

DRAINAGE LETTER REPORT
for
THE RESERVE AT CORRAL BLUFFS – FILINGS NO. 3-5

Prepared for:

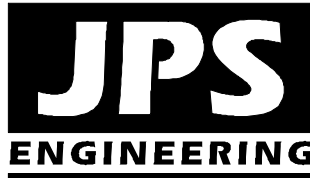
Corral Ranches Development Company
1830 Coyote Point Drive
Colorado Springs, CO 80904

Revise to Filing No. 3 and 4.

Filing No. 5 is not an active project application; therefore, this drainage report cannot be approved for filing 5.

December 27, 2019

Prepared by:



19 E. Willamette Avenue
Colorado Springs, CO 80903
(719)-477-9429
www.jpsegr.com

JPS Project No. 081104
PCD File No. SF-19-

Add: SF207 & SF208

DRAINAGE STATEMENT

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 master plan of the drainage basin. I accept responsibility for liability caused by negligent acts, errors or omissions on my part in preparing this report.

John P. Schwab, P.E. #29891

Developer's Statement:

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

By:

Printed Name: Jake Kunstle, President
Corral Ranches Development Company
1830 Coyote Point Drive, Colorado Springs, CO 80904

Date

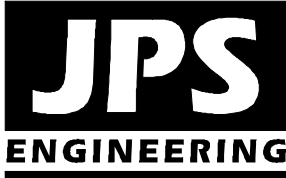
El Paso County's Statement

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

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Date

Conditions:



19 E. Willamette Avenue
Colorado Springs, CO 80903
(719)-477-9429
www.jpsegr.com

Remove Filing 5 from
this report.



**THE RESERVE AT CORRAL BLUFFS - FILINGS NO. 3-5
DRAINAGE LETTER REPORT
December, 2019**

I. INTRODUCTION

This Drainage Letter Report has been prepared in support of the final plat submittal for Filings No. 3-5 of The Reserve at Corral Bluffs Subdivision. The overall Reserve at Corral Bluffs Subdivision project consists of a total of 31 single-family rural residential lots, with minimum lot sizes of 5 acres. Filings No. 1 and 2 have been previously developed. The proposed Filing No. 3 consists of 6 lots along the easterly extension of Hoofprint Road and the northerly extension of Solberg Court. All remaining public infrastructure improvements for the subdivision will be completed with Filing No. 3. The proposed Filing No. 4 consists of 5 lots at the north end of Solberg Court, and the proposed Filing No. 5 consists of the final 8 lots at the south end of Solberg Court.

II. EXISTING AND PROPOSED DRAINAGE CONDITIONS

El Paso County previously approved the “Final Drainage Report for The Reserve at Corral Bluffs - Filing No. 1” prepared by JPS Engineering, dated October 24, 2013, as well as the “Drainage Letter for The Reserve at Corral Bluffs Filing No. 2” by JPS Engineering dated June 26, 2018. As shown in the attached “Figure D1: Developed Drainage Plan,” the area within Filings No. 3-5 lies within Basins A1, A2, A4, A5, C, D, E, and F. Basins A1-A5, C, and D generally sheet flow northerly to the north boundary of the subdivision. Basin E sheet flows northwesterly to the west boundary of the subdivision, and Basin F sheet flows to the south boundary of the subdivision. As discussed in the previously approved subdivision drainage report, the developed drainage impact will be minimal based on the rural residential development plan for the site.

Development of this subdivision filing will include roadside ditches and culvert improvements to safely convey drainage through the site. This filing will include construction of proposed Culvert OA1 to convey drainage across a low point in Hoofprint Road. Culvert sizing calculations for Culvert OA1 were included in Appendix D of the previously approved Final Drainage Report for Filing No. 1, and the referenced calculations demonstrate that these culverts have been designed to County standards. Erosion control blankets have been specified for roadside ditch stabilization in selected locations based on the hydraulic calculations within the previously approved Final Drainage Report.

III. DRAINAGE PLANNING FOUR STEP PROCESS

El Paso County Drainage Criteria require drainage planning to include a Four Step Process for receiving water protection that focuses on reducing runoff volumes, treating the water quality capture volume (WQCV), stabilizing drainageways, and implementing long-term source controls.

