DRAINAGE LETTER
FOR
CIRCLE A SUBDIVISION FILING NO. 1

EL PASO COUNTY, COLORADO

JUNE 2021

Prepared for:

Daniel B. Andres Trust
17110 Goshawk Road
Colorado Springs, CO 80908

Prepared by:

CIVIL CONSULTANTS,INC.

212 Wahsatch Ave., Ste. 305
Colorado Springs, CO 80903
(719) 955-5485

Project #70-072
PCD – MS 20-007

DRAINAGE LETTER
FOR
CIRCLE A SUBDIVISION FILING NO. 1
EL PASO COUNTY COLORADO

DRAINAGE PLAN STATEMENTS

ENGINEERS STATEMENT

The attached drainage plan and letter was prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage letter 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 any liability caused by any negligent acts, errors or omissions on my part in preparing this report.

COLORADO REGISTERED
VIRGIL A. SANCHEZ II
37160
6-23-21
PROFESSIONAL ENGINEER

_____
Virgil A. Sanchez, P.E. #37160
For and on Behalf of M&S Civil Consultants, Inc

DEVELOPER'S STATEMENT

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

BY: Daniel B Andres

TITLE: Owner/Developer
DATE: 6-23-21

ADDRESS: Daniel B. Andres (Owner)
17110 Goshawk Road
Colorado Springs, CO 80908

EL PASO COUNTY'S STATEMENT

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

BY:_____ DATE:_____
Jennifer Irvine, P.E.
County Engineer / ECM Administrator

CONDITIONS:

CIVIL CONSULTANTS,INC.

June 23, 2021

El Paso County Planning & Community Development
2880 International Circle Suite 110
Colorado Springs, Colorado 80910
Attn: Jennifer Irvine P.E./County Engineer

RE: Drainage Letter for Circle A Subdivision Filing No. 1

Dear Jennifer,

The following is the Drainage Letter for Minor Subdivision application to the Circle A Subdivision Filing No. 1. The Circle A Subdivision is located in the NE quarter of Section 23, Township 11 South, Range 65 West of the 6th P.M. in El Paso County, Colorado. The site is bound to the north, south, east, and west by large-lot single-family residential lots land uses.

The existing parcel in its entirety consists of 14.867 AC and is currently zoned "RR-5" for Residential Rural under TSN: 51230-00-015. The proposal consists of subdividing an existing 14.867 AC into three (3) separate approx. ~5 AC parcels and is planned for (1) single-family unit on each lot. Lot 1 has an existing residential home and shop located on the lot, and after subdividing the parcel, Lot 1 shall consist of 4.957 AC, Lot 2 shall consist of 4.960 AC, and Lot 3 shall consist of 4.950 AC. A new single-family residential home is planned to be constructed on each of Lot 2 and 3.

The subject property generally slopes to the southeast. There are two natural drainage swales on the subject property, one on the northern portion of the project site (Lot 2) and one west on (Lot 3), that convey storm events towards West Kiowa Creek. The natural drainage swales shall be left unaltered as not to change the natural drainage patterns. The surface topography across the site is predominantly flat, with gentle slopes of less than 5%. Ponderosa Pines and native grasses cover the property.

No portion of this site is within a designated FEMA floodplain as determined by the Federal Emergency Management Agency (FEMA) Flood Insurance Map Rate Map (FIRM) Panel No. 08041C0310G, effective date of December 7, 2018. It's anticipated that the general drainage patterns will not change, except for the construction and drainage protection of the future home structures.

No drainage Improvements are proposed with the minor subdivision application of the Circle A Subdivision. The proposed development of two (2) new residential units shall be less than 1 AC of disturbance areas combined, thereby complying with the El Paso County ECM code.

The Circle A Subdivision is not subject to ESQCP requirements per ECM 5.6.3. The project development falls under "Large Lot Single Family Home Construction." It's estimated that, including the construction of single-family homes, associated landscaping, gravel driveways, utility sheds, well location, and septic systems, it is expected that each lot will disturb approximately 5% on each respective lot. The estimated disturbance will be

less than the maximum of 10%. Therefore the Circle A subdivision shall not be required to provide a water quality treatment or a formal drainage study at this time, as the anticipated disturbance is less than the impervious surface area threshold identified within the ECM Section 5.6.3.

FOUR STEP PROCESS

Step 1 **Employ Runoff Reduction Practices** – Roof runoff shall be allowed to run off to the natural and landscaping area of the yards on the new home structures. The goal is to minimize the overall impervious surface areas and route potential runoff from impervious surfaces over grassy areas to slow down runoff and promote infiltration. These grass buffer areas will slow down the impervious surface runoff and encourage infiltration.

Step 2 **Stabilize Drainage ways** – The project site proposes two (2) typical residential home sites, including landscaping, gravel driveways, a utility sheds. The estimated disturbance will be less than the maximum of 10%. Therefore it's not anticipated to have adverse effects on the downstream drainage ways, nor anticipate a need to stabilize the natural drainage ways through the site.

Step 3 **Provide Water Quality Capture Volume** – The estimated disturbance will be less than the maximum of 10%. Therefore the Circle A subdivision shall not be required to provide a water quality treatment or a formal drainage study at this time, as the anticipated disturbance is less than the impervious surface area threshold identified within the ECM Section 5.6.3.

Step 4 **Consider Need for Industrial and Commercial BMP's** – This project consists of constructing two (2) new typical residences (one home per 5+/- ac parcel). It is not anticipated that the project site locations will require any specialized BMPs. It is recommended that any grading activities shall employ the use of silt fencing to mitigate erosion across the site and minimize sediment being carried downstream to the natural drainage ways. It is recommended that reseeding the disturbed areas once construction of the home is completed.

EXISTING DRAINAGE CONDITIONS

The Circle A Subdivision Fil No. 1 site consists of 14.867 acres and is situated within the West Kiowa Creek Drainage Basin. The subject property generally slopes in a southeasterly direction. There are two natural drainage swales on the subject property, one on the northeastern portion of the project site (Lots 1 and 2) and one to the west on (Lot 3), that convey storm events to West Kiowa Creek. A runoff flow analysis was performed on the existing natural swales that traverse the proposed lots to determine the current cumulative flow runoff.

An existing offsite natural drainage swale enters Lot 2 at the northwest corner of the lot and crosses through to the southeast corner. The natural swale continues onto Lot 1 at the northeast corner of the lot, where the cumulative runoff travels within an open swale in a southeasterly direction. The existing runoff flows are conveyed under Goshawk Rd via an existing 12" culvert. The flows continue to be conveyed downstream in an open swale in a southeasterly direction to West Kiowa Creek. (An Existing Drainage Map is provided in the appendix of this report)

Existing Flow Calculations

DP 11, Q5=6.5 cfs and Q100=45.0cfs (Downstream offsite, east of Goshawk Road, the outfall of existing 12" culvert. DP 10, Q5=6.0 cfs and Q100=42.8 cfs (Property line between Lot 1 and 2). DP 7, Q5=3.8 cfs, and Q100=28.0 cfs (Natural swale enters the project site of Lot 2). Other runoff routes contributing to the swales cumulative are identified on the existing drainage map as **DP 8 and 9. DP 8 Q5=0.6 cfs, and Q100=4.1 cfs and DP 9, Q5=1.4 cfs and Q100=10.3 cfs.**

Lot 1 has an additional smaller outlet area at the south property line that flows continue downstream to the adjacent property in the same general southeasterly direction. **DP 6, Q5=1.2 cfs and Q100=4.6 cfs.**

The second-largest natural swale passes through the project site, crosses onto Lot 3 at the north property line, and conveys runoff flows in a southeasterly direction. The swale travels to the south property line of Lot 3 at **DP 3, Q5=1.8 cfs and Q100=12.6 cfs.**

Lot 3 has some additional smaller, less significant flows travel over and across Lot 3 in the same general southeasterly direction. These are identified as **DP 1, Q5=0.1 cfs and Q100=0.5 cfs, DP 2, Q5=0.4 cfs and Q100=2.6 cfs, DP 4, Q5=0.3 cfs and Q100=1.5 cfs, and DP 5, Q5=0.4 cfs and Q100=2.5 cfs.**

PROPOSED DRAINAGE CONDITIONS

This project proposes two (2) new typical residences (one home per 5+/- ac parcel). The estimated disturbance will be less than the maximum of 10% of each lot's overall acreage. Therefore the Circle A subdivision shall not be required to provide a water quality treatment. It is anticipated that the lot's general drainage patterns will not change, except for the construction of the proposed residential structures and the drainage protection grading. No drainage Improvements are proposed with the (2) two proposed residential structures.

