FINAL DRAINAGE REPORT
FOR
SADDLEHORN RANCH – FILING 3
EARLY GRADING

Prepared For:
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October 27, 2022
Project No. 25142.05

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El Paso County PCD File No.:
EGP-22-004

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 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.

25043

Bryan Law, Colorado P.E. # 25043
For and On Behalf of JR Engineering, LLC

8/5/22
Date

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: ROI Property Group, LLC

By: FOR ROI

Title: AUTHORIZED REPRESENTATIVE

Address: 2495 Rigdon Street
Napa, CA 94558

El Paso County:

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:

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PURPOSE

This document is the Final Drainage report for Filing 3 of Saddlehorn Ranch Early Grading. The purpose of this report is to:

1. Identify on-site and off-site drainage patterns.
2. Recommend storm water facilities to collect and convey storm runoff from the proposed development during early grading operations to appropriate discharge and/or detention locations.
3. Recommend detention facilities to control discharge release rates to below historic.
4. Demonstrate compliance with surrounding major drainage basin planning studies, master development drainage plans and flood insurance studies.

GENERAL LOCATION AND DESCRIPTION

Location

The proposed Saddlehorn Ranch Filing 3, known as "Filing 3" from herein, is a parcel of land located in Section 3 and 10, Township 13 South, Range 64 West of the 6th Principal Meridian in El Paso County, Colorado. Saddlehorn Ranch is an 824 acre, rural, single family-development. Filing 3 is 175.43 acres and is comprised of 44 lots of the overall Saddlehorn Ranch development. Saddlehorn Ranch is bound by Judge Orr Road to the North and Curtis Road to the West. To the East, Saddlehorn Ranch is bound by undeveloped land owned by Brent Houser Enterprises, LLC. To the south, Saddlehorn Ranch is bound by undeveloped properties owned by Carolyn Gudzunas and Faye Reynolds. Filing 3 is bound by future Filing 4 to the east, Filing 2 to the south, Judge Orr Road to the north, and by Curtis Road to the west. A vicinity map is presented in Appendix A.

Currently, there are two major Drainageway that will receive flows from Filing 3: Gieck Ranch (WF-R7A) and Haegler Ranch Main Stem 6 (MS-06). These Drainageways were analyzed, both hydrologically and hydraulically, in the following reports:

- Haegler Ranch Basin Drainage Basin Planning Study (DBPS), May 2009.
- Santa Fe Springs – Haegler Ranch Drainage Basin Letter of Map Revision, June 2004.
- Master Development Drainage Plan and Preliminary Drainage Report for Saddlehorn Ranch, May 2020.
- Geick Ranch Drainage Basin Planning Study (DBPS), October 2007

The impact of these Drainageways and planning studies on the proposed development will be discussed later in the report.

Description of Property

Filing 3 is currently unoccupied and undeveloped. The existing ground cover is sparse vegetation and open space, typical of a Colorado rolling range land condition. In general, Filing 3 slopes from south to southeast and the existing drainageways follows this topography.

Per a NRCS web soil survey of the area, Filing 3 is made up of Type A and D soils. Type A soils cover roughly 76% of Filing 3 while Type D soils cover 24% of Filing 3. Group A soils have a high infiltration rate when thoroughly wet. Type D soils have a very slow infiltration when thoroughly wet. A NRCS soil survey map has been presented in Appendix A.

Floodplain Statement

Based on the FEMA FIRM Map number 08041C0558G, dated December 7, 2018, Filing 3 lies within Zone AE and Zone X. Zone AE is defined as area subject to inundation by the 1-percent-annual-chance flood event. Zone X is defined as area outside the Special Flood Hazard Area (SFHA) and higher than the elevation of the 0.2-percent-annual-chance (or 500-year) flood. All proposed residential development within Filing 3 will occur in Zone X. The FIRM Map has been presented in Appendix A.

