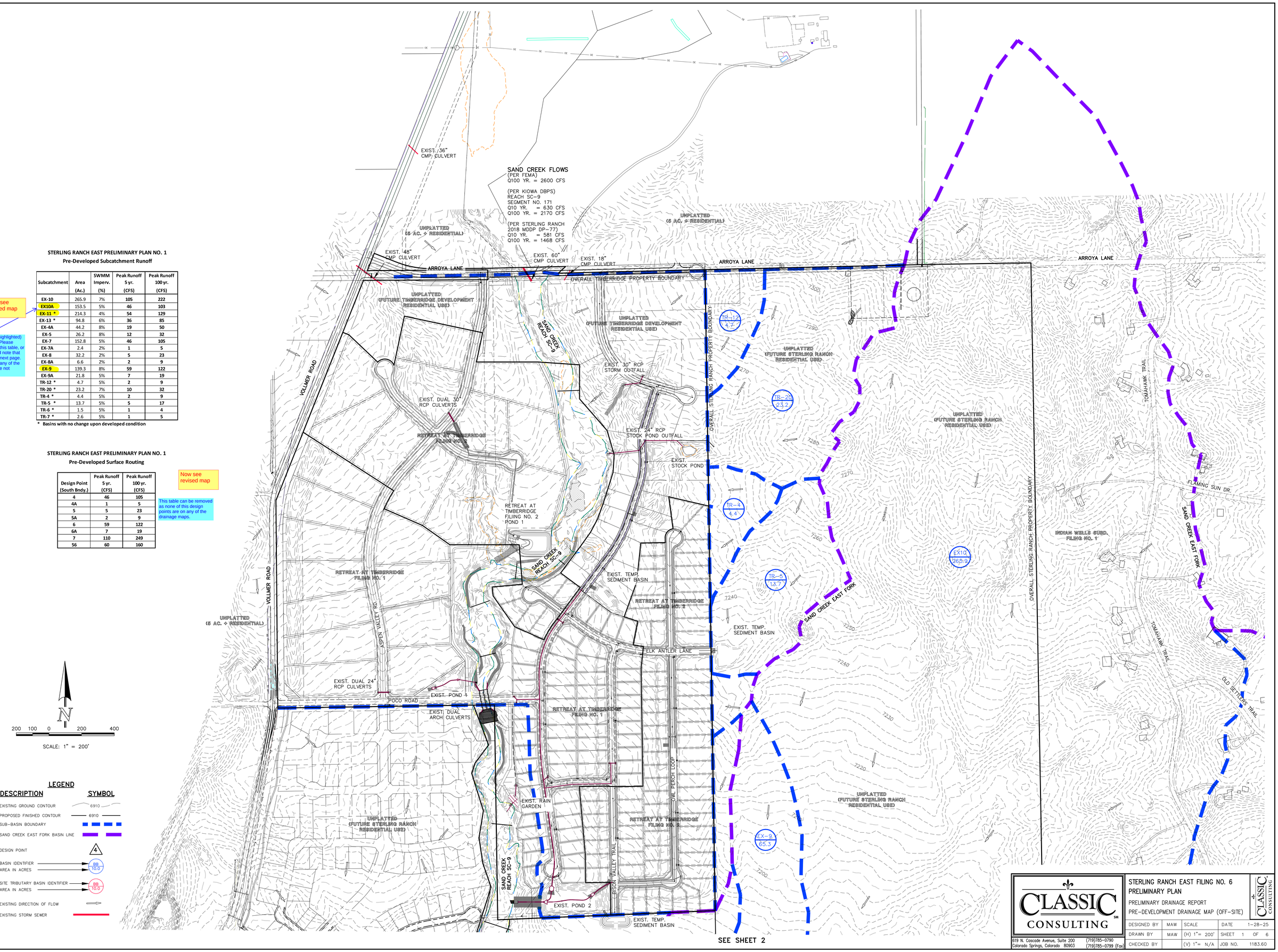
These basins (highlighted) have changed. Please update them in this table, or remove and add note that they are on the next page. Please remove any of the basins which are not relevant

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pre-Developed Surface Routing**

| Design Point (South Bndy.) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|
| 4 | 46 | 105 |
| 4A | 1 | 5 |
| 5 | 5 | 23 |
| 5A | 2 | 9 |
| 6 | 59 | 122 |
| 6A | 7 | 19 |
| 7 | 110 | 249 |
| 56 | 60 | 160 |

Now see revised map

This table can be removed as none of this design points are on any of the drainage maps.




200 100 0 200 400

SCALE: 1" = 200'

**LEGEND**

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | 6910 |
| PROPOSED FINISHED CONTOUR | 6910 |
| SUB-BASIN BOUNDARY | |
| SAND CREEK EAST FORK BASIN LINE | |
| DESIGN POINT | 4 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| SITE TRIBUTARY BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING STORM SEWER | |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STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
PRE-DEVELOPMENT DRAINAGE MAP (OFF-SITE)

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 1-28-25 |
| DRAWN BY | MAW | (H) 1"= 200' | | SHEET | 1 OF 6 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

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## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | 6910 |
| PROPOSED FINISHED CONTOUR | 6910 |
| SUB-BASIN BOUNDARY | |
| SAND CREEK EAST FORK BASIN LINE | |
| DESIGN POINT | 4 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| SITE TRIBUTARY BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| EXISTING STORM SEWER | |

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pre-Developed Subcatchment Runoff**

| Subcatchment | Area (Ac.) | SWMM Imperv. (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|
| EX-10 * | 265.9 | 7% | 105 | 222 |

* Reference Sterling Ranch East Preliminary Plan No. 1 for SWMM calculations (SP224)

**STERLING RANCH EAST PRELIMINARY PLAN NO. 1**
**Pre-Developed Subcatchment Runoff**

| Subcatchment | Area (Ac.) | SWMM Imperv. (%) | *SWMM Width (Lw) (ft.) | *SWMM Slope (Sw) (%) | Peak Runoff 5 yr. (CFS) | Peak Runoff 100 yr. (CFS) |
|---|---|---|---|---|---|---|
| EX-10 | 265.9 | 7% | 3365 | 3.41% | 105 | 222 |

* Reference Sterling Ranch East Preliminary Plan No. 1 for SWMM calculations (SP224)