Proposed Flow Calculations

DP 11, Q5=6.7 cfs and Q100=45.2cfs (Downstream offsite, east of Goshawk Road, the outfall of existing 12" culvert. DP 10, Q5=6.3 cfs and Q100=43.1 cfs (Property line between Lot 1 and 2). DP 7, Q5=3.8 cfs, and Q100=28.0 cfs (Natural swale enters the project site of Lot 2). Other runoff routes contributing to the swales cumulative are identified on the proposed drainage map as **DP 8 and 9. DP 8 Q5=0.6 cfs, and Q100=4.1 cfs and DP 9, Q5=1.4 cfs and Q100=10.3 cfs.**

Lot 1 has an additional smaller outlet area at the south property line that flows continue downstream to the adjacent property in the same general southeasterly direction. **DP 6, Q5=1.2 cfs and Q100=4.6 cfs.**

The second-largest natural swale passes through the project site, crosses onto Lot 3 at the north property line, and conveys runoff flows in a southeasterly direction. The swale travels to the south property line of Lot 3 at **DP 3, Q5=2.0 cfs and Q100=12.9 cfs.**

Lot 3 has some additional smaller, less significant flows travel over and across Lot 3 in the same general southeasterly direction. These are identified as **DP 1, Q5=0.1 cfs and Q100=0.5 cfs, DP 2, Q5=0.4 cfs and Q100=2.6 cfs, DP 4, Q5=0.3 cfs and Q100=1.5 cfs, and DP 5, Q5=0.4 cfs and Q100=2.5 cfs.**

Due to the cohesive nature of the existing soils and velocities determined to be less than 5.0f/s, it is anticipated that erosion within the existing swales shall be negligible. Runoff flows at **DP 7**, **DP 10**, and **DP 11** combined are calculated to be over 15 cfs in the natural swale during significant storm events. Therefore a 60' Drainage easement has been provided along the natural alignment of the swale through Lots 1 and 2. These two mentioned natural drainage swales shall be left unaltered as not to change the natural drainage patterns.

Should the owner desire to construct additional outbuildings in the future, increasing the total impervious surface area exceeding the allowable 10% (up to a maximum of 20%), the owner would be required to submit a watershed study. This study would be specific to the watershed for the parcel. It shall be approved by the ECM Administrator, demonstrating that expected soil and vegetation are suitable to infiltrate 100% of the Water Quality Capture Volume (WQCV).

This site is in the West Kiowa Creek Drainage Basin. Per the El Paso County Drainage Basin Fee under Res. No. 20-424. The project site falls outside of any specific Drainage Basin specified in the 2021 El Paso County Drainage Basin / Bridge Fees. Therefore final plat of Circle A Subdivision Filing NO.1 shall not be subject to the drainage Basin or bridge fees.

This final drainage letter for the Circle A Subdivision anticipates minimal disturbance with the construction of (2) single-family homes, one on Lot 2 and one on Lot 3, with associated gravel driveways, utility sheds, dry utilities, well service, and septic service. Therefore, it's anticipated that there will be no negative impacts to the adjacent properties, downstream improvements, or facilities with this drainage letter approval.

Respectfully,

Georgianne Willard
Project Manager
M&S Civil Consultants, Inc.

REFERENCES

1.) "City of Colorado Springs/County of El Paso County Drainage Criteria Manual, as revised in November 1991 and 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.) "ECM El Paso County Engineering Criteria Manual, Revised December 13, 2016"

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

4.) "Flood Insurance Rate Map (FIRM), Federal Emergency Management Agency, Effective date December 7, 2018"

ATTACHMENTS:

VICINITY MAP
CIRCLE A SUBDIVISION FILING NO. 1 FINAL PLAT
FEMA MAP
SOILS MAP
HYDROLOGIC CALCULATIONS
HYDRAULIC CALCULATIONS
EXISTING DRAINAGE MAP
PROPOSED DRAINAGE MAP

ATTACHMENTS

VICINITY MAP

VICINITY MAP

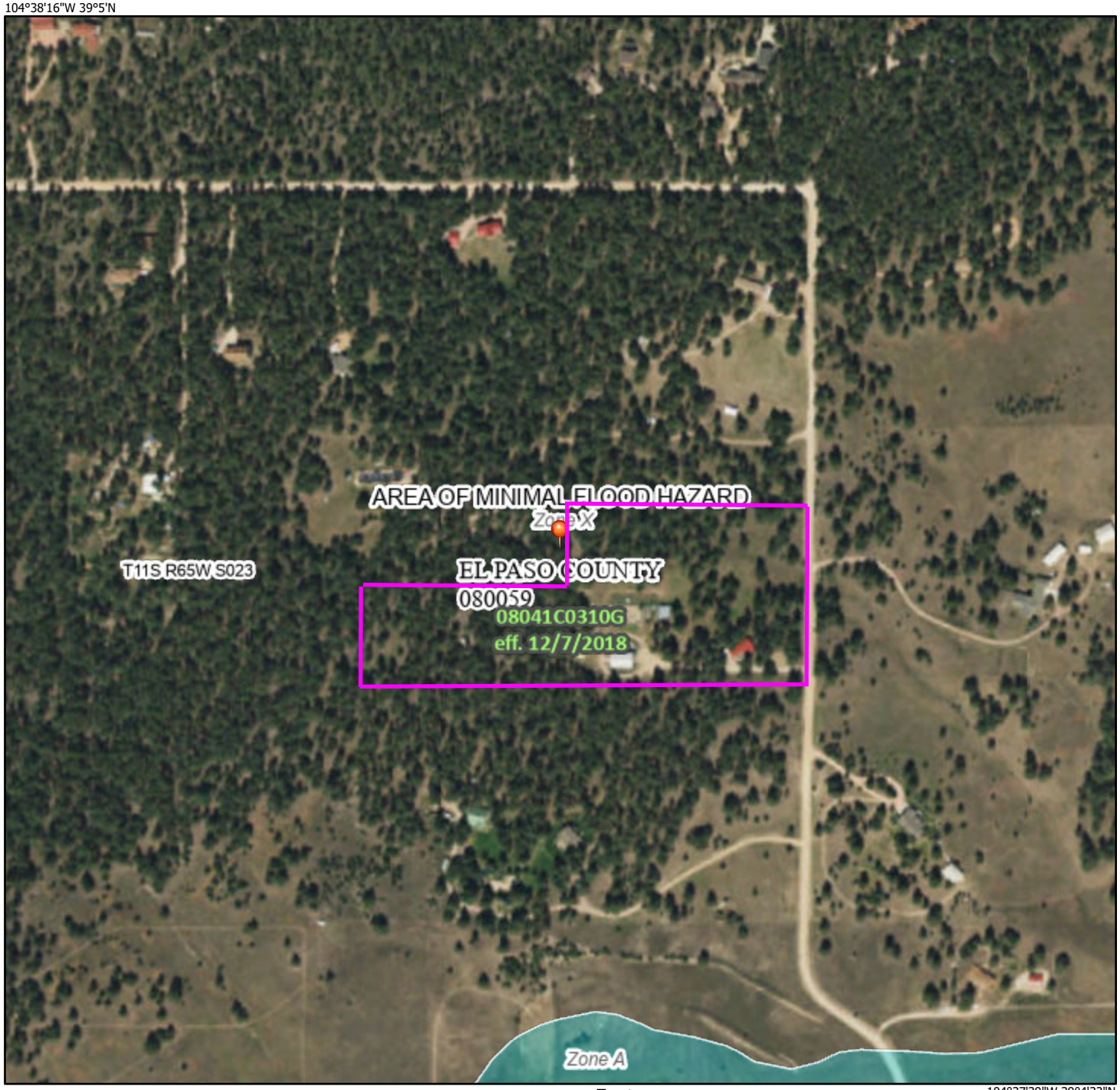
NOT TO SCALE

FEMA FLOOD MAP

National Flood Hazard Layer FIRMette

FEMA

104°38'16"W 39°5'N



Feet

0 250 500 1,000 1,500 2,000

1:6,000

104°37'39"W 39°4'32"N

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD

- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS

- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES

- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES

- B 20.2 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- 8 Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS

- Digital Data Available
- No Digital Data Available
- Unmapped

N

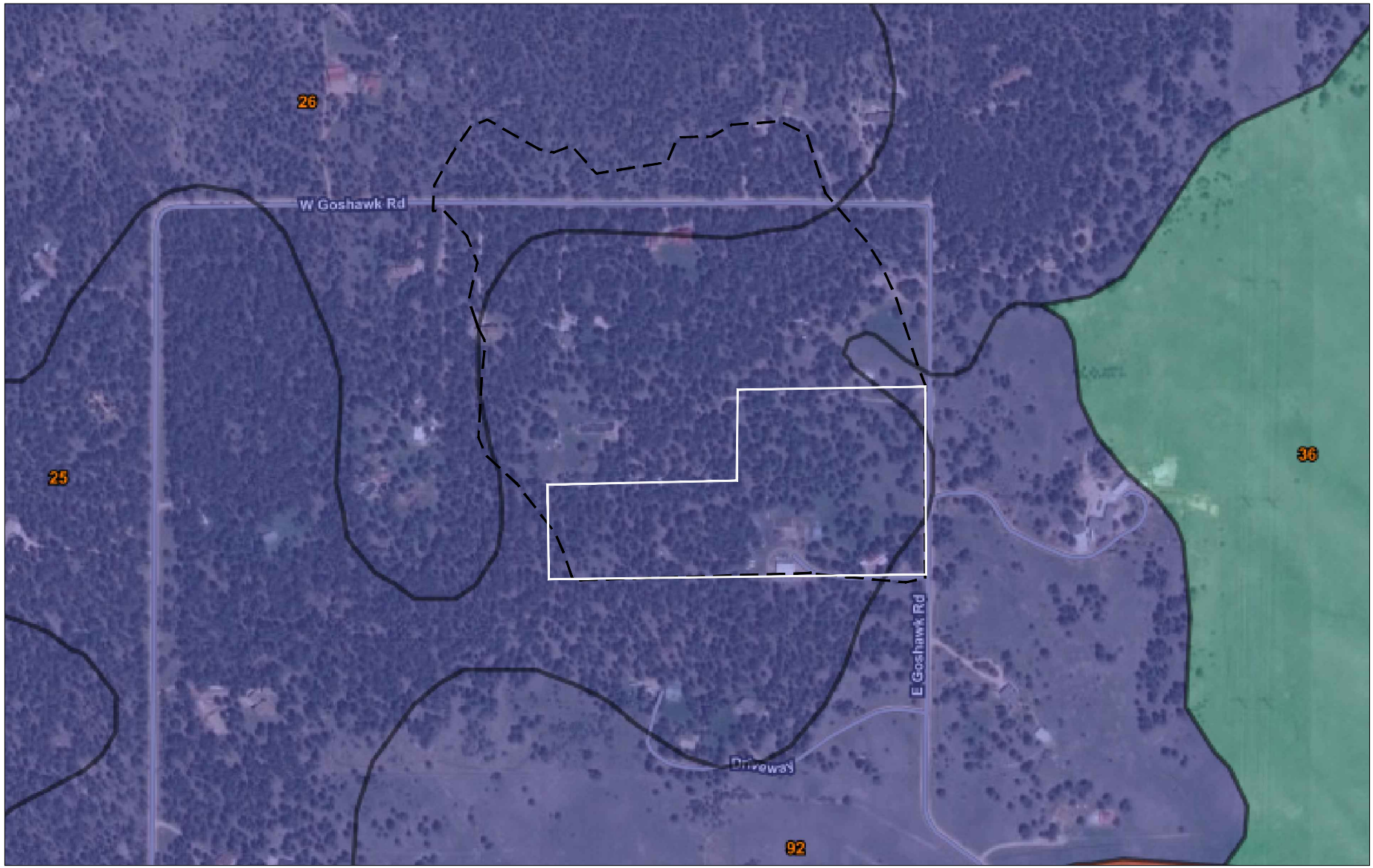
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/13/2021 at 10:27 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

SOILS MAP



NTS

25	Elbeth sandy loam, 3 to 8 percent slopes	B
26	Elbeth sandy loam, 8 to 15 percent slopes	B
92	Tomah-Crowfoot loamy sands, 3 to 8 percent slopes	B

HYDROLOGIC TYPE B SOILS

SITE BOUNDARY

GOSHAWK SOILS MAP

JOB NO. 70-002A

O:\70072A-Goshawk\17110 Goshawk Rd\dwg\Eng Exhibits\Soils Map.dwg

5/24/2021 11:16 AM

CIRCLE A SUBDIVISION FILING NO. 1
FINAL PLAT

CIRCLE A SUBDIVISION FILING NO. 1

A SUBDIVISION OF THE SOUTH HALF OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23 AND THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23. ALL IN TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO

VICINITY MAP
NOT TO SCALE

KNOW ALL MEN BY THESE PRESENTS:

THAT THE DANIEL B. ANDRES TRUST BEING THE OWNER OF THE FOLLOWING DESCRIBED TRACT OF LAND:

TO WIT:

THE SOUTH HALF OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23 AND

THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23.

ALL IN TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO

CONTAINING 14.87 ACRES MORE OR LESS.

OWNERS CERTIFICATE:

THE UNDERSIGNED, BEING ALL THE OWNERS, MORTGAGEES, BENEFICIARIES OF DEEDS OF TRUST AND HOLDERS OF OTHER INTERESTS IN THE LAND DESCRIBED HEREIN, HAVE LAID OUT, SUBDIVIDED, AND PLATTED SAID LANDS INTO LOTS AND EASEMENTS AS SHOWN HEREON UNDER THE NAME AND SUBDIVISION OF "CIRCLE A SUBDIVISION FILING NO. 1", EL PASO COUNTY, COLORADO. THE UTILITY EASEMENTS SHOWN HEREON ARE HEREBY DEDICATED FOR PUBLIC UTILITIES AND COMMUNICATION SYSTEMS AND OTHER PURPOSES AS SHOWN HEREON. THE ENTITIES RESPONSIBLE FOR PROVIDING THE SERVICES FOR WHICH THE EASEMENTS ARE ESTABLISHED ARE HEREBY GRANTED THE PERPETUAL RIGHT OF INGRESS AND EGRESS FROM AND TO ADJACENT PROPERTIES FOR INSTALLATION, MAINTENANCE, AND REPLACEMENT OF UTILITY LINES AND RELATED FACILITIES.

_____
BY: DANIEL B. ANDRES, TRUSTEE, DANIEL B. ANDRES TRUST

NOTARIAL

STATE OF COLORADO)
COUNTY OF EL PASO) ss

ACKNOWLEDGED BEFORE ME THIS _____ DAY OF _____, 2021, A.D. BY DANIEL B. ANDRES, TRUSTEE, DANIEL B. ANDRES TRUST.

WITNESS MY HAND AND OFFICIAL SEAL:

MY COMMISSION EXPIRES: _____

NOTARY PUBLIC: _____

NOTES:

1. THE BASIS OF BEARINGS USED FOR THIS SURVEY IS THE SOUTH LINE OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER (SW 1/4, NE 1/4) OF SECTION 23, T11S, R65W OF THE SIXTH P.M., EL PASO COUNTY, COLORADO. THE EAST 1/16TH CORNER OF SAID SECTION IS MONUMENTED WITH A 3.25" ALUMINUM CAP STAMPED "CE 1/16TH, SEC 23, T11S, R65W, LS 28658", THE CENTER OF SAID SECTION IS MONUMENTED WITH A 0.75" IRON PIPE AND A 2.5" ALUMINUM CAP WITNESS CORNER STAMPED "LWA, C1/4, T11S, R65W, W.C., LS 25955", 1.00' WEST OF SAID PIPE, SAID LINE IS ASSUMED TO BEAR S89°10'29"W, 1315.00 US SURVEY FEET (GROUND) BASED ON STATIC GPS OBSERVATIONS.