DRAINAGE BASINS AND SUB-BASINS

Existing Major Basin Descriptions

Filing 3 lies within Haegler Ranch Drainage Basin based on the "*Haegler Ranch Drainage Basin Planning Study*" prepared by URS Corporation in May 2009.

The Haegler Ranch Drainage Basin covers approximately 16.6 square miles in unincorporated El Paso County, CO. The Haegler Ranch Drainage Basin is tributary to Black Squirrel Creek. In its existing condition, the basin is comprised of rolling rangeland with poor vegetative cover associated with Colorado's semi-arid climate. The natural Drainageways within the basin are typically shallow and wide with poorly defined flow paths in most areas. Anticipated land use for the basin includes residential and commercial development. Residential developments will range from 0.125 – 5 acre lots with a mix of low, medium and high density developments.

As part of its drainage research, JR Engineering reviewed the following drainage studies, reports and LOMRs:

- Haegler Ranch Drainage Basin Planning Study prepared by URS Corporation in May 2009
- Santa Fe Springs – Haegler Ranch Drainage Basin Letter of Map Revision prepared by Tri-Core Engineering in June 2004.
- Master Development Drainage Plan and Preliminary Drainage Report for Saddlehorn Ranch, prepared by JR Engineering, May 2020.
- Gieck Ranch Drainage Basin Planning Study (DBPS), October 2007

The "*Haegler Ranch Drainage Basin Planning Study*" was used to establish a stormwater management plan for the existing and future stormwater infrastructure needs within the Haegler Ranch Drainage Basin. Based on provided drainage maps and analysis, in the existing condition Haegler Ranch contributes a total of 710 cfs onto the site. Of the 710 cfs, 590 cfs crosses Curtis Road in an existing 24" CMP onto the site. Major Drainageway MS-06 conveys the stormwater through the site and to its off-site confluence with Major Drainageway MS-05. The remaining 210 cfs crosses Curtis Road in an existing 36" CMP onto the site. Major Drainageway T-6 conveys the stormwater through the site and to its off-site confluence with

Major Drainageway MS-05. Both Curtis Road culverts are undersized for existing and future flows and overtopping occurs locally near the culvert crossings. The overtopping culvert at the intersection of MS-06 and Curtis Road is not contained within the 100-year floodplain limits. Therefore, berming will be provided in the final plat to protect proposed lots from overtopping flows.

The existing 24" CMP culvert will not be upsized within the context of this report and development. The culvert is owned by El Paso County and timing of improvements, if any, will be controlled by the County.

Furthermore, the *Haegler Ranch DBPS* recommends channel improvements within Drainageway MS-06. Per the *Haegler Ranch DBPS*, all recommended channel sections are trapezoidal with side slopes of 4:1 and a maximum depth of five feet. Within the limits of the site, three (3) channel bottom widths are recommended for MS-06. The first reach, from station 0+00 – 31+34, is proposed with a 15' bottom width, the second reach from 31+34 to 74+61, MS-06 is proposed with a 30' bottom width, and the last reach from station 74+61 - 103+62 is proposed with a 20' channel bottom. The portion of the MS-06 channel improvements along Filing 3 has been analyzed with the Engineer's Certification of No Impact Letter. This letter shows the proposed Drainageway MS-06 sections and flow depths. This letter can be found in Appendix E.

Unresolved. See attached PDF to see requirements for a no rise certification letter. A WSE table will be required to show changes in elevations, see attached item next to this comment. If the no rise requirement cannot be met, a CLOMR will be required for the EGP to be approved. If no work is being done within the floodplain, per GEC, with the EGP clarify that in the drainage report.

Based on flood impacts, stream stabi… sub-regional detention approach. This allows futu…ruction of an associated sub-regional pond. Howe… *and Preliminary Drainage Report for Sa…* …ree on-site temporary sediment basins. These se… MS-06 and WF-R7A Drainageways to less than …

The Santa Fe Springs – Haegler Ran… …Ranch Tributary 2, 3, and 4. The LOMR revised the onsite effective flood zone from Zone A to Zone AE. See FIRM Map Panel 08041C0558G for limits of LOMR study and revised flood zones, presented in Appendix E.