POCO ROAD
EXIST. POND 4
EXIST. DUAL ARCH CULVERTS
RETREAT AT TIMBERRIDGE FILING NO. 1
RETREAT AT TIMBERRIDGE FILING NO. 2
OWL PERCH LOOP
BISON VALLEY TRAIL
EXIST. RAIN GARDEN
EXIST. POND 2
EXIST. TEMP. SEDIMENT BASIN
SAND CREEK REACH SC-9
UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)
VOLLMER ROAD
HOMESTEAD NORTH AT STERLING RANCH RESIDENTIAL USE
HOMESTEAD NORTH PLATTED BOUNDARY
CLASSIC OWNERSHIP BOUNDARY
REFERENCE SAND CREEK REACH SC-9
REFERENCE SAND CREEK CHANNEL IMPROVEMENTS PROPOSED WITH HOMESTEAD NORTH AT STERLING RANCH FIL.NO. 1 PREPARED BY JR ENG. (PCD NO. SF2213)
BRIARGATE PKWY. (130' ROW)
HOMESTEAD AT STERLING RANCH FILING NO. 2
EAD AT S RANCH NO. 4
SAND CREEK REACH SC-8
SAND CREEK EAST FORK
UNPLATTED (FOURSQUARE AT STERLING RANCH FILING 1 - SF2236))
UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)
SITE
EXIST. POND FSD-16 CURRENTLY UNDER CONST. (SP226)
STERLING RANCH RD. (80' ROW)
FUTURE BRIARGATE PKWY. (130' ROW)
PRE-DEVELOPMENT RELEASE FROM BASIN EX-9 INTO EXIST. POND FSD-16
Q5 YR. = 9 CFS
Q100 YR. = 61 CFS
PRE-DEVELOPMENT RELEASE FROM BASIN EX10A
Q5 YR. = 4 CFS
Q100 YR. = 25 CFS
PRE-DEVELOPMENT RELEASE FROM BASINS EX-10 & EX-11
Q5 YR. = 105 CFS
Q100 YR. = 222 CFS
UNPLATTED (FUTURE VILLAGES AT STERLING RANCH - PUD SP220)
UNPLATTED (FUTURE STERLING RANCH RESIDENTIAL USE)
INDIAN WELLS SUBD. FILING NO. 1
TOMAHAWK TRAIL
STAPLETON ROAD
BOW VALLEY SUBD.
BROKEN BOW CT.
OVERALL STERLING RANCH PROPERTY BOUNDARY
UNPLATTED ELITE PROPERTIES OF AMERICA, INC. (CLASSIC HOMES)
EX-9 65.3
EX10 265.9
EX-11 3.9
EX10A 17.8
BB 14.4
EX1
EX2
EX3

N

200 100 0 200 400

SCALE: 1" = 200'

**PRELIMINARY DRAINAGE REPORT ~ PRE-DEVELOPMENT BASIN RUNOFF COEFFICIENT SUMMARY**

| BASIN | TOTAL AREA (AC) | C VALUE DCM TABLE 6-6 LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | WEIGHTED CA CA(2) | CA(5) | CA(100) | DCM TABLE 6-6 WEIGHTED % IMPERVIOUS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-9 | 65.30 | UNDEV. | 2.0% | 65.30 | 0.03 | 0.09 | 0.36 | 1.96 | 5.88 | 23.51 | 2.0% |
| EX-10 | 265.90 | REFERENCE STERLING RANCH EAST PRELIMINARY PLAN NO. 1 SWMM CALCULATIONS (SP224) | | | | | | | | | |
| EX-10A | 17.80 | UNDEV. | 2.0% | 17.80 | 0.03 | 0.09 | 0.36 | 0.53 | 1.60 | 6.41 | 2.0% |
| EX-11 | 3.90 | UNDEV. | 2.0% | 3.90 | 0.03 | 0.09 | 0.36 | 0.12 | 0.35 | 1.40 | 2.0% |

**PRELIMINARY DRAINAGE REPORT ~ PRE-DEVELOPMENT BASIN RUNOFF SUMMARY**

| BASIN | WEIGHTED CA(2) | CA(5) | CA(100) | OVERLAND C(5) | Length (ft) | Height (ft) | Tc (min) | STREET / CHANNEL FLOW Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | Tc TOTAL (min) | INTENSITY I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | TOTAL FLOWS Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EX-9 | 1.96 | 5.88 | 23.51 | 0.12 | 300 | 8 | 22.2 | 3500 | 3.0% | 1.7 | 33.7 | 55.9 | 1.25 | 1.55 | 2.60 | 2 | 9 | 61 |
| EX-10 | REFERENCE STERLING RANCH EAST PRELIMINARY PLAN NO. 1 SWMM CALCULATIONS (SP224) | | | | | | | | | | | | | | | | 105 | 222 |
| EX-10A | 0.53 | 1.60 | 6.41 | 0.12 | 300 | 8 | 22.2 | 1100 | 3.0% | 1.7 | 10.6 | 32.8 | 1.88 | 2.35 | 3.94 | 1 | 4 | 25 |
| EX-11 | 0.12 | 0.35 | 1.40 | 0.12 | 300 | 8 | 22.2 | | | | | 22.2 | 2.35 | 2.93 | 4.93 | 0.3 | 1 | 7 |

**PRELIMINARY DRAINAGE REPORT ~ PRE-DEVELOPMENT SURFACE ROUTING SUMMARY**

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Outfall |
|---|---|---|---|---|---|---|---|---|---|
| EX1 | EX-9 | 5.88 | 23.51 | 55.9 | 1.55 | 2.60 | 9 | 61 | Exist Pond FSD-16 (Interim - TSB) |
| EX2 | EX-10A | 1.60 | 6.41 | 32.8 | 2.35 | 3.94 | 4 | 25 | |
| EX3 | EX-10 & EX-11 | REFERENCE STERLING RANCH EAST PRELIMINARY PLAN NO. 1 SWMM CALCULATIONS (SP224) | | | | | 105 | 222 | |


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STERLING RANCH EAST FILING NO. 6
PRELIMINARY PLAN
PRELIMINARY DRAINAGE REPORT
PRE-DEVELOPMENT DRAINAGE MAP

| | | | |
|---|---|---|---|
| DESIGNED BY | MAW | SCALE | DATE 1-28-25 |
| DRAWN BY | MAW | (H) 1"= 200' | SHEET 2 OF 6 |
| CHECKED BY | | (V) 1"= N/A | JOB NO. 1183.60 |


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MATCH LINE SEE SHEET 6

PLANNED STERLING RANCH EAST FILING NO. 4 (SF2234) UNPLATTED

FUTURE STERLING RANCH EAST DEVELOPMENT UNPLATTED

FUTURE STERLING RANCH ROAD (80' PUBLIC ROW)

STERLING RANCH ROAD

MINNEAPOLIS CT.

APPLETON DR.

VANCOUVER STREET

WISCOLLA WAY

GREAT FALLS DR.