As stated in DCM Volume 2, the Four Step Process is applicable to all new and re-development projects with construction activities that disturb 1 acre or greater or that disturb less than 1 acre but are part of a larger common plan of development. The Four Step Process has been implemented as follows in the planning of this project:

Step 1: Employ Runoff Reduction Practices

- **Minimize Impacts:** The proposed rural residential subdivision is an inherently low impact development. The proposed 5-acre minimum lot sizes and gravel rural roads with roadside ditches will minimize drainage impacts in comparison to higher density development alternatives.

Step 2: Stabilize Drainageways

- There are no major drainageways within or directly adjacent to this project site. This exclusion only applies to sub-basins with only contains large lots. Basins A1 and A2 would not meet this criteria.

Step 3: Provide Water Quality Capture Volume (WQCV)

- Water quality detention is not required based on the rural residential development. For Basins A1 and A2 see ECM section I.7.1.C "Base Design Standards". Control measures shall meet one of the listed base design standards.

Step 4: Consider Need for Industrial and Commercial BMPs

- No industrial or commercial land uses are proposed as part of this development.

IV. STORMWATER DETENTION AND WATER QUALITY

As stated in the previously approved subdivision drainage report, the proposed development will result in a minimal increase in developed flows based on the rural residential development plan, and there is no requirement for on-site stormwater detention based on the minimal developed drainage impact.

Water quality facilities are not required as this site meets exclusions listed in the revised El Paso County Engineering Criteria Manual (ECM). Section I.7.1.B.5 of the ECM identifies "Large Lot Single Family Sites" as excluded sites under the following definition: "A single-family residential lot, or agricultural zoned lands, greater than or equal to 2.5 acres in size per dwelling and having a total lot impervious area of less than 10 percent." The proposed subdivision consists of 5-acre minimum lot sizes, and the approved Final Drainage Report the subdivision, which is well be

Section I.7.1.B.11.b of the ECM Growth Areas as excluded development site or larger co

This exclusion does not apply. The project is not within the "County Growth Area". Additionally, this is part of the larger common plan of development for the entire Reserve at Corral Bluffs subdivision (Fil 1 through 5). The land disturbance to be less than 10 acres for the entire development not specific to Filing 3 & 4.

If the overall subdivision disturbed less than 10 acres then the applicant may submit a deviation request for consideration to apply this section to this development.

construction activities result in a land disturbance of less than or equal to 10 acres and have a proposed density of less than 1,000 people per square mile.” The proposed development of Filings No. 3-5 will result in a land disturbance of approximately 6 acres, which is well below the “10-acre” threshold. Assuming 3 people per residential lot, and 19 lots to be developed through Filings No. 3-5 comprising approximately 124 acres, the proposed density will be less than 300 people per square mile, which is substantially lower than the “1,000 people per square mile” limit established under this exclusion.

Based on the rural residential nature of this project and the ECM exclusions described above, The Reserve at Corral Bluffs Subdivision Filings No. 3-5 is not required to implement permanent water quality facilities.

V. COST ESTIMATE AND DRAINAGE FEES

The developer will finance all costs for proposed roadway and drainage improvements, and public facilities will be owned and maintained by El Paso County upon final acceptance.

This majority of these subdivision filings (Basins A, C, and D) are located in the Curtis Ranch Drainage Basin (CHWS 1000), which is an unstudied basin with no drainage basin fee or bridge fee requirement.

Filing No. 3 and 4 Drainage Basin Fees

Filings No. 3 and 4 are located entirely within the Curtis Ranch Drainage Basin, so there are no applicable drainage basin fees.

Filing No. 5 Drainage Basin Fees

Remove Fil 5



The south and southwest parts of Filing No. 5 (Basins E and F) are located within the Jimmy Camp Creek Drainage Basin (FOFO 2000), which has a 2019 drainage basin fee of \$18,350 per impervious acre and a bridge fee of \$858 per impervious acre according to the schedule of El Paso County Drainage Basin Fees. No significant development activity is proposed within Basin F, so the only development area impacted by Jimmy Camp Creek Drainage Basin fee requirements is the southwesterly area within Basin E.

For the Jimmy Camp Creek Drainage Basin, the County Basin Fee Schedule also includes a surety fee based on the DBPS currently being in the process of revision. The Basin Fee Schedule states that “In addition to the Drainage Fee, a surety in the amount of \$7,285 per impervious acre shall be provided to secure payment of additional fees in the event that the DBPS results in a fee greater than the current fee. Fees paid in excess of the future revised fee will be reimbursed.”