The Gieck Ranch Drainage Basin covers approximately 22 square miles and begins approximately five miles northeast of the Town of Falcon and travels approximately 15 miles to the southeast. The Gieck Ranch Drainage Basin is tributary to Black Squirrel Creek which drains south to the Arkansas River near the city of Pueblo, Colorado. The majority of the area within the basin is undeveloped and is characterized as rolling range land typically associated with Colorado's semi-arid climates. Anticipated land use for the basin includes residential, industrial, agricultural and commercial development. Residential developments will range from 0.125 – 5 acre lots with a mix of low, medium and high density developments.

Based upon provided drainage maps and analysis, Gieck Ranch discharges a total of 1,017 cfs onto the site within Major Drainageway Gieck Ranch West Fork Reach 7A (WF-R7A). An existing 66" CMP and 36" CMP convey the offsite flow across Judge Orr Road onto the site. The existing culverts at Judge Orr Road are undersized for existing and future flows resulting in localized overtopping. The DBPS recommends the culvert be upsized to four –12' x 5' box culverts. The culvert will not be upsized within the context of this report and development. The culvert is owned by El Paso County and timing of the

recommended improvements will be controlled by the County. The overtopping at the intersection of WF-R7A is not contained within the 100-year floodplain. Therefore, at time of Final Drainage Report for Filing 4, berming will be provided that will protect proposed lots from overtopping flows.

See Table 2 for comparison of Drainageway identification and the naming convention used within the context of this report. See Table 3 for a comparison of 100-year flows as calculated in the aforementioned DBPS and LOMR. An existing conditions drainage map is presented in Appendix E.

Table 1: Major Drainageway Naming Convention

Major Drainageway Naming Conventions			
Saddlehorn Ranch MDDP/PDR:	Per Haegler Ranch DBPS:	Per Geick Ranch DBPS:	Per Sante Fe Springs LOMR:
MS-06	Main Stem (MS-06)	N/A*	Haegler Ranch Tributary 3
WF-R7A	N/A*	West Fork (Middle)/WF-R7A	N/A*

Table 2: Major Drainageway – Ex. 100-Year Flow Comparison

Major Drainageways: 100-Year Flow Comparison				
Drainageway Name	Contributing Area (sq. mi.)	Q_{100} Per Haegler Ranch DBPS:	Q_{100} Per Geick Ranch DBPS:	Q_{100} Per Sante Fe Springs LOMR:
MS-06 @ Curtis Road	1.05	590 cfs	N/A*	505 cfs
WF-R7A @ Judge Orr Road	1.50	N/A*	1,017 cfs	N/A*

*N/A: Flow regime outside limits of study.

The *Master Development Drainage Plan and Preliminary Drainage Report for Saddlehorn Ranch* proposed the overall drainage facility design for Saddlehorn Ranch. Within the context of this report, onsite drainage basins the temporary sediment basins were established. As it pertains to Filing 3, three temporary sediment basins are recommended. Roadside ditches and local street culverts will be utilized to capture and convey Filing 3's runoff to the temporary sediment basins. Temporary Sediment Basins 1 and 2 will discharge into Drainageway MS-06, while Temporary Sediment Basin 3 will release into Drainageway WF-R7A.

Existing Sub-basin Drainage

On-site, existing sub-basin drainage patterns are generally from northwest to southeast by way of Drainageway MS-06 and Drainageway WF-R7A. On-site areas flow directly into these drainageways, which also bypass off-site flows through the site.

On-site, existing drainage basins were established based upon existing topography and the limits of the 100-year floodplain. These existing sub-basins were analyzed in the *Master Development Drainage Plan and Preliminary Drainage Report for Saddlehorn Ranch.* An existing drainage map has been provided in Appendix E.