GRAND FORKS WAY

SIOUX FALLS WAY

ROCK SPRINGS CT.

EVANSTON PLACE

RAPID CITY PLACE

BOULDER CITY DRIVE (60' PUBLIC ROW)

ESTES PARK PATH (60' PUBLIC ROW)

IDAHO FALLS DR. (60' PUBLIC ROW)

SALT LAKE WAY (60' PUBLIC ROW)

MARICOPA CT. (60' PUBLIC ROW)

EXIST. STERLING RANCH ROAD (80' PUBLIC ROW)

EXIST. SHARGATE PARKWAY (130' PUBLIC ROW)

PROP. SHARGATE PARKWAY (130' PUBLIC ROW)

STERLING RANCH EAST FILING NO. 2 (SF2237)

STERLING RANCH EAST FILING NO. 6 (SF2236)

PINE CREEK

RIO RANCHON TRAIL (60' PUBLIC ROW)

VILLAGES AT STERLING RANCH

PARK TRACT G

TRACT C

TRACT E

TRACT A

TRACT B

PROP. CONC. TRICKLE CHANNEL

PROP. CONC. FOREBAY

PROP. CONC. MICROPOOL/ OUTLET STRUCTURE

PROP. CONC. FOREBAY/ IMPACT STRUCTURE

PROP. CONC. FOREBAY AND TRICKLE CHANNEL

PROP. DIVERSION BERM TO ROUTE OFF-SITE FLOWS AROUND SITE

PROP. TEMP. SEDIMENT BASIN

FUTURE HP

FUTURE SUMP CONDITION TYPE R SUMP INLETS SIZED WITH FUTURE FDR

TYPE R AT-GRADE INLET SIZED WITH FUTURE FDR AS REQUIRED

PROP. 10' TYPE R SUMP INLET

PROP. 5' TYPE R SUMP INLET

PROP. 10' TYPE R AT-GRADE INLET

PROP. 15' TYPE R AT-GRADE INLET

PROP. 6' STD. CROSSPAN

PROP. PUBLIC 42" RCP STORM STUB

PROP. PUBLIC 48" RCP STORM

PROP. PUBLIC 54" RCP STORM

PROP. PUBLIC 66" RCP STORM (TYP.)

PROP. PUBLIC 24" RCP STORM (TYP.)

PROP. PUBLIC 30" RCP STORM (TYP.)

PROP. PUBLIC 36" RCP STORM (TYP.)

PROP. PUBLIC 18" RCP STORM (TYP.)

PROP. PUBLIC 42" RCP STORM (TYP.)

PROP. PUBLIC 48" RCP STORM (TYP.)

EXIST. 18" RCP STORM

EXIST. 42" RCP STORM

EXIST. 48" RCP STORM

EXIST. 30" RCP STORM OUTFALL (CDR221)

EXIST. PUBLIC 15' TYPE R AT-GRADE INLET (CDR221)

EXIST. PUBLIC 20' TYPE R SUMP INLET (SF2235)

EXIST. 36" RCP STORM OUTFALL (SF2235)

EXIST. 48" RCP STORM OUTFALL (CDR221)

EXIST. PUBLIC 15' TYPE R SUMP INLET (SF2235)

## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| PROPOSED DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'


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STERLING RANCH EAST FILING NO. 6
FINAL PLAT
FINAL DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (ULTIMATE)

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 4/8/26 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 5 OF 7 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |


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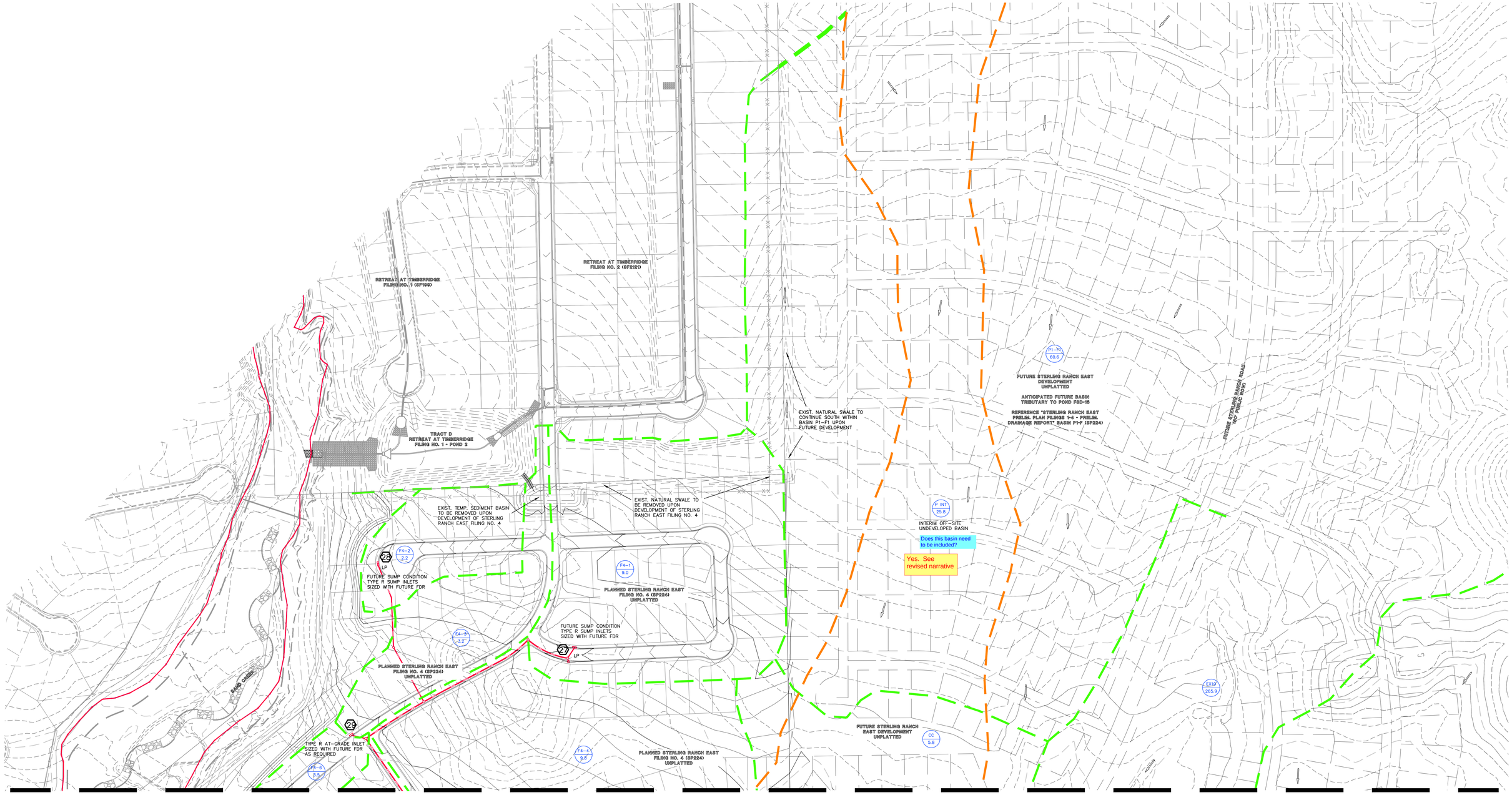