2. THE FLOOD INSURANCE RATE MAP FOR EL PASO COUNTY, COLORADO PANEL NO. 08041C0310 G WITH AN EFFECTIVE DATE OF 12/7/2018 SHOWS THE PROPERTY TO BE LOCATED IN ZONE X (AREA OF MINIMAL FLOOD HAZARD).

3. A TITLE REPORT ISSUED BY COMMONWEALTH LAND TITLE INSURANCE COMPANY TITLE REPORT NO. H0562780-710-CTO-SSC, WITH AN EFFECTIVE DATE OF JULY 22, 2019 HAS BEEN REVIEWED AS IT RELATES TO THE SUBJECT PROPERTY. THE FOLLOWING EXCEPTIONS IN SCHEDULE B ARE NOTED AND SHOWN IF APPLICABLE HEREON.

- NON-EXCLUSIVE EASEMENT FOR ROADWAY PURPOSES OVER THE EASTERLY 20 FEET AS CONTAINED IN INSTRUMENTS RECORDED IN BOOK 2422 AT PAGE 44 AND IN BOOK 2356 AT PAGE 170. (GOSHAWK ROAD)
- RIGHT OF WAY AND EASEMENT 20 FEET IN WIDTH FOR UTILITY PURPOSES GRANTED TO MOUNTAIN VIEW ELECTRIC ASSOCIATION, INC. BY INSTRUMENT RECORDED IN BOOK 3150 AT PAGE 546, IN WHICH THE SPECIFIC LOCATION IS UNDEFINED. (ASSUMED TO BE CENTERED ON THE OVERHEAD LINES ALONG GOSHAWK ROAD, AS SHOWN)
- TERMS, CONDITIONS, PROVISIONS AND OBLIGATIONS AS CONTAINED IN GOSHAWK ROAD MAINTENANCE AGREEMENT RECORDED IN BOOK 5145 AT PAGE 866. (NOTHING TO SHOW)
- TERMS, CONDITIONS, PROVISIONS, AGREEMENTS AND OBLIGATIONS CONTAINED IN THE EASEMENT AGREEMENT RECORDED IN BOOK 6062 AT PAGE 535. (NON-EXCLUSIVE EASEMENT FOR ROADWAY PURPOSES AS SHOWN HEREON).

4. SEWAGE TREATMENT IS THE RESPONSIBILITY OF EACH PROPERTY OWNER. THE EL PASO COUNTY HEALTH DEPARTMENT MUST APPROVE EACH SYSTEM AND, IN SOME CASES, THE DEPARTMENT MAY REQUIRE A SPECIALLY DESIGNED SYSTEM PRIOR TO APPROVAL.

5. INDIVIDUAL WELLS ARE THE RESPONSIBILITY OF EACH PROPERTY OWNER. PERMITS FOR INDIVIDUAL WELLS MUST BE OBTAINED FROM THE STATE WATER ENGINEER WHO BY LAW HAS THE AUTHORITY TO SET CONDITIONS FOR THE ISSUANCE OF THESE PERMITS.

6. ALL STRUCTURAL FOUNDATIONS AND SEPTIC SYSTEMS SHALL BE LOCATED AND DESIGNED BY A PROFESSIONAL ENGINEER CURRENTLY REGISTERED IN THE STATE OF COLORADO. REFER TO NOTE 8.

7. A.) ACCESS AND MAINTENANCE TO HODGEN ROAD, A PUBLIC RIGHT-OF-WAY, IS VIA GOSHAWK ROAD A 40 FOOT (40') WIDE PRIVATE ROADWAY IS SUBJECT TO A RECIPROCAL EASEMENT AGREEMENT AS RECORDED IN BOOK 2356 AT PAGE 170.
B.) THE ACCESS AND MAINTENANCE FOR LOT 3 TO GOSHAWK ROAD, A 40 FOOT PRIVATE ROADWAY, IS VIA A 24 FOOT INGRESS\EGRESS EASEMENT ALONG THE SOUTH LINE OF LOT 1. AN ADDITIONAL MAINTENANCE AGREEMENT IS RECORDED UNDER RECEPTION NO. _____.

8. THE FOLLOWING REPORTS HAVE BEEN SUBMITTED IN ASSOCIATION WITH THIS MINOR SUBDIVISION AND ARE ON FILE AT THE COUNTY PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT: SOILS AND GEOLOGY AND WASTEWATER TREATMENT SYSTEM EVALUATION; THREATENED AND ENDANGERED SPECIES ANALYSIS REPORT; WATER RESOURCE; WILDLAND FIRE AND MITIGATION PLAN; FIRE PROTECTION; AND DRAINAGE REPORT.

9. ALL PROPERTY OWNERS ARE RESPONSIBLE FOR MAINTAINING PROPER STORM WATER DRAINAGE IN AND THROUGH THEIR PROPERTY. PUBLIC DRAINAGE EASEMENTS AS SPECIFICALLY NOTED ON THE PLAT SHALL BE MAINTAINED BY THE INDIVIDUAL LOT OWNERS UNLESS OTHERWISE INDICATED. STRUCTURES, FENCES, MATERIALS OR LANDSCAPING THAT COULD IMPEDE THE FLOW OF RUNOFF SHALL NOT BE PLACED IN DRAINAGE EASEMENTS.

10. DEVELOPER SHALL COMPLY WITH FEDERAL AND STATE LAWS, REGULATIONS, ORDINANCES, REVIEW AND PERMIT REQUIREMENTS, AND OTHER AGENCY REQUIREMENTS, IF ANY, OF APPLICABLE AGENCIES INCLUDING, BUT NOT LIMITED TO, THE COLORADO DIVISION OF WILDLIFE, COLORADO DEPARTMENT OF TRANSPORTATION, U.S. ARMY CORPS OF ENGINEERS AND THE U.S. FISH AND WILDLIFE SERVICE REGARDING THE ENDANGERED SPECIES ACT, PARTICULARLY AS IT RELATES TO THE LISTED SPECIES.

11. THE ADDRESSES EXHIBITED ON THIS PLAT ARE FOR INFORMATIONAL PURPOSES ONLY. THEY ARE NOT THE LEGAL DESCRIPTION AND ARE SUBJECT TO CHANGE.

12. NO DRIVEWAY SHALL BE ESTABLISHED UNLESS AN ACCESS PERMIT HAS BEEN GRANTED BY EL PASO COUNTY.

13. MAILBOXES SHALL BE INSTALLED IN ACCORDANCE WITH ALL EL PASO COUNTY AND UNITED STATES POSTAL SERVICE REGULATIONS. MAILBOXES SHALL BE PLACED AT THE CENTRAL MAILBOX LOCATION AT THE SOUTH END OF GOSHAWK ROAD.

14. THE SUBDIVIDER(S) AGREES ON BEHALF OF HIM/HERSELF AND ANY DEVELOPER OR BUILDER SUCCESSORS AND ASSIGNEES THAT SUBDIVIDER AND/OR SAID SUCCESSORS AND ASSIGNS SHALL BE REQUIRED TO PAY TRAFFIC IMPACT FEES IN ACCORDANCE WITH THE EL PASO COUNTY ROAD IMPACT FEE PROGRAM RESOLUTION (RESOLUTION NO. 19-471), OR ANY AMENDMENTS THERETO, AT OR PRIOR TO THE TIME OF BUILDING PERMIT SUBMITTALS. THE FEE OBLIGATION, IF NOT PAID AT FINAL PLAT RECORDING, SHALL BE DOCUMENTED ON ALL SALES DOCUMENTS AND ON PLAT NOTES TO ENSURE THAT A TITLE SEARCH WOULD FIND THE FEE OBLIGATION BEFORE SALE OF THE PROPERTY.