For Filing No. 5, applicable drainage basin fees within the Jimmy Camp Creek Drainage Basin are summarized as follows:

Total Developed Residential Lot Area (Basin E) = 15.89 acres (per Sh. D1)
 Filing No. 2 Residential Lot Area (Basin E) = 8.22 acres
 (Basin fees previously paid during Filing No. 2 recording)
 Filing No. 5 Residential Lot Area (Basin E) = **7.67 acres**
 (Basin fees due for Filing No. 5 recording)

Percent impervious = 5.16%
 (per Site-Specific Impervious Calculation in Appendix C of previously
 approved subdivision drainage report)
 Filing No. 5 Impervious area = (5.16% * 7.67 ac.) = 0.396 ac.
 Adjusted Impervious area = (0.396 ac) * 75% = 0.297 ac.
 (includes 25% reduction on drainage fees for 5-acre lots)

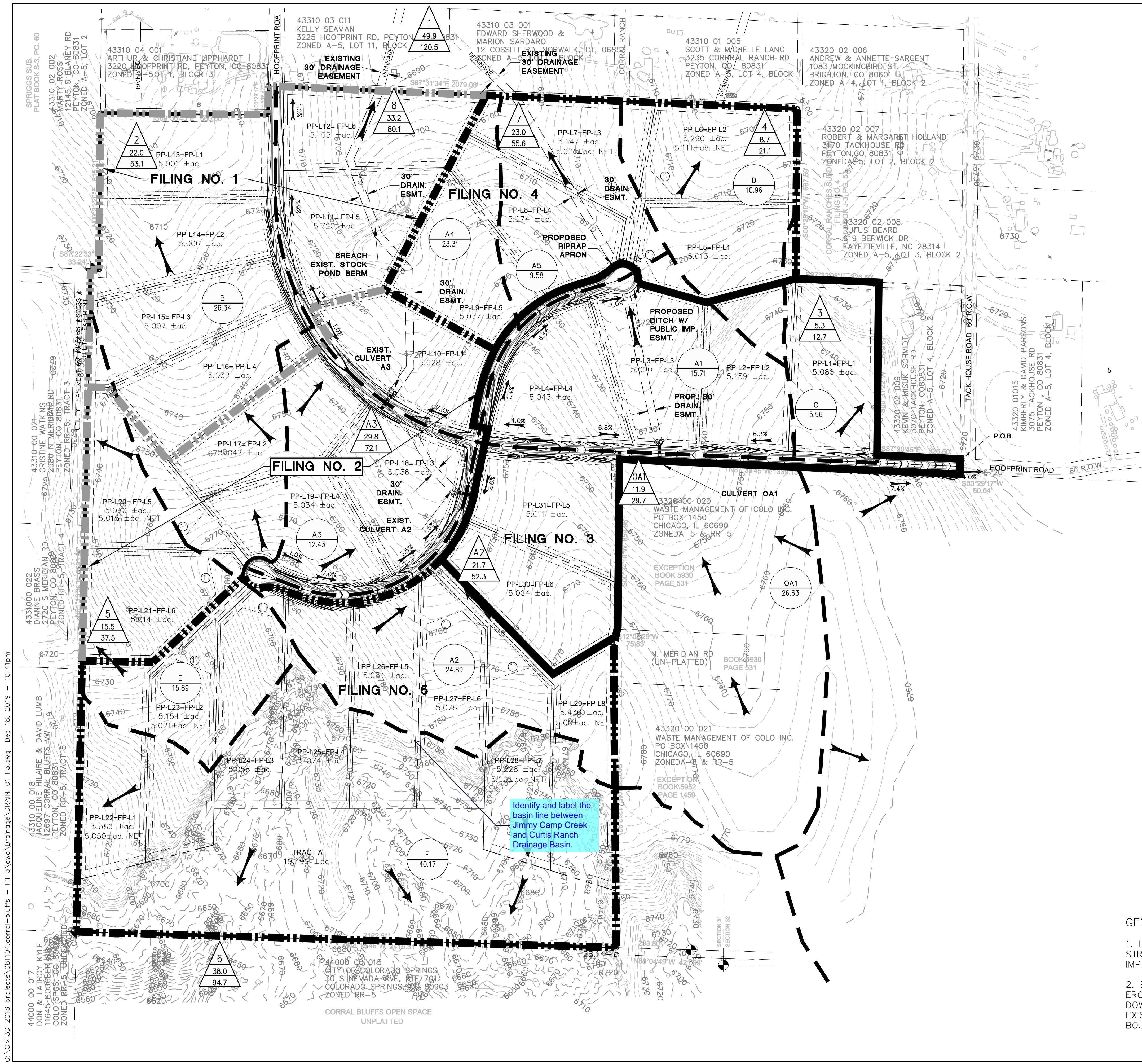
Drainage Basin Fee = (0.297 ac.) @ \$18,350 ac. =	\$5,449.95
Bridge Fee = (0.297 ac.) @ \$858 ac. =	\$254.83
Drainage Basin Surety Fee = (0.297 ac.) @ \$7,285 ac. =	<u>\$2,163.65</u>
TOTAL DRAINAGE & BRIDGE FEES =	\$7,868.42