MATCH LINE SEE SHEET 5

## LEGEND

| DESCRIPTION | SYMBOL |
|---|---|
| EXISTING GROUND CONTOUR | (6910) |
| PROPOSED FINISHED CONTOUR | 6910 |
| BASIN BOUNDARY | |
| INTERIM BASIN BOUNDARY | |
| DESIGN POINT | 1 |
| PIPE ROUTING | 8 |
| BASIN IDENTIFIER / AREA IN ACRES | BB 10.0 |
| EXISTING DIRECTION OF FLOW | |
| PROPOSED DIRECTION OF FLOW | |
| EXISTING/PLANNED STORM SEWER | |
| PROPOSED STORM SEWER | |

N

100 50 0 100 200

SCALE: 1" = 100'

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Colorado Springs, Colorado 80903 (719)785-0799 (Fax)

STERLING RANCH EAST FILING NO. 6
FINAL PLAT
FINAL DRAINAGE REPORT
DEVELOPED CONDITIONS MAP (ULTIMATE)

CLASSIC CONSULTING

| | | | | | |
|---|---|---|---|---|---|
| DESIGNED BY | MAW | SCALE | | DATE | 4/8/26 |
| DRAWN BY | MAW | (H) 1"= 100' | | SHEET | 6 OF 7 |
| CHECKED BY | | (V) 1"= N/A | | JOB NO. | 1183.60 |