15. THE BOARD OF ADJUSTMENT HAS MADE AN ALLOWANCE FOR LESS THAN 5 ACRE LOTS. REFER TO PCD FILE NO. BOA-20-002, APPROVED PER BOA HEARING DATE 6-10-2020, FOR INFORMATION RELATING TO THIS ALLOWANCE.

EASEMENTS:

UNLESS OTHERWISE INDICATED, ALL SIDE, FRONT, AND REAR LOT LINES ARE HEREBY PLATTED ON EITHER SIDE WITH A 10 FOOT PUBLIC UTILITY AND DRAINAGE EASEMENT UNLESS OTHERWISE INDICATED. ALL EXTERIOR SUBDIVISION BOUNDARIES ARE HEREBY PLATTED WITH A 20 FOOT PUBLIC UTILITY AND DRAINAGE EASEMENT. THE SOLE RESPONSIBILITY FOR MAINTENANCE OF THESE EASEMENTS IS HEREBY VESTED WITH THE INDIVIDUAL PROPERTY OWNERS.

A 60 FOOT DRAINAGE EASEMENT ACROSS LOTS 1 AND 2 FOR THE PURPOSE OF PRESERVING THE NATURAL DRAINAGE PATTERNS. NO ALTERATIONS TO THE NATURAL DRAINAGE PATTERNS OF THE EXISTING SWALE SHALL OCCUR WITHIN THE 60 FOOT EASEMENT DELINEATION. THE SOLE RESPONSIBILITY FOR MAINTENANCE OF THE EASEMENT IS HEREBY VESTED WITH THE INDIVIDUAL PROPERTY OWNERS.

BOARD OF COUNTY COMMISSIONERS CERTIFICATE:

THIS PLAT FOR "CIRCLE A SUBDIVISION FILING NO. 1" WAS APPROVED FOR FILING BY THE EL PASO COUNTY, COLORADO BOARD OF COUNTY COMMISSIONERS ON THE _____ DAY OF _____, 2021, A.D., SUBJECT TO ANY NOTES SPECIFIED HEREON AND ANY CONDITIONS INCLUDED IN THE RESOLUTION OF APPROVAL.

_____ _____
CHAIR, BOARD OF COUNTY COMMISSIONERS DATE

COUNTY APPROVAL:

THIS PLAT FOR "CIRCLE A SUBDIVISION FILING NO. 1" WAS APPROVED FOR FILING BY THE EL PASO COUNTY, COLORADO PLANNING AND COMMUNITY DEVELOPMENT DEPARTMENT DIRECTOR ON THE _____ DAY OF _____, 2021, A.D. SUBJECT TO ANY NOTES OR CONDITIONS SPECIFIED HEREON.

_____
PLANNING AND COMMUNITY DEVELOPMENT DIRECTOR

_____
EL PASO COUNTY ASSESSOR

RECORDING:

STATE OF COLORADO)
COUNTY OF EL PASO) ss

I HEREBY CERTIFY THAT THIS INSTRUMENT WAS FILED FOR RECORD AT MY OFFICE AT _____ O'CLOCK ___M., THIS _____ DAY OF _____, 2021, A.D., AND IS DULY RECORDED UNDER RECEPTION NUMBER _____ OF THE RECORDS OF EL PASO COUNTY, COLORADO.

CHUCK BROERMAN, RECORDER

FEE: _____ BY: _____
DEPUTY

SURVEYORS CERTIFICATE

I VERNON P. TAYLOR, A DULY REGISTERED PROFESSIONAL LAND SURVEYOR IN THE STATE OF COLORADO, DO HEREBY CERTIFY THAT THIS PLAT TRULY AND CORRECTLY REPRESENTS THE RESULTS OF A SURVEY MADE ON NOVEMBER 02, 2017 BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL MONUMENTS EXIST AS SHOWN HEREON; THAT MATHEMATICAL CLOSURE ERRORS ARE LESS THAN 1:10,000 ; AND THAT SAID PLAT HAS BEEN PREPARED IN FULL COMPLIANCE WITH ALL APPLICABLE LAWS OF THE STATE OF COLORADO DEALING WITH MONUMENTS, SUBDIVISION, OR SURVEYING OF LAND AND ALL APPLICABLE PROVISIONS OF THE EL PASO COUNTY LAND DEVELOPMENT CODE.

I ATTEST THE ABOVE ON THIS _____ DAY OF _____, 2021.

_____
VERNON P. TAYLOR
COLORADO PLS NO. 25966, FOR AND
ON BEHALF OF M&S CIVIL CONSULTANTS, INC

NOTICE:
ACCORDING TO COLORADO LAW, YOU **MUST** COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN **THREE** YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT, MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN **TEN** YEARS FROM THE DATE OF THE CERTIFICATION SHOWN HEREON.

SUMMARY:

3 LOTS	14.87 ACRES	100%
TOTAL	14.87 ACRES	100.00%

FEES:

DRAINAGE FEE: _____

BRIDGE FEE: _____

SCHOOL FEE: _____

PARK FEE: _____

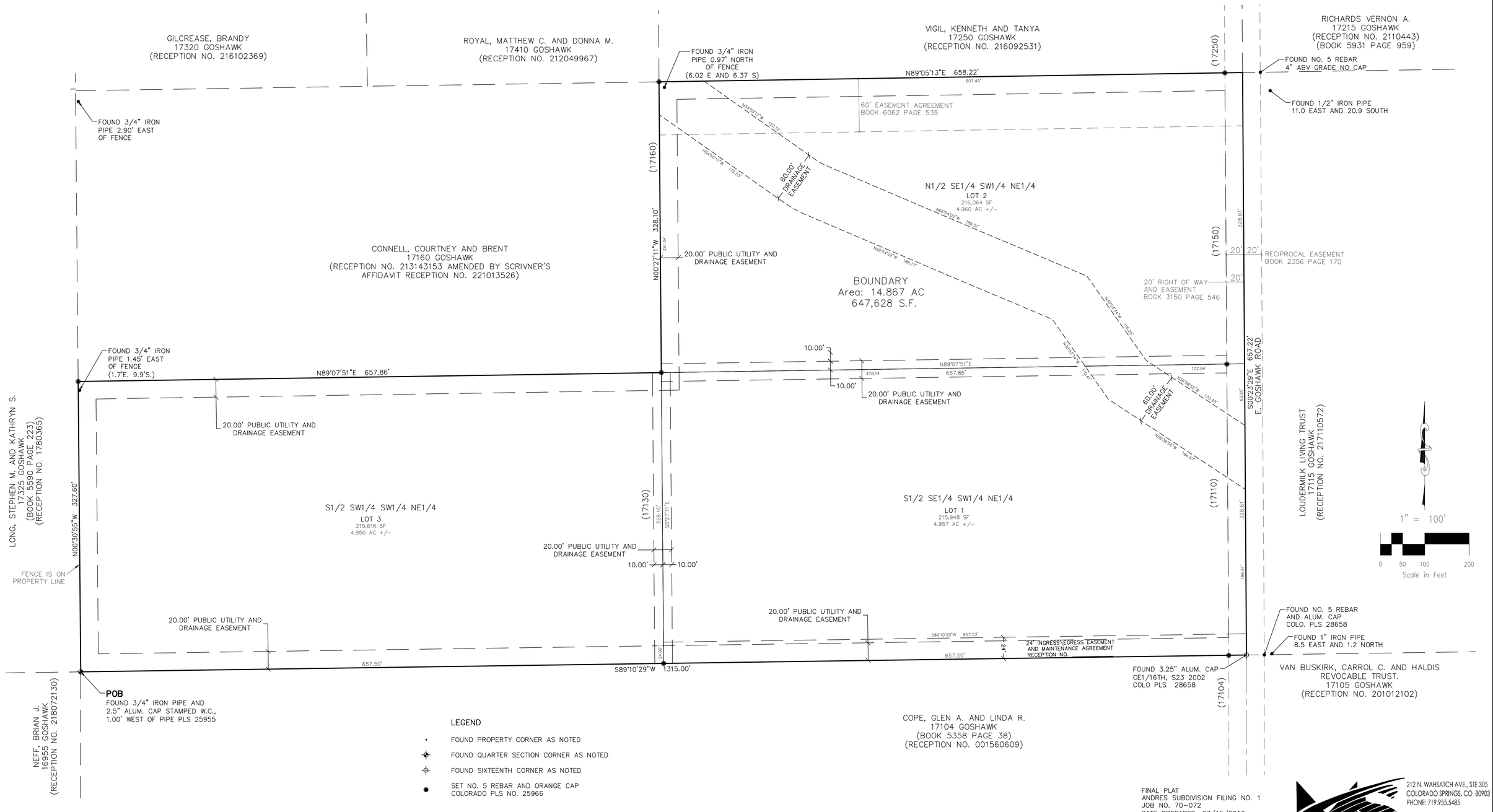
FINAL PLAT
CIRCLE A SUBDIVISION FILING NO. 1
JOB NO. 70-072
DATE PREPARED: 07/15/2019
DATE REVISED: 01/27/2021
DATE REVISED: 05/12/2021
DATE REVISED: 06/02/2021