VI. SUMMARY

The Reserve at Corral Bluffs Filings No. 3-5 comprise the final 19 lots of this rural residential subdivision. All remaining public infrastructure improvements for the subdivision will be completed with Filing No. 3. The proposed rural residential subdivision, consisting of 5-acre minimum lot sizes, is consistent with the surrounding zoning and character of this site.

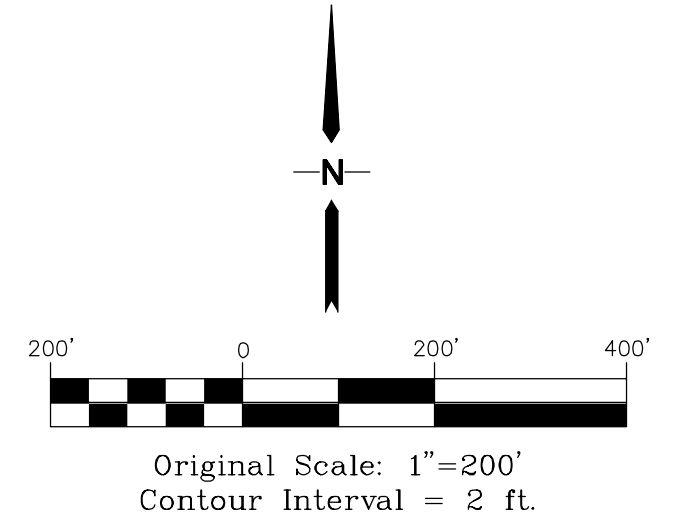
The proposed development of The Reserve at Corral Bluffs Filings No. 3-5 conforms to the previously approved drainage plan for this subdivision as detailed in the "Final Drainage Report for The Reserve at Corral Bluffs - Filing No. 1." This final phase of development will include culverts, roadside ditches, and drainage improvements as detailed in the approved subdivision drainage report.

Development of the proposed subdivision is anticipated to result in a minimal increase in developed runoff from the site, and erosion control best management practices will be implemented to mitigate developed drainage impacts. The proposed drainage patterns will remain consistent with historic conditions, and new drainage facilities will be constructed on-site to El Paso County standards to safely convey runoff to adequate outfalls. Implementation and maintenance of proper erosion control measures will ensure that downstream properties are protected from potential adverse drainage impacts from this development.



LEGEND

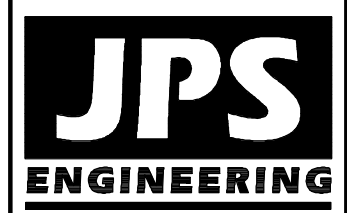
	FILING LIMITS
	DRAINAGE BASIN BOUNDARY
	EXISTING CONTOUR
	PROPOSED SPOT ELEVATION (FLOWLINE)
	EXISTING SPOT ELEVATION (FLOWLINE)
	DRAINAGE CHANNEL
	PROPOSED FLOW DIRECTION ARROW
	PROPOSED CULVERT W/ FLARED END SECTIONS
	DESIGN POINT
	Qs (cfs)
	Q100 (cfs)
	BASIN DESIGNATION
	BASIN AREA (ACRES)



GENERAL DRAINAGE NOTES:

- INDIVIDUAL BUILDERS SHALL PROVIDE POSITIVE DRAINAGE AWAY FROM STRUCTURES AND ACCOUNT FOR POTENTIAL CROSS-LOT DRAINAGE IMPACTS WITHIN EACH LOT.
- BUILDERS AND PROPERTY OWNERS SHALL IMPLEMENT & MAINTAIN EROSION CONTROL BEST MANAGEMENT PRACTICES FOR PROTECTION OF DOWNSTREAM PROPERTIES AND FACILITIES INCLUDING PROTECTION OF EXISTING GRASS BUFFER STRIPS ALONG THE DOWNSTREAM PROPERTY BOUNDARIES.