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## FINAL DRAINAGE REPORT ~ BASIN RUNOFF COEFFICIENT SUMMARY

| BASIN | TOTAL AREA (AC) | C VALUE DCM TABLE 6-6 | | | | | C VALUE DCM TABLE 6-6 | | | | | WEIGHTED "C" VALUE | | | WEIGHTED CA | | | DCM TABLE 6-6 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | LAND USE | PERCENT IMPERVIOUS | AREA (AC) | C(2) | C(5) | C(100) | C(2) | C(5) | C(100) | CA(2) | CA(5) | CA(100) | WEIGHTED % IMPERVIOUS |
| A | 3.60 | RES 1/8 AC. | 52.5% | 3.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.15 | 1.35 | 1.98 | 52.5% |
| B | 1.20 | RES 1/8 AC. | 52.5% | 1.20 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.38 | 0.45 | 0.65 | 52.5% |
| C | 4.50 | RES 1/8 AC. | 52.5% | 3.90 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.60 | 0.05 | 0.12 | 0.39 | 0.28 | 0.34 | 0.52 | 1.28 | 1.53 | 2.36 | 46.4% |
| D | 1.50 | RES 1/8 AC. | 52.5% | 1.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.48 | 0.56 | 0.82 | 52.5% |
| E | 1.60 | RES 1/8 AC. | 52.5% | 1.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.51 | 0.60 | 0.87 | 52.5% |
| F | 3.50 | RES 1/8 AC. | 52.5% | 3.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.12 | 1.31 | 1.91 | 52.5% |
| G | 1.10 | RES 1/8 AC. | 52.5% | 1.10 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.35 | 0.41 | 0.60 | 52.5% |
| H | 1.70 | RES 1/8 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| I | 0.22 | RES 1/8 AC. | 52.5% | 0.22 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.07 | 0.08 | 0.12 | 52.5% |
| J | 1.90 | RES 1/8 AC. | 52.5% | 1.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.61 | 0.71 | 1.04 | 52.5% |
| K | 0.73 | RES 1/8 AC. | 52.5% | 0.73 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.23 | 0.27 | 0.40 | 52.5% |
| L | 2.20 | RES 1/3 AC. | 46.0% | 2.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.62 | 0.75 | 1.14 | 46.0% |
| M | 0.57 | RES 1/3 AC. | 46.0% | 0.57 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.16 | 0.19 | 0.30 | 46.0% |
| N | 1.70 | RES 1/8 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| O | 0.49 | RES 1/8 AC. | 52.5% | 0.49 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.16 | 0.18 | 0.27 | 52.5% |
| P | 0.40 | RES 1/8 AC. | 52.5% | 0.40 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.13 | 0.15 | 0.22 | 52.5% |
| Q | 1.70 | RES 1/8 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| R | 2.70 | RES 1/8 AC. | 52.5% | 2.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.86 | 1.01 | 1.47 | 52.5% |
| S | 1.60 | RES 1/8 AC. | 52.5% | 1.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.51 | 0.60 | 0.87 | 52.5% |
| T | 0.49 | RES 1/8 AC. | 52.5% | 0.49 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.16 | 0.18 | 0.27 | 52.5% |
| U | 1.70 | RES 1/8 AC. | 52.5% | 1.37 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.33 | 0.05 | 0.12 | 0.39 | 0.27 | 0.33 | 0.51 | 0.45 | 0.55 | 0.88 | 43.7% |
| V | 2.70 | RES 1/3 AC. | 46.0% | 1.93 | 0.28 | 0.34 | 0.52 | POCKET PARK | 7.0% | 0.77 | 0.05 | 0.12 | 0.39 | 0.21 | 0.28 | 0.48 | 0.58 | 0.75 | 1.30 | 34.9% |
| W | 0.79 | RES 1/3 AC. | 46.0% | 0.79 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.25 | 0.30 | 0.43 | 52.5% |
| X | 2.00 | RES 1/8 AC. | 52.5% | 2.00 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.64 | 0.75 | 1.09 | 52.5% |
| Y | 3.20 | RES 1/3 AC. | 46.0% | 3.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.28 | 0.34 | 0.52 | 0.90 | 1.09 | 1.66 | 46.0% |
| Z | 0.30 | RES 1/3 AC. | 46.0% | 0.15 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.15 | 0.05 | 0.12 | 0.39 | 0.17 | 0.23 | 0.46 | 0.05 | 0.07 | 0.14 | 26.5% |
| AA | 2.60 | RES 1/3 AC. | 46.0% | 2.35 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.26 | 0.32 | 0.51 | 0.67 | 0.83 | 1.32 | 42.3% |
| BB | 6.20 | RES 1/3 AC. | 46.0% | 0.00 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 6.20 | 0.05 | 0.12 | 0.39 | 0.05 | 0.12 | 0.39 | 0.31 | 0.74 | 2.42 | 7.0% |
| CC | 5.80 | RES 1/3 AC. | 46.0% | 3.60 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 2.20 | 0.05 | 0.12 | 0.39 | 0.19 | 0.26 | 0.47 | 1.12 | 1.49 | 2.73 | 31.2% |
| DD | 4.40 | RES 1/3 AC. | 52.5% | 4.40 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.40 | 0.05 | 0.12 | 0.39 | 0.30 | 0.35 | 0.53 | 1.30 | 1.55 | 2.34 | 48.4% |
| EE | 1.30 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.44 | 0.49 | 0.68 | 0.57 | 0.64 | 0.89 | 50.5% |
| FF | 0.62 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | | | 0.00 | 0.05 | 0.12 | 0.39 | 0.86 | 0.87 | 0.93 | 0.53 | 0.54 | 0.58 | 96.8% |
| GG | 2.50 | RES 1/8 AC. | 52.5% | 1.90 | 0.32 | 0.38 | 0.55 | STREET | 100.0% | 0.60 | 0.89 | 0.90 | 0.96 | 0.46 | 0.50 | 0.64 | 1.14 | 1.25 | 1.61 | 63.9% |
| HH | 2.00 | RES 1/8 AC. | 52.5% | 1.00 | 0.32 | 0.38 | 0.55 | STREET | 100.0% | 1.00 | 0.89 | 0.90 | 0.96 | 0.61 | 0.64 | 0.75 | 1.21 | 1.28 | 1.51 | 76.3% |
| F4-1 | 9.00 | RES 1/3 AC. | 46.0% | 9.00 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 2.52 | 3.06 | 4.68 | 46.0% |
| F4-2 | 2.20 | RES 1/3 AC. | 46.0% | 2.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.62 | 0.75 | 1.14 | 46.0% |
| F4-3 | 3.20 | RES 1/3 AC. | 46.0% | 3.20 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.90 | 1.09 | 1.66 | 46.0% |
| F4-4 | 9.80 | RES 1/3 AC. | 46.0% | 6.10 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 3.70 | 0.05 | 0.12 | 0.39 | 0.19 | 0.25 | 0.47 | 1.89 | 2.52 | 4.62 | 31.3% |
| F4-5 | 1.70 | RES 1/8 AC. | 52.5% | 1.70 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 0.54 | 0.64 | 0.93 | 52.5% |
| F4-6 | 3.50 | RES 1/3 AC. | 46.0% | 3.50 | 0.28 | 0.34 | 0.52 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.28 | 0.34 | 0.52 | 0.98 | 1.19 | 1.82 | 46.0% |
| F4-7 | 6.90 | RES 1/8 AC. | 52.5% | 6.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 2.21 | 2.59 | 3.76 | 52.5% |
| F4-8 | 1.10 | RES 1/8 AC. | 52.5% | 1.10 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.35 | 0.41 | 0.60 | 52.5% |
| F4-9 | 4.90 | RES 1/8 AC. | 52.5% | 4.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.57 | 1.84 | 2.67 | 52.5% |
| F4-10 | 8.50 | RES 1/8 AC. | 52.5% | 8.50 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 2.72 | 3.19 | 4.63 | 52.5% |
| F2-A | 2.90 | RES 1/8 AC. | 52.5% | 2.90 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 0.93 | 1.09 | 1.58 | 52.5% |
| F2-B | 5.00 | RES 1/8 AC. | 52.5% | 5.00 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.02 | 0.08 | 0.35 | 0.32 | 0.38 | 0.55 | 1.60 | 1.88 | 2.73 | 52.5% |
| F2-C | 0.72 | STREET | 100.0% | 0.19 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.53 | 0.05 | 0.12 | 0.39 | 0.27 | 0.33 | 0.54 | 0.20 | 0.23 | 0.39 | 31.5% |
| F8-1 | 3.30 | RES 1/8 AC. | 52.5% | 3.10 | 0.32 | 0.38 | 0.55 | OPEN SPACE | 7.0% | 0.20 | 0.05 | 0.12 | 0.39 | 0.30 | 0.36 | 0.54 | 1.00 | 1.19 | 1.77 | 49.7% |
| F8-2 | 1.00 | RES 1/3 AC. | 46.0% | 0.88 | 0.28 | 0.34 | 0.52 | OPEN SPACE | 7.0% | 0.12 | 0.05 | 0.12 | 0.39 | 0.25 | 0.31 | 0.50 | 0.25 | 0.31 | 0.50 | 41.3% |
| F8-3 | 3.00 | RES 1/3 AC. | 65.0% | 2.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.38 | 0.42 | 0.57 | 1.14 | 1.27 | 1.72 | 60.2% |
| F8-4 | 5.00 | RES 1/3 AC. | 65.0% | 4.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.25 | 0.05 | 0.12 | 0.39 | 0.39 | 0.43 | 0.58 | 1.96 | 2.17 | 2.90 | 62.1% |
| F8-5 | 2.50 | RES 1/3 AC. | 65.0% | 4.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.49 | 0.05 | 0.12 | 0.39 | 0.34 | 0.39 | 0.55 | 0.85 | 0.96 | 1.38 | 53.6% |
| F8-6 | 3.50 | RES 1/3 AC. | 65.0% | 2.30 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 1.20 | 0.05 | 0.12 | 0.39 | 0.29 | 0.34 | 0.52 | 1.00 | 1.18 | 1.83 | 45.1% |
| F8-7 | 4.90 | RES 1/3 AC. | 65.0% | 4.75 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.15 | 0.05 | 0.12 | 0.39 | 0.40 | 0.44 | 0.58 | 1.96 | 2.16 | 2.86 | 63.2% |
| F8-8 | 1.30 | RES 1/3 AC. | 65.0% | 0.50 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.19 | 0.25 | 0.47 | 0.25 | 0.32 | 0.61 | 29.3% |
| F8-9 | 1.60 | RES 1/3 AC. | 65.0% | 0.80 | 0.41 | 0.45 | 0.59 | OPEN SPACE | 7.0% | 0.80 | 0.05 | 0.12 | 0.39 | 0.23 | 0.29 | 0.49 | 0.37 | 0.46 | 0.78 | 36.0% |
| P1-A2 | 4.20 | STREET | 100.0% | 3.50 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.70 | 0.05 | 0.12 | 0.39 | 0.75 | 0.77 | 0.87 | 3.15 | 3.23 | 3.63 | 84.5% |
| P1-A3 | 1.20 | STREET | 100.0% | 1.03 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.17 | 0.05 | 0.12 | 0.39 | 0.77 | 0.79 | 0.88 | 0.93 | 0.95 | 1.06 | 86.8% |
| SR-1 | 1.20 | STREET | 100.0% | 0.75 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.45 | 0.05 | 0.12 | 0.39 | 0.58 | 0.61 | 0.75 | 0.69 | 0.73 | 0.90 | 65.1% |
| SR-2 | 0.65 | STREET | 100.0% | 0.48 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.17 | 0.05 | 0.12 | 0.39 | 0.67 | 0.70 | 0.81 | 0.44 | 0.45 | 0.53 | 75.7% |
| BG-1 | 4.20 | STREET | 100.0% | 3.00 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 1.20 | 0.05 | 0.12 | 0.39 | 0.65 | 0.68 | 0.80 | 2.73 | 2.84 | 3.35 | 73.4% |
| BG-2 | 3.00 | STREET | 100.0% | 2.25 | 0.89 | 0.90 | 0.96 | OPEN SPACE | 7.0% | 0.75 | 0.05 | 0.12 | 0.39 | 0.68 | 0.71 | 0.82 | 2.04 | 2.12 | 2.45 | 76.8% |
| P1-F1 | 60.60 | RES 1/8 AC. | 52.5% | 60.60 | 0.32 | 0.38 | 0.55 | | | 0.00 | 0.89 | 0.90 | 0.96 | 0.32 | 0.38 | 0.55 | 19.39 | 22.73 | 33.03 | 52.5% |