FILE NO. AR FP MS-20-007

CIVIL CONSULTANTS,INC.
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

CIRCLE A SUBDIVISION FILING NO. 1

A SUBDIVISION OF THE SOUTH HALF OF THE SOUTH HALF OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23 AND THE NORTH HALF OF THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 23. ALL IN TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE SIXTH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO



FINAL PLAT
ANDRES SUBDIVISION FILING NO. 1
JOB NO. 70-072
DATE PREPARED: 07/15/2019
DATE REVISED: 01/27/2021
DATE REVISED: 05/12/2021
DATE REVISED: 06/02/2021

FILE NO. AR FP MS-20-007

CIVIL CONSULTANTS, INC.
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

HYDROLOGIC CALCULATIONS

17110 GOSHAWK
EXISTING DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

			STREETS / DEVELOPED			*DEVELOPED LOTS*			*DEVELOPED LANDSCAPING*			*RUNOFF COEFFICIENT*	
BASIN	**AREA**	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	C_5	C_{100}
A	***10166.94***	0.23	0.00	0.59	0.70	0.00	0.73	0.81	0.23	0.08	0.35	***0.08***	***0.35***
B	***60680.21***	1.39	0.00	0.59	0.70	0.00	0.73	0.81	1.39	0.08	0.35	***0.08***	***0.35***
C	***325933.100***	7.48	0.13	0.59	0.70	0.00	0.73	0.81	7.35	0.08	0.35	***0.09***	***0.36***
D	***29909.74***	0.69	0.04	0.59	0.70	0.00	0.73	0.81	0.65	0.08	0.35	***0.11***	***0.37***
E	***58934.16***	1.35	0.06	0.59	0.70	0.00	0.73	0.81	1.29	0.08	0.35	***0.10***	***0.37***
F	***96930.600***	2.23	0.40	0.59	0.70	0.02	0.73	0.81	1.81	0.08	0.35	***0.18***	***0.42***
G	***796865.41***	18.29	0.00	0.59	0.70	0.00	0.73	0.81	18.29	0.08	0.35	***0.08***	***0.35***
H	***97798.1***	2.25	0.00	0.59	0.70	0.00	0.73	0.81	2.25	0.08	0.35	***0.08***	***0.35***
I	***300152.65***	6.89	0.00	0.59	0.70	0.00	0.73	0.81	6.89	0.08	0.35	***0.08***	***0.35***
J	***273448.68***	6.28	0.22	0.59	0.70	0.00	0.73	0.81	6.06	0.08	0.35	***0.10***	***0.36***
K	***128951.18***	2.96	0.15	0.59	0.70	0.00	0.73	0.81	2.96	0.08	0.35	***0.11***	***0.39***

17110 GOSHAWK
FINAL DRAINAGE REPORT
(ExistingArea Drainage Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*		*INTENSITY **		*TOTAL FLOWS*	
BASIN	**AREA TOTAL**	**C_5**	**C_{100}**	**C_5**	**Length**	**Height**	**T_C**	**Length**	**Slope**	**Velocity**	**T_t**	**TOTAL**	**CHECK**	**I_5**	**I_{100}**	**Q_5**	**Q_{100}**
	(Acres)	*From DCM Table 5-1*			*(ft)*	*(ft)*	*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*
A	0.23	0.08	0.35	0.08	175	8	14.8	0	0.0%	0.0	0.0	14.8	11.0	3.5	6.0	***0.1***	***0.5***
B	1.39	0.08	0.35	0.08	200	10	15.3	275	4.4%	1.5	3.1	18.4	12.6	3.2	5.4	***0.4***	***2.6***
C	7.48	0.09	0.36	0.09	300	26	15.5	685	4.2%	1.4	7.9	23.4	15.5	2.9	4.8	***1.9***	***12.8***
D	0.69	0.11	0.37	0.11	150	7	13.2	150	2.7%	1.1	2.2	15.4	11.7	3.5	5.8	***0.3***	***1.5***
E	1.35	0.10	0.37	0.10	300	22	16.2	305	3.0%	1.2	4.2	20.4	13.4	3.1	5.1	***0.4***	***2.5***
F	2.23	0.18	0.42	0.18	300	23	14.8	400	2.0%	1.0	6.7	21.5	13.9	3.0	5.0	***1.2***	***4.6***
G	18.29	0.08	0.35	0.08	300	22	16.5	1050	5.1%	1.6	11.0	27.6	17.5	2.6	4.4	***3.8***	***28.0***
H	2.25	0.08	0.35	0.08	300	23	16.3	380	5.8%	1.7	3.8	20.0	13.8	3.1	5.2	***0.6***	***4.1***
I	6.89	0.08	0.35	0.08	300	15	18.8	850	4.2%	1.4	9.8	28.6	16.4	2.6	4.3	***1.4***	***10.3***
J	6.28	0.10	0.36	0.10	300	31	14.5	700	2.9%	1.2	9.9	24.4	15.6	2.8	4.7	***1.7***	***10.7***
K	2.96	0.11	0.39	0.11	300	18	17.1	230	5.2%	1.6	2.4	19.5	12.9	3.1	5.2	***1.0***	***6.0***

* Intensity equations assume a minimum travel time of 5 minutes.

Calculated by: DLM
Date: 6/22/2021
Checked by:

17110 GOSHAWK
FINAL DRAINAGE REPORT
(Existing Basin Routing Summary)

From Area Runoff Coefficient Summary				OVERLAND				PIPE / CHANNEL FLOW				Time of Travel (T_t)	INTENSITY *		TOTAL FLOWS		
DESIGN POINT	CONTRIBUTING BASINS	CA_5	CA_{100}	C_5	Length (ft)	Height (ft)	T_C (min)	Length (ft)	Slope (%)	Velocity (fps)	T_t (min)	TOTAL (min)	I_5 (in/hr)	I_{100} (in/hr)	Q_5 (c.f.s.)	Q_{100} (c.f.s.)	COMMENTS
1	Basin A	0.02	0.08				14.8					14.8	3.5	6.0	0.1	0.5	
				Basin A Tc Was Used													
2	Basin B	0.11	0.49				18.4					18.4	3.2	5.4	0.4	2.6	
				Basin B Tc Was Used													
3	Basin C	0.67	2.66				23.4					23.4	2.9	4.8	1.9	12.8	
				Basin C Tc Was Used													
4	Basin D	0.07	0.25				15.4					15.4	3.5	5.8	0.3	1.5	
				Basin D Tc Was Used													
5	Basin E	0.14	0.49				20.4					20.4	3.1	5.1	0.4	2.5	
				Basin E Tc Was Used													
6	Basin F	0.39	0.93				21.5					21.5	3.0	5.0	1.2	4.6	
				Basin F Tc Was Used													
7	Basin G	1.46	6.40				27.6					27.6	2.6	4.4	3.8	28.0	
				Basin G Tc Was Used													
8	Basin H	0.18	0.79				20.0					20.0	3.1	5.2	0.6	4.1	
				Basin H Tc Was Used													
9	Basin I	0.55	2.41				16.2					28.6	2.6	4.3	1.4	10.3	
				Basin I Tc Was Used													
10	DP7, DP8, DP9 Basin J	2.81	11.87				27.6	700	2.9%	1.2	9.9	37.4	2.2	3.6	6.0	42.8	
				DP7 Tc Was Used													
11	DP10, K	3.13	13.02				37.4	125	1.6%	0.9	2.4	39.8	2.1	3.5	6.5	45.0	
				DP 10 Tc Was Used													