Proposed Sub-basin Drainage

The proposed Filing 3 basin delineation is as follows;

Basin C consists of Sub-Basins C1-C10 combining for a total of 93.77 acres. In its existing condition, Basin C is rolling rangeland and runoff generally flows southeast towards Drainageway MS-06. During early grading, Basin C will be rolling rangeland, gravel roadway, and will include Temporary Sediment Basin 2. Runoff from this basin will be collected in road side ditches and conveyed to Temporary Sediment Basin 2 located in the southeast corner of the future Filing 4 development. Once the project progresses past early grading, Temporary Sediment Basin 2 will be converted into Pond C. Pond C will be a full spectrum water quality and detention pond, and will release at less than historic rates into Drainageway MS-06.

Basin D consists of Sub-basins D1-D7 combining for a total of 74.66 acres. In its existing condition, Basin D is rolling rangeland and runoff generally flows east to Drainageway WF-R7A. During early grading, Basin D will be rolling rangeland, gravel roadway, and will include Temporary Sediment Basin 3. Runoff from this basin will be collected in road side ditches and conveyed west to Temporary Sediment Basin 3 located in the northeast corner of the future Filing 4 development. Once the project progresses past early grading, Temporary Sediment Basin 3 will be converted into Pond D. Pond D is a full spectrum water quality and detention pond, and will release at less than historic rates into Drainageway WF-R7A.

Basin E consists of Sub-basins E1-E4 combining for a total of 18.37 acres. In its existing condition, Basin E is rolling rangeland and runoff generally flows south towards Drainageway MS-06. During early grading operations, Basin E will be rolling rangeland, gravel roadway, and will include Temporary Sediment Basin 1. Runoff from this basin will be collected in road side ditches and conveyed to Temporary Sediment Basin 1 located in the southern portion of the Filing 3 development along San Isidro Trail. Once the project progresses past early grading, Temporary Sediment Basin 1 will be converted into Pond E. Pond E will be a full spectrum water quality and detention pond, and will release at less than historic rates into Drainageway MS-06.

Basin UD consists of Sub-basins UD1-UD5 combining for a total of 74.27 acres. In their existing condition, these basins are rolling rangeland. Runoff from Basins UD1-UD3 generally flows south and east to Drainageway MS-06. Basin UD5 flows east to Drainageway MS-06. Basin UD4 represents Drainageway MS-06 and the runoff generated along the Filing 3 boundary. In the proposed condition, Basins UD1, UD2, UD3, and UD5 will be rural 2.5 acre lots with an Imperviousness = 6.2% and will be excluded from permanent stormwater quality management per Section I.7.1.B.5 of the ECM – Stormwater Quality Policy and Procedures.

Basin OS consists of Sub-basins OS1-OS5 combining for a total of 9.35 acres of offsite area. In their existing condition, these basins are paved roadway (Curtis Road & Judge Orr Road) and undeveloped area. Basins OS1-OS4 will flow on-site prior to being captured in a roadside swale and conveyed to a proposed temporary sediment basin prior to being released into Drainageway MS-06 or Drainageway WF-R7A. Basin OS5 will not be detained by a sediment basin due to its location relative to the site.

A summary table of proposed basin parameters and flow rates are presented in Appendix B.

Basin C runoff along with runoff from Sub-Basins OS1 and OS2 will be captured in roadside swales and conveyed to the proposed Temporary Sediment Basin 2. This temporary sediment basin will release flows at less than historic rates to minimize adverse impacts downstream. Basin D along with runoff from Sub-Basins OS3 and OS4 will be captured in roadside swales and conveyed to the proposed Temporary Sediment Basin 3. Basin E will be captured in roadside swales and conveyed to the proposed Temporary Sediment Basin 1. Temporary Sediment Basins 1 and 2 will discharge into Drainageway MS-06. Temporary Sediment Basin 3 will discharge into Drainageway WF-R7A.

Permanent pond infrastructure and drainageway improvements are not permitted with the early grading permit. Early grading drainage infrastructure is discussed below.