| | | | |
|---|---|---|---|
| TOTAL AREA TRIBUTARY TO POND FSD-16 | 211.5 | 49.1% | |
| Tributary Area to NWesterly Outfall | 136.1 | 49.1% | |
| Tributary Area to Easterly Outfall | 33.4 | 51.1% | |
| Tributary Area to SWesterly Outfall | 33.0 | 52.0% | |
| Basins tributary to Pond FSD-14A | 17.9 | 66.4% | |
| Basin tributary to future SWQ pond | 0.62 | 96.8% | |

## FINAL DRAINAGE REPORT ~ BASIN RUNOFF SUMMARY

| BASIN | WEIGHTED | | | OVERLAND | | | | STREET / CHANNEL FLOW | | | | Tc | INTENSITY | | | TOTAL FLOWS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CA(2) | CA(5) | CA(100) | C(5) | Length (ft) | Height (ft) | Tc (min) | Length (ft) | Slope (%) | Velocity (fps) | Tc (min) | TOTAL (min) | I(2) (in/hr) | I(5) (in/hr) | I(100) (in/hr) | Q(2) (cfs) | Q(5) (cfs) | Q(100) (cfs) |
| A | 1.15 | 1.35 | 1.96 | 0.12 | 100 | 2 | 14.1 | 600 | 1.5% | 2.4 | 4.1 | 18.2 | 2.59 | 3.23 | 5.43 | 3 | 4 | 11 |
| B | 0.38 | 0.45 | 0.65 | 0.12 | 100 | 2 | 14.1 | 450 | 2.5% | 3.2 | 3.4 | 17.5 | 2.63 | 3.29 | 5.52 | 1 | 1 | 4 |
| C | 1.28 | 1.53 | 2.36 | 0.12 | 100 | 2 | 14.1 | 650 | 2.5% | 3.2 | 3.4 | 17.5 | 2.63 | 3.29 | 5.52 | 3 | 5 | 13 |
| D | 0.48 | 0.56 | 0.82 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.86 | 3.58 | 6.02 | 1 | 2 | 5 |
| E | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 360 | 2.0% | 2.8 | 2.1 | 16.2 | 2.72 | 3.41 | 5.72 | 1 | 2 | 5 |
| F | 1.12 | 1.31 | 1.91 | 0.12 | 100 | 2 | 14.1 | 510 | 1.5% | 2.4 | 3.5 | 17.5 | 2.63 | 3.29 | 5.52 | 3 | 4 | 11 |
| G | 0.35 | 0.41 | 0.60 | 0.12 | 50 | 1 | 10.0 | 510 | 1.5% | 2.4 | 3.5 | 13.4 | 2.94 | 3.69 | 6.19 | 1 | 2 | 4 |
| H | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 180 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.86 | 2 | 2 | 5 |
| I | 0.07 | 0.08 | 0.12 | 0.12 | 50 | 1 | 10.0 | 10 | 1.5% | 2.4 | 0.1 | 10.0 | 3.29 | 4.13 | 6.93 | 0.2 | 0.3 | 0.8 |
| J | 0.61 | 0.71 | 1.04 | 0.12 | 100 | 2 | 14.1 | 240 | 1.5% | 2.4 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 2 | 2 | 6 |
| K | 0.23 | 0.27 | 0.40 | 0.12 | 50 | 1 | 10.0 | 240 | 1.5% | 2.4 | 1.6 | 11.6 | 3.12 | 3.91 | 6.56 | 0.7 | 1.1 | 2.6 |
| L | 0.62 | 0.75 | 1.14 | 0.12 | 100 | 2 | 14.1 | 220 | 1.5% | 2.4 | 1.5 | 15.6 | 2.77 | 3.46 | 5.82 | 2 | 3 | 7 |
| M | 0.16 | 0.19 | 0.30 | 0.12 | 50 | 1 | 10.0 | 200 | 1.5% | 2.4 | 1.4 | 11.3 | 3.15 | 3.94 | 6.62 | 0.5 | 0.8 | 2.0 |
| N | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 180 | 1.5% | 2.4 | 1.2 | 15.3 | 2.79 | 3.49 | 5.86 | 2 | 2 | 5 |
| O | 0.16 | 0.18 | 0.27 | 0.12 | 50 | 1 | 10.0 | 180 | 1.5% | 2.4 | 1.2 | 11.2 | 3.16 | 3.96 | 6.65 | 0.5 | 0.7 | 1.8 |
| P | 0.13 | 0.15 | 0.22 | 0.12 | 50 | 1 | 10.0 | 120 | 3.0% | 3.5 | 0.6 | 10.5 | 3.29 | 4.05 | 6.80 | 0.4 | 0.6 | 1.5 |
| Q | 0.54 | 0.64 | 0.93 | 0.12 | 100 | 2 | 14.1 | 340 | 3.0% | 3.5 | 1.6 | 15.7 | 2.76 | 3.45 | 5.79 | 1 | 2 | 5 |
| R | 0.86 | 1.01 | 1.47 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 2 | 3 | 8 |
| S | 0.51 | 0.60 | 0.87 | 0.12 | 100 | 2 | 14.1 | 675 | 3.0% | 3.5 | 3.2 | 17.3 | 2.64 | 3.30 | 5.55 | 1 | 2 | 5 |
| T | 0.16 | 0.18 | 0.27 | 0.12 | 50 | 1 | 10.0 | 150 | 1.5% | 2.4 | 1.0 | 11.0 | 3.18 | 3.99 | 6.70 | 0.5 | 0.7 | 1.8 |
| U | 0.45 | 0.55 | 0.88 | 0.12 | 80 | 3 | 10.2 | | | | | 10.2 | 3.27 | 4.09 | 6.87 | 1 | 2 | 6 |
| V | 0.58 | 0.75 | 1.30 | 0.12 | 100 | 2 | 14.1 | 390 | 2.0% | 2.8 | 2.3 | 16.4 | 2.71 | 3.39 | 5.69 | 2 | 3 | 7 |
| W | 0.25 | 0.30 | 0.43 | 0.12 | 50 | 1 | 10.0 | 370 | 2.0% | 2.8 | 2.2 | 12.1 | 3.06 | 3.84 | 6.45 | 0.8 | 1.1 | 2.8 |
| X | 0.64 | 0.75 | 1.09 | 0.12 | 100 | 2 | 14.1 | 350 | 1.5% | 2.4 | 2.4 | 16.5 | 2.70 | 3.38 | 5.68 | 2 | 3 | 6 |
| Y | 0.90 | 1.09 | 1.66 | 0.12 | 100 | 2 | 14.1 | 600 | 4.0% | 4.0 | 2.5 | 16.6 | 2.69 | 3.37 | 5.66 | 2 | 4 | 9 |
| Z | 0.05 | 0.07 | 0.14 | 0.12 | 90 | 3 | 11.3 | | | | | 11.3 | 3.15 | 3.95 | 6.63 | 0.2 | 0.3 | 0.9 |
| AA | 0.67 | 0.83 | 1.32 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | 4 | 10 |
| BB | 0.31 | 0.74 | 2.42 | 0.12 | 70 | 2 | 10.5 | | | | | 10.5 | 3.24 | 4.06 | 6.82 | 1 | 3 | 16 |