17110 GOSHAWK
PROPOSED DRAINAGE CALCULATIONS
(Area Runoff Coefficient Summary)

			STREETS / DEVELOPED			*DEVELOPED LOTS*			*DEVELOPED LANDSCAPING*			*RUNOFF COEFFICIENT*	
BASIN	**AREA**	**TOTAL AREA** *(Acres)*	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	**AREA** *(Acres)*	C_5	C_{100}	C_5	C_{100}
A	***10166.94***	0.23	0.00	0.59	0.70	0.00	0.73	0.81	0.23	0.08	0.35	***0.08***	***0.35***
B	***60680.21***	1.39	0.00	0.59	0.70	0.00	0.73	0.81	1.39	0.08	0.35	***0.08***	***0.35***
C	***325933.100***	7.48	0.13	0.59	0.70	0.04	0.73	0.81	7.31	0.08	0.35	***0.09***	***0.36***
D	***29909.74***	0.69	0.04	0.59	0.70	0.01	0.73	0.81	0.63	0.08	0.35	***0.12***	***0.38***
E	***58934.16***	1.35	0.06	0.59	0.70	0.00	0.73	0.81	1.29	0.08	0.35	***0.10***	***0.37***
F	***96930.600***	2.23	0.40	0.59	0.70	0.02	0.73	0.81	1.81	0.08	0.35	***0.18***	***0.42***
G	***796865.41***	18.29	0.00	0.59	0.70	0.00	0.73	0.81	18.29	0.08	0.35	***0.08***	***0.35***
H	***97798.1***	2.25	0.00	0.59	0.70	0.00	0.73	0.81	2.25	0.08	0.35	***0.08***	***0.35***
I	***300152.65***	6.89	0.00	0.59	0.70	0.00	0.73	0.81	6.89	0.08	0.35	***0.08***	***0.35***
J	***273448.68***	6.28	0.35	0.59	0.70	0.05	0.73	0.81	5.88	0.08	0.35	***0.11***	***0.37***
K	***128951.18***	2.96	0.15	0.59	0.70	0.00	0.73	0.81	2.96	0.08	0.35	***0.11***	***0.39***

17110 GOSHAWK
FINAL DRAINAGE REPORT
(Proposed Area Drainage Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*STREET / CHANNEL FLOW*				*Time of Travel (T_t)*		*INTENSITY **		*TOTAL FLOWS*	
BASIN	**AREA TOTAL**	**C_5**	**C_{100}**	**C_5**	**Length**	**Height**	**T_C**	**Length**	**Slope**	**Velocity**	**T_t**	**TOTAL**	**CHECK**	**I_5**	**I_{100}**	**Q_5**	**Q_{100}**
	(Acres)	*From DCM Table 5-1*			*(ft)*	*(ft)*	*(min)*	*(ft)*	*(%)*	*(fps)*	*(min)*	*(min)*	*(min)*	*(in/hr)*	*(in/hr)*	*(c.f.s.)*	*(c.f.s.)*
A	0.23	0.08	0.35	0.08	175	8	14.8	0	0.0%	0.0	0.0	14.8	11.0	3.5	6.0	***0.1***	***0.5***
B	1.39	0.08	0.35	0.08	200	10	15.3	275	4.4%	1.5	3.1	18.4	12.6	3.2	5.4	***0.4***	***2.6***
C	7.48	0.09	0.36	0.09	300	26	15.5	685	4.2%	1.4	7.9	23.4	15.5	2.9	4.8	***2.0***	***12.9***
D	0.69	0.12	0.38	0.12	150	7	13.0	150	2.7%	1.1	2.2	15.2	11.7	3.5	5.9	***0.3***	***1.5***
E	1.35	0.10	0.37	0.10	300	22	16.2	305	3.0%	1.2	4.2	20.4	13.4	3.1	5.1	***0.4***	***2.5***
F	2.23	0.18	0.42	0.18	300	23	14.8	400	2.0%	1.0	6.7	21.5	13.9	3.0	5.0	***1.2***	***4.6***
G	18.29	0.08	0.35	0.08	300	22	16.5	1050	5.1%	1.6	11.0	27.6	17.5	2.6	4.4	***3.8***	***28.0***
H	2.25	0.08	0.35	0.08	300	23	16.3	380	5.8%	1.7	3.8	20.0	13.8	3.1	5.2	***0.6***	***4.1***
I	6.89	0.08	0.35	0.08	300	15	18.8	850	4.2%	1.4	9.8	28.6	16.4	2.6	4.3	***1.4***	***10.3***
J	6.28	0.11	0.37	0.11	300	31	14.3	700	2.9%	1.2	9.9	24.1	15.6	2.8	4.7	***2.0***	***11.0***
K	2.96	0.11	0.39	0.11	300	18	17.1	230	5.2%	1.6	2.4	19.5	12.9	3.1	5.2	***1.0***	***6.0***

* Intensity equations assume a minimum travel time of 5 minutes.

Calculated by: DLM
Date: 6/22/2021
Checked by:

3

17110 GOSHAWK
FINAL DRAINAGE REPORT
(Proposed Basin Routing Summary)

From Area Runoff Coefficient Summary				*OVERLAND*				*PIPE / CHANNEL FLOW*				*Time of Travel (T_t)*	*INTENSITY **		*TOTAL FLOWS*		
DESIGN POINT	**CONTRIBUTING BASINS**	**CA_5**	**CA_{100}**	**C_5**	**Length** *(ft)*	**Height** *(ft)*	**T_C** *(min)*	**Length** *(ft)*	**Slope** *(%)*	**Velocity** *(fps)*	**T_t** *(min)*	**TOTAL** *(min)*	**I_5** *(in/hr)*	**I_{100}** *(in/hr)*	**Q_5** *(c.f.s.)*	**Q_{100}** *(c.f.s.)*	COMMENTS
1	**Basin A**	0.02	0.08				14.8					14.8	3.5	6.0	***0.1***	***0.5***	
				Basin A Tc Was Used													
2	**Basin B**	0.11	0.49				18.4					18.4	3.2	5.4	***0.4***	***2.6***	
				Basin B Tc Was Used													
3	**Basin C**	0.69	2.68				23.4					23.4	2.9	4.8	***2.0***	***12.9***	
				Basin C Tc Was Used													
4	**Basin D**	0.08	0.26				15.2					15.2	3.5	5.9	***0.3***	***1.5***	
				Basin D Tc Was Used													
5	**Basin E**	0.14	0.49				20.4					20.4	3.1	5.1	***0.4***	***2.5***	
				Basin E Tc Was Used													
6	**Basin F**	0.39	0.93				21.5					21.5	3.0	5.0	***1.2***	***4.6***	
				Basin F Tc Was Used													
7	**Basin G**	1.46	6.40				27.6					27.6	2.6	4.4	***3.8***	***28.0***	
				Basin G Tc Was Used													
8	**Basin H**	0.18	0.79				20.0					20.0	3.1	5.2	***0.6***	***4.1***	
				Basin H Tc Was Used													
9	**Basin I**	0.55	2.41				16.2					28.6	2.6	4.3	***1.4***	***10.3***	
				Basin I Tc Was Used													
10	**DP7, DP8, DP9** **Basin J**	2.91	11.94				27.6	700	2.9%	1.2	9.9	37.4	2.2	3.6	***6.3***	***43.1***	
				DP7 Tc Was Used													
11	**DP10, K**	3.23	13.09				37.4	125	1.6%	0.9	2.4	39.8	2.1	3.5	***6.7***	***45.2***	
				DP 10 Tc Was Used													

HYDRAULIC CALCULATIONS

Worksheet for Section - A-A

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.035 ft/ft
Discharge	11.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	1.80
0+45	0.00
0+90	3.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1.80)	(0+90, 3.00)	0.030