THE RESERVE AT CORRAL BLUFFS SUBDIVISION FIL NO. 3



19 E. Willamette Ave.
 Colorado Springs, CO 80903
 PH: 719-477-9429
 FAX: 719-471-0766
 www.jpsengr.com

No.	REVISION	BY	DATE

DEVELOPED DRAINAGE PLAN

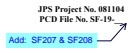
HORIZ. SCALE: 1" = 200'	DRAWN: MSP
VERT. SCALE: N/A	DESIGNED: JPS
SURVEYED: LWA	CHECKED: JPS
CREATED: 01/30/12	LAST MODIFIED: 12/19/19
PROJECT NO: 081104	MODIFIED BY: MSP

D1

C:\civil3d\2018\projects\081104\corral-bluffs - Fil 3\dwg\Drainage\RAIN_01 F3.dwg Dec 18, 2019 - 10:41pm

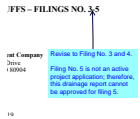
Drainage Report_V1.pdf Markup Summary

Callout (7)



Subject: Callout
Page Label: 1
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:25 AM
Status:
Color: ■
Layer:
Space:

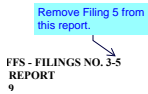
Add: SF207 & SF208



Subject: Callout
Page Label: 1
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:26 AM
Status:
Color: ■
Layer:
Space:

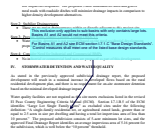
Revise to Filing No. 3 and 4.

Filing No. 5 is not an active project application; therefore, this drainage report cannot be approved for filing 5.



Subject: Callout
Page Label: 3
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:27 AM
Status:
Color: ■
Layer:
Space:

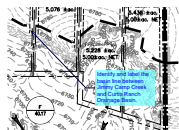
Remove Filing 5 from this report.



Subject: Callout
Page Label: 4
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:31 AM
Status:
Color: ■
Layer:
Space:

This exclusion only applies to sub-basins with only contains large lots. Basins A1 and A2 would not meet this criteria.

For Basins A1 and A2 see ECM section 1.7.1.C "Base Design Standards". Control measures shall meet one of the listed base design standards.



Subject: Callout
Page Label: 7
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:33 AM
Status:
Color: ■
Layer:
Space:

Identify and label the basin line between Jimmy Camp Creek and Curtis Ranch Drainage Basin.

WS 1000), which is an unmodified basin with no drainage basin at
it.
Remove Fil 5
entirely within the Carter Ranch Drainage Basin, so there
is no Fil 5.
of Filing No. 5 (Basins E and F) are located within the
Basin (FWSO 2005), which have a 2019 drainage basin for
use and a budget for of \$108 per impervious acre according to
the Drainage Basin Fee. No significant development
Basin F, as the only development area impacted by Fil 5
in the assessment is the wastewater area within Basin F.

Subject: Callout
Page Label: 5
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:35 AM
Status:
Color: ■
Layer:
Space:

Remove Fil 5

entirely within the Carter Ranch Drainage Basin, so there
is no Fil 5.
of Filing No. 5 (Basins E and F) are located within the
Basin (FWSO 2005), which have a 2019 drainage basin for
use and a budget for of \$108 per impervious acre according to
the Drainage Basin Fee. No significant development
Basin F, as the only development area impacted by Fil 5
in the assessment is the wastewater area within Basin F.

Subject: Callout
Page Label: 4
Lock: Locked
Author: dsdlaforce
Date: 4/20/2020 8:31:47 AM
Status:
Color: ■
Layer:
Space:

This exclusion does not apply. The project is not within the "County Growth Area". Additionally, this is part of the larger common plan of development for the entire Reserve at Corral Bluffs subdivision (Fil 1 through 5). The land disturbance to be less than 10 ac is for the entire development not specific to Filing 3 & 4.

If the overall subdivision disturbed less than 10 acres then the applicant may submit a deviation request for consideration to apply this section to this development.