| CC | 1.12 | 1.49 | 2.73 | 0.12 | 100 | 2 | 14.1 | 300 | 2.0% | 2.8 | 1.8 | 15.8 | 2.75 | 3.44 | 5.77 | 3 | 5 | 16 |
| DD | 1.30 | 1.55 | 2.34 | 0.12 | 100 | 2 | 14.1 | 350 | 2.0% | 2.8 | 2.1 | 16.1 | 2.73 | 3.41 | 5.73 | 4 | 5 | 13 |
| EE | 0.57 | 0.64 | 0.89 | 0.12 | 90 | 2 | 12.9 | 300 | 1.5% | 2.4 | 2.0 | 14.9 | 2.82 | 3.53 | 5.92 | 2 | 2 | 5 |
| FF | 0.53 | 0.54 | 0.58 | 0.12 | 10 | 0.2 | 4.5 | 650 | 3.5% | 3.7 | 2.9 | 7.3 | 3.66 | 4.59 | 7.71 | 2 | 2 | 4 |
| GG | 1.14 | 1.25 | 1.61 | 0.12 | 80 | 5 | 8.6 | 900 | 3.5% | 3.7 | 4.0 | 12.7 | 3.01 | 3.78 | 6.34 | 3 | 5 | 10 |
| HH | 1.21 | 1.28 | 1.51 | 0.12 | 80 | 3 | 10.2 | 900 | 3.5% | 3.7 | 4.0 | 14.2 | 2.87 | 3.60 | 6.04 | 3 | 5 | 9 |
| F4-1 | 2.52 | 3.06 | 4.68 | 0.12 | 100 | 2 | 14.1 | 670 | 2.5% | 3.2 | 3.5 | 17.6 | 2.62 | 3.28 | 5.51 | 7 | 10 | 26 |
| F4-2 | 0.62 | 0.75 | 1.14 | 0.12 | 100 | 2 | 14.1 | 350 | 2.5% | 3.2 | 1.8 | 15.9 | 2.74 | 3.43 | 5.76 | 2 | 3 | 7 |
| F4-3 | 0.90 | 1.09 | 1.66 | 0.12 | 100 | 2 | 14.1 | 450 | 2.5% | 3.2 | 2.4 | 16.4 | 2.70 | 3.38 | 5.68 | 2 | 4 | 9 |
| F4-4 | 1.89 | 2.52 | 4.62 | 0.12 | 100 | 2 | 14.1 | 730 | 2.5% | 3.2 | 3.8 | 17.9 | 2.60 | 3.25 | 5.46 | 5 | 8 | 25 |
| F4-5 | 0.54 | 0.64 | 0.93 | 0.12 | 50 | 1 | 10.0 | 770 | 2.5% | 3.2 | 4.1 | 14.0 | 2.89 | 3.62 | 6.08 | 2 | 2 | 6 |
| F4-6 | 0.98 | 1.19 | 1.82 | 0.12 | 50 | 1 | 10.0 | 850 | 1.5% | 2.4 | 5.8 | 15.7 | 2.76 | 3.45 | 5.79 | 3 | 4 | 11 |
| F4-7 | 2.21 | 2.59 | 3.76 | 0.12 | 100 | 2 | 14.1 | 870 | 2.0% | 2.8 | 5.1 | 19.2 | 2.52 | 3.15 | 5.29 | 6 | 8 | 20 |
| F4-8 | 0.35 | 0.41 | 0.60 | 0.12 | 50 | 1 | 10.0 | 200 | 1.5% | 2.4 | 1.4 | 11.3 | 3.15 | 3.94 | 6.62 | 1 | 2 | 4 |
| F4-9 | 1.57 | 1.84 | 2.67 | 0.12 | 50 | 1 | 10.0 | 1500 | 2.0% | 2.8 | 8.8 | 18.8 | 2.54 | 3.18 | 5.34 | 4 | 6 | 14 |
| F4-10 | 2.72 | 3.19 | 4.63 | 0.12 | 100 | 2 | 14.1 | 1070 | 2.5% | 3.2 | 5.6 | 19.7 | 2.49 | 3.11 | 5.22 | 7 | 10 | 24 |
| F2-A | 0.93 | 1.09 | 1.58 | 0.12 | 50 | 1 | 10.0 | 300 | 2.0% | 2.8 | 1.8 | 11.7 | 3.11 | 3.89 | 6.53 | 3 | 4 | 10 |
| F2-B | 1.60 | 1.88 | 2.73 | 0.12 | 100 | 2 | 14.1 | 300 | 2.0% | 2.8 | 1.8 | 15.8 | 2.75 | 3.44 | 5.77 | 4 | 6 | 16 |
| F2-C | 0.20 | 0.23 | 0.39 | 0.12 | 50 | 1 | 10.0 | | | | | 10.0 | 3.30 | 4.14 | 6.94 | 0.6 | 1.0 | 3 |
| F8-1 | 1.00 | 1.19 | 1.77 | 0.12 | 90 | 2 | 12.9 | 560 | 1.5% | 2.4 | 3.8 | 16.7 | 2.68 | 3.36 | 5.64 | 3 | 4 | 10 |
| F8-2 | 0.25 | 0.31 | 0.50 | 0.12 | 100 | 3 | 12.3 | 60 | 1.5% | 2.4 | 0.4 | 12.7 | 3.01 | 3.77 | 6.33 | 0.8 | 1.2 | 3 |
| F8-3 | 1.14 | 1.27 | 1.72 | 0.12 | 50 | 1 | 10.0 | 650 | 1.5% | 2.4 | 4.4 | 14.4 | 2.86 | 3.58 | 6.02 | 3 | 5 | 10 |
| F8-4 | 1.96 | 2.17 | 2.90 | 0.12 | 100 | 2 | 14.1 | 800 | 1.5% | 2.4 | 5.4 | 19.5 | 2.50 | 3.13 | 5.25 | 5 | 7 | 15 |
| F8-5 | 0.85 | 0.96 | 1.38 | 0.12 | 50 | 1 | 10.0 | 650 | 2.3% | 3.0 | 3.6 | 13.5 | 2.94 | 3.68 | 6.17 | 2 | 4 | 8 |
| F8-6 | 1.00 | 1.18 | 1.83 | 0.12 | 100 | 2 | 14.1 | 325 | 1.5% | 2.4 | 2.2 | 16.3 | 2.71 | 3.40 | 5.70 | 3 | 4 | 10 |
| F8-7 | 1.96 | 2.16 | 2.86 | 0.12 | 100 | 2 | 14.1 | 500 | 1.5% | 2.4 | 3.4 | 17.5 | 2.63 | 3.29 | 5.53 | 5 | 7 | 16 |
| F8-8 | 0.25 | 0.32 | 0.61 | 0.12 | 120 | 7 | 10.8 | | | | | 10.8 | 3.20 | 4.01 | 6.73 | 0.8 | 1.3 | 4 |
| F8-9 | 0.37 | 0.46 | 0.78 | 0.12 | 80 | 8 | 7.4 | | | | | 7.4 | 3.65 | 4.58 | 7.69 | 1 | 2 | 6 |
| P1-A2 | 3.15 | 3.23 | 3.63 | 0.12 | 20 | 0.5 | 5.8 | 1500 | 1.0% | 2.0 | 12.5 | 18.3 | 2.57 | 3.22 | 5.40 | 8.1 | 10.4 | 19.6 |
| P1-A3 | 0.93 | 0.95 | 1.06 | 0.12 | 20 | 0.5 | 5.8 | 780 | 1.0% | 2.0 | 6.5 | 12.3 | 3.04 | 3.81 | 6.40 | 2.8 | 3.6 | 6.8 |
| SR-1 | 0.69 | 0.73 | 0.90 | 0.12 | 50 | 5 | 5.9 | 550 | 3.5% | 3.7 | 2.4 | 8.3 | 3.52 | 4.41 | 7.40 | 2 | 3 | 7 |
| SR-2 | 0.44 | 0.45 | 0.53 | 0.12 | 15 | 0.4 | 5.0 | 550 | 3.5% | 1.9 | 4.9 | 9.9 | 3.31 | 4.15 | 6.97 | 1 | 2 | 4 |
| BG-1 | 2.73 | 2.84 | 3.35 | 0.12 | 80 | 2 | 11.7 | 700 | 1.0% | 2.0 | 5.8 | 17.5 | 2.63 | 3.29 | 5.52 | 7 | 9 | 18 |
| BG-2 | 2.04 | 2.12 | 2.45 | 0.12 | 60 | 2 | 9.2 | 1150 | 1.0% | 2.0 | 9.6 | 18.8 | 2.54 | 3.18 | 5.34 | 5 | 7 | 13 |
| P1-F1 | 19.39 | 22.73 | 33.03 | 0.12 | 100 | 2 | 14.1 | 2000 | 1.5% | 2.4 | 13.6 | 27.7 | 2.08 | 2.60 | 4.37 | 40 | 59 | 144 |