Early Grading Drainage

During early grading operations, flow will be captured by one of three Temporary Sediment Basin. Each basin will be equipped with a temporary outlet structure designed to drain the basins' volume within 40 hrs. Water will drain into these basins via roadside swales and temporary CMP culverts. Once the project progresses past early grading, each temporary sediment basin will be converted into its own respective full spectrum water quality detention pond. This includes adding a concrete forebay along with appropriately sized riprap. The water will then drain through a concrete trickle channel to the proposed permanent outlet structure. The current temporary outlet structure pipe will be replaced by a permanent outlet structure with an appropriately sized riprap spreader. These full spectrum ponds will release treated flows at less than historic rates to minimize adverse impacts downstream. In addition to the improvements mentioned above, each pond will have an emergency spillway along with a gravel maintenance access trail. The final design for the ponds will be included in the Final Drainage report.

Sediment Basin 1 is designed to treat a tributary area of 12.09 acres, 2.70 acres of disturbed land and 9.39 acres of undisturbed land. The required volume of Sediment Basin 1 in order to treat 12.09 acres is 0.219 ac-ft. Sediment Basin 1 exceeds this with a provided volume of 0.424 ac-ft. Sediment Basin 1 is designed to drain its entire volume within 40 hrs via a temporary outlet structure. This temporary outlet structure is designed as a singular column with five 1" dia holes allowing for water to drain. Once the project progresses past early grading, Temporary Sediment Basin 1 will be converted to a full spectrum water quality detention pond (Pond E). Pond E will

discharge into major Drainageway MS-06. The final design for Pond E will be included with the final drainage report.

Sediment Basin 2 is designed to treat a tributary area of 99.31 acres, 18.87 acres of disturbed land and 80.44 acres of undisturbed land. The required volume of Sediment Basin 2 in order to treat 99.31 acres is 1.703 ac-ft. Sediment Basin 2 exceeds this with a provided volume of 2.39 ac-ft. Sediment Basin 2 is designed to drain its entire volume within 40 hrs via a temporary outlet structure. This temporary outlet structure is designed as a singular column with five 2 3/4" dia holes allowing for water to drain. Once the project progresses past early grading, Temporary Sediment Basin 2 will be converted to a full spectrum water quality detention pond (Pond C). Pond C will discharge into major Drainageway MS-06. The final design for Pond C will be included with the final drainage report.

Sediment Basin 3 is designed to treat a tributary area of 63.2 acres, 11.36 acres of disturbed land and 51.84 acres of undisturbed land. The required volume of Sediment Basin 3 in order to treat 63.2 acres is 1.064 ac-ft. Sediment Basin 3 exceeds this with a provided volume of 2.315 ac-ft. Sediment Basin 3 is designed to drain its entire volume within 40 hrs via a temporary outlet structure. This temporary outlet structure is designed as a singular column with five 2 5/8" dia holes allowing for water to drain. Once the project progresses past early grading, Temporary Sediment Basin 3 will be converted to a full spectrum water quality detention pond (Pond D). Pond E will discharge into Major Drainageway WF-R7A. The final design for Pond D will be included with the final drainage report.

See Table 3 below for Filing 3 Early Grading sediment basin parameters

Table 3: Sediment Basin Summary

Tributary Sub-Basin	Sediment Basin Name	Tributary Acres	Total Detention Volume (ac-ft)	Provided Volume (ac-ft)	Maximum Discharge (cfs)
C	Sediment Basin 2	99.31	1.703	2.39	0.4223
D	Sediment Basin 3	63.2	1.064	2.315	0.3730
E	Sediment Basin 1	12.09	0.219	0.424	0.0634

DRAINAGE DESIGN CRITERIA

Development Criteria Reference

Storm drainage analysis and design criteria for the project were taken from the "*City of Colorado Spring/El Paso County Drainage Criteria Manual*" Volumes 1 and 2 (EPCDCM), dated October 12, 1994, the "*Urban Storm Drainage Criteria Manual"* Volumes 1 - 3 (USDCM) and Chapter 6 and Section 3.2.1 of Chapter 13 of the "Colorado Springs Drainage Criteria Manual (CCSDCM), dated May 2014, as adopted by El Paso County.