## FINAL DRAINAGE REPORT ~ SURFACE ROUTING SUMMARY (Ultimate)

| Design Point(s) | Contributing Basins / Design Point | Equivalent CA(5) | Equivalent CA(100) | Maximum Tc | Intensity I(5) | Intensity I(100) | Flow Q(5) | Flow Q(100) | Facility/ Inlet Size* |
|---|---|---|---|---|---|---|---|---|---|
| 1 | A | 1.35 | 1.96 | 18.2 | 3.23 | 5.43 | 4 | 11 | Prop. 10' Type R At-grade Inlet |
| 2 | B, C, Flow-by from DP-1 | 2.01 | 3.66 | 18.4 | 3.22 | 5.40 | 6 | 20 | Prop. 10' Type R Sump Inlet |
| 3 | D | 0.56 | 0.82 | 14.4 | 3.58 | 6.02 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 4 | E | 0.60 | 0.87 | 16.2 | 3.41 | 5.72 | 2 | 5 | Prop. 10' Type R At-grade Inlet |
| 5 | F | 1.31 | 1.91 | 17.5 | 3.29 | 5.52 | 4 | 11 | Prop. 5' Type R Sump Inlet |
| 6 | G | 0.41 | 0.60 | 13.4 | 3.69 | 6.19 | 2 | 4 | Prop. 5' Type R Sump Inlet |
| 7 | H | 0.64 | 0.93 | 15.3 | 3.49 | 5.86 | 2 | 5 | Prop. 5' Type R Sump Inlet |
| 8 | I | 0.08 | 0.12 | 10.0 | 4.13 | 6.93 | 0.3 | 0.8 | Prop. 5' Type R Sump Inlet |
| 9 | J | 0.71 | 1.04 | 15.7 | 3.45 | 5.79 | 2 | 6 | Prop. 5' Type R Sump Inlet |
| 10 | K | 0.27 | 0.40 | 11.6 | 3.91 | 6.56 | 1.1 | 2.6 | Prop. 5' Type R Sump Inlet |
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