Hydrologic Criteria

All hydrologic data was obtained from the "El Paso Drainage Criteria Manual" Volumes 1 and 2, and the "Urban Drainage and Flood Control District Urban Storm Drainage Criteria Manual" Volumes 1, 2, and 3. Onsite drainage improvements were designed based on the 5 year (minor) storm event and the 100-year (major) storm event. Rational Method calculations were prepared, in accordance with Section 13.3.2.1. of the CCSDCM, for the sub-basins that directly impact the sizing of ditches and local street culverts. Rational method calculations are presented in Appendix B.

Urban Drainage and Flood Control District's UD-Detention, Version 4.04 workbook was used for pond sizing. Required detention volumes and allowable release rates were designed per USDCM and CCS/EPCDCM. Pond sizing spreadsheets are presented in Appendix D. The temporary sediment basins used during early grading operations share the same basin geometry as the final pond buildout.

Hydraulic Criteria

Autodesk Inc.'s Hydraflow Express Extension (Volume 10.5) was used for roadside ditch design. Ditches were checked for velocity and capacity per the CCS/EPCDCM Section 12.3.2.2. In order to check both capacity and velocity, a cross section analysis was performed on the roadside swales using the basin's maximum runoff Q and the proposed uniform slope of the swale. Swale cross sections have been presented in Appendix C.

Autodesk Inc.'s Hydraflow Express Extension (Volume 10.5) was used for local road crossing culvert design. Culvert size was determined based on 100-year flows and hydraulic criteria from EPCDCM Chapter 9 –Culvert Design. All local road crossing culvert design reports are presented in Appendix C.

Early Grading Criteria

Early grading improvements follow the same criteria mentioned above. However, off-site grading, drainageway improvements, permanent detention ponds, and paving is not allowed with the early grading permit. Improvements permitted with early grading include grading the subgrade of the proposed roads with swales and temporary CMP culverts. The temporary sediment basins will be graded in with a temporary slope drain and outlet pipe. The basins are sized to the full pond build-out and designed to drain their entire volume over a 40 hour period. Stabilized staging areas will be built along with vehicle tracking control will be set up. Check dams and silt fences will be installed to reduce erosion during early grading operations.

DRAINAGE FACILITY DESIGN

General Concept

The proposed stormwater conveyance system was designed to convey the developed Filing 3 runoff during interim early grading to one of three sediment basins via roadside ditches and local street culverts. These sediment basins were designed to store and release at less than historic rates to minimize adverse impacts downstream during early grading.

The proposed early grading improvements are over designed for the current state of the project site. The roadside swales along with the proposed culverts are designed to treat runoff for the completed subdivision. During early grading operations, the site will have minimal composite impervious surfaces without the proposed roads and vacant lots. This will allow more runoff to infiltrate the ground, reducing the amount of runoff that needs to be caught by the roadside swales and the three sediment basins.

Once the project progresses past early grading operations, each sediment basin will be converted to a full spectrum water quality and detention pond. The temporary outlet structures will be replaced with permanent outlet structures. Additionally, concrete forebays along with concrete trickle channels will be installed. These full spectrum ponds will release treated flows at less than historic rates to minimize adverse impacts downstream. Ponds C and E will discharge into Major Drainageway MS-06. Pond D will discharge into Major Drainageway WF-R7A. The final design for Ponds C, D, and E will be included in the Final Drainage report.

Improvements to Drainageway MS-06 are proposed within the Saddlehorn Filing 3 improvements. However, improvements to Drainageway MS-06 are not permitted during early grading operations. These improvements will be carried out once the project progresses past early grading. A no rise study has been conducted on the proposed Drainageway MS-06 improvements to ensure no rises to the floodplain occur as a result of the Filing 3 development. All proposed drainageway improvements, including the San Isidro culvert crossing and channel sections can be found in Appendix E. All improvements aforementioned to Drainageway WF-R7A are proposed with the Saddlehorn Filing 4 improvements. Outfall protection from Pond D is the only improvement to Drainageway WF-R7A proposed with the Filing 3 improvements. The remaining improvements to Drainageway MS-06 will be implemented with the Filing 5 improvements.

Specific Details

Four Step Process to Minimize Adverse Impacts of Urbanization

In accordance with the El Paso County Drainage Criteria Manual Volume 2, this site has implemented the four step process to minimize adverse impacts of urbanization. The four step process includes reducing runoff volumes, stabilizing drainageways, treating the water quality capture volume (WQCV), and consider the need for Industrial Commercial BMP's.

Step 1, Reducing Runoff Volumes: The development of the project site is proposed single family residential lots (2.5 ac. min.) with open spaces and lawn areas interspersed within the development which helps disconnect impervious areas and reduce runoff volumes. Roadways utilize soil riprap lined roadside ditches further disconnecting impervious areas. These practices will also allow for increased infiltration and reduce runoff volume.

Step 2, Stabilize Drainageways: Filing 3 utilizes roadside ditches with temporary culvert crossings throughout the site. These roadside ditches direct the on-site development flows to the proposed temporary sediment basin that release at or below historic rates into Drainageways MS-06 and WF-R7A. Based upon the proposed reduction in released flows compared to the pre-developed flows, no impacts to downstream Drainageway MS-06 or Drainageway WF-R7A are anticipated.

Drainageway improvements and permanent full spectrum detention ponds are not permitted during early grading. Steps 3 and 4 will be addressed in the final drainage report submitted at a later date.

Erosion Control Plan

The El Paso County Drainage Criteria Manual specifies an Erosion Control Plan and associated cost estimate must be submitted since this project is disturbing more than 1 acre. The Early Grading Erosion Control Plans for Filing 3 have been submitted concurrently with this report.

Operation & Maintenance

In order to ensure the function and effectiveness of the stormwater infrastructure, maintenance activities such as inspection, routine maintenance, restorative maintenance, rehabilitation and repair, are required. All proposed drainage structures within the any platted County ROW will be owned and maintained by El Paso County. All proposed drainage structures within easements or tracts will be owned and maintained by the 824 Acre Metropolitan No. 1. Vegetation in Drainageway MS-06 is the responsibility of 824 Acre Metropolitan District No. 1. This includes all mowing, seeding and weed control activities. An Operation & Maintenance Plan will be submitted concurrently with the final drainage report that details the required maintenance activities and intervals to ensure proper function of all stormwater infrastructure in the future.

Drainage and Bridge Fees

Drainage and Bridge Fees are not due with the early grading permit application. An estimate of basin fees for the proposed development within Haegler Ranch drainage basin will be calculated and provided with the Filing 3 Final Drainage Report.

SUMMARY

The proposed development remains consistent with pre-development drainage conditions with the construction of the recommended drainage improvements, including ditches, culverts, detention ponds and drainage channel improvements. The proposed development will not adversely affect the offsite major drainageways or surrounding development. This report meets the latest El Paso County Drainage Criteria requirements for this site and is in accordance with the PDR/MDDP for Saddlehorn Ranch.

REFERENCES:

1. City of Colorado Springs Drainage Criteria Manual Volume 1, City of Colorado Springs, CO, May 2014.

2. Urban Storm Drainage Criteria Manual, Urban Drainage and Flood Control District, Latest Revision.

3. Master Development Drainage Plan and Preliminary Drainage Report for Saddlehorn Ranch, JR Engineering, May 2020.

4. Haegler Ranch Drainage Basin Planning Study, URS Corporation, May 2009.

5. The Santa Fe Springs – Haegler Ranch Drainage Basin LOMR, Federal Emergency Management Agency, October 20, 2004.

6. Final Drainage Report for Saddlehorn Ranch – Filing 2, JR Engineering, January 4, 2022