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	5.0 in
Roughness Coefficient	0.030
Elevation	0.41 ft
Elevation Range	0.0 to 3.0 ft
Flow Area	3.4 ft²
Wetted Perimeter	16.5 ft
Hydraulic Radius	2.5 in
Top Width	16.50 ft
Normal Depth	5.0 in
Critical Depth	5.4 in
Critical Slope	0.022 ft/ft
Velocity	3.23 ft/s
Velocity Head	0.16 ft
Specific Energy	0.57 ft
Froude Number	1.254
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in

Worksheet for Section - A-A

GVF Input Data	
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	5.0 in
Critical Depth	5.4 in
Channel Slope	0.035 ft/ft
Critical Slope	0.022 ft/ft

Worksheet for Section - B-B

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.033 ft/ft
Discharge	43.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	2.00
0+45	0.00
0+90	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 2.00)	(0+90, 2.00)	0.030

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	8.0 in
Roughness Coefficient	0.030
Elevation	0.67 ft
Elevation Range	0.0 to 2.0 ft
Flow Area	10.0 ft²
Wetted Perimeter	30.0 ft
Hydraulic Radius	4.0 in
Top Width	29.94 ft
Normal Depth	8.0 in
Critical Depth	8.9 in
Critical Slope	0.018 ft/ft
Velocity	4.32 ft/s
Velocity Head	0.29 ft
Specific Energy	0.95 ft
Froude Number	1.320
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in

Worksheet for Section - B-B

GVF Input Data	
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.0 in
Critical Depth	8.9 in
Channel Slope	0.033 ft/ft
Critical Slope	0.018 ft/ft

Worksheet for Section - C-C

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.026 ft/ft
Discharge	43.00 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	2.00
0+45	0.00
0+90	2.10

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 2.00)	(0+90, 2.10)	0.030

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	8.4 in
Roughness Coefficient	0.030
Elevation	0.70 ft
Elevation Range	0.0 to 2.1 ft
Flow Area	10.8 ft²
Wetted Perimeter	30.9 ft
Hydraulic Radius	4.2 in
Top Width	30.84 ft
Normal Depth	8.4 in
Critical Depth	9.0 in
Critical Slope	0.018 ft/ft
Velocity	3.97 ft/s
Velocity Head	0.25 ft
Specific Energy	0.95 ft
Froude Number	1.182
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in

Worksheet for Section - C-C

GVF Input Data	
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	8.4 in
Critical Depth	9.0 in
Channel Slope	0.026 ft/ft
Critical Slope	0.018 ft/ft

Worksheet for Section - D-D

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Channel Slope	0.025 ft/ft
Discharge	45.20 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	2.00
1+00	0.00
1+40	2.00

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 2.00)	(1+40, 2.00)	0.030

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	7.3 in
Roughness Coefficient	0.030
Elevation	0.61 ft
Elevation Range	0.0 to 2.0 ft
Flow Area	12.8 ft²
Wetted Perimeter	42.4 ft
Hydraulic Radius	3.6 in
Top Width	42.37 ft
Normal Depth	7.3 in
Critical Depth	7.6 in
Critical Slope	0.019 ft/ft
Velocity	3.53 ft/s
Velocity Head	0.19 ft
Specific Energy	0.80 ft
Froude Number	1.130
Flow Type	Supercritical

GVF Input Data	
Downstream Depth	0.0 in

Worksheet for Section - D-D

GVF Input Data	
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	Infinity ft/s
Upstream Velocity	Infinity ft/s
Normal Depth	7.3 in
Critical Depth	7.6 in
Channel Slope	0.025 ft/ft
Critical Slope	0.019 ft/ft

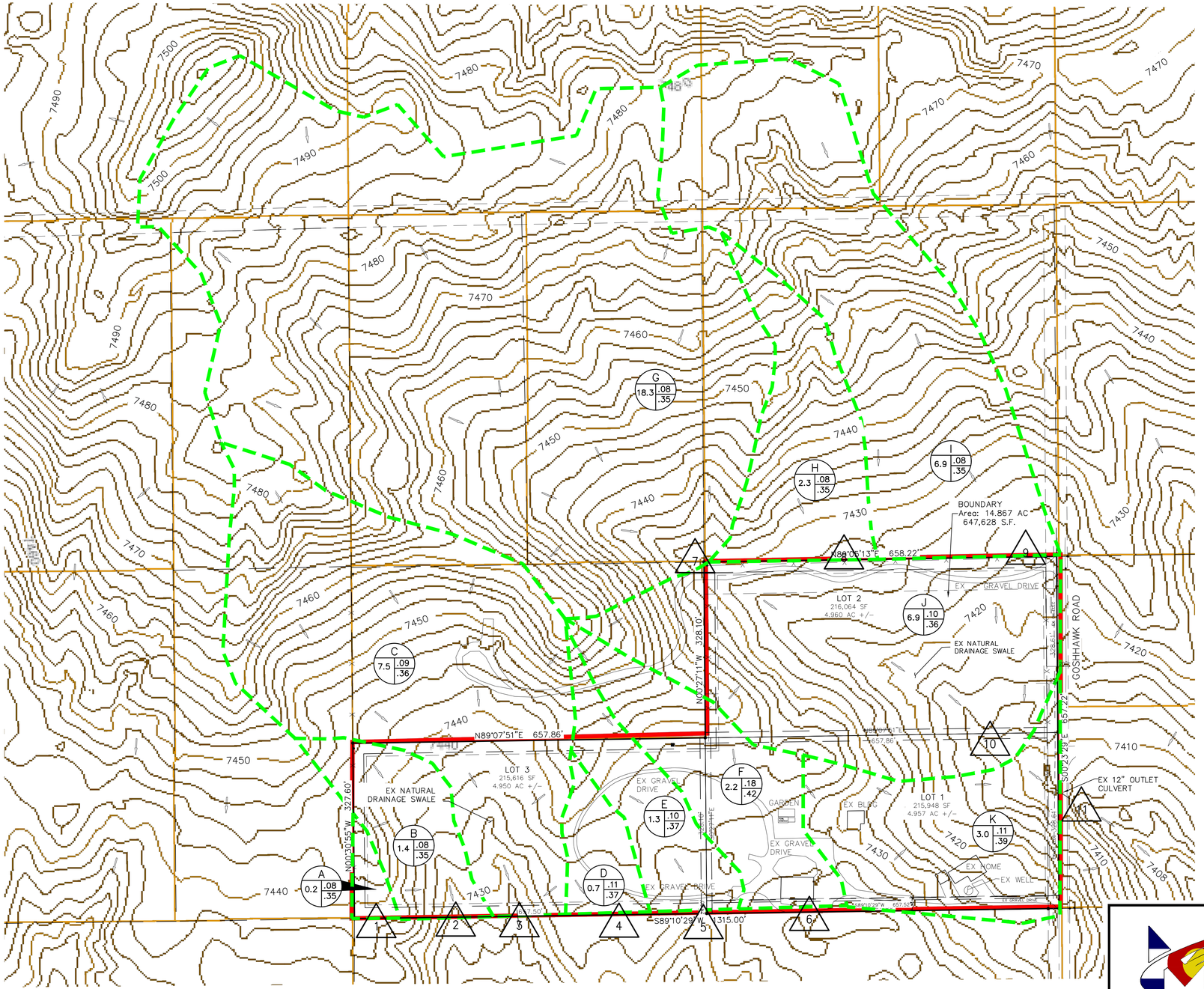
EXISTING DRAINAGE MAP

FINAL DRAINAGE LETTER FOR
CIRCLE A SUBDIVISION FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

EXISTING DRAINAGE MAP

JUNE 2021



LEGEND

BASIN DESIGNATION — Z; 25; .25; .35; C5; C100; ACRES

6 — SURFACE DESIGN POINT

BASIN BOUNDARY

SITE BOUNDARY

6920 — EXISTING CONTOUR

EXISTING FLOW DIRECTION ARROW

EX BASIN SUMMARY			
BASIN	AREA (ACRES)	Q_5	Q_{100}
A	0.23	0.1	0.5
B	1.39	0.4	2.6
C	7.48	1.9	12.6
D	0.69	0.3	1.5
E	1.35	0.4	2.5
F	2.23	1.2	4.6
G	18.29	3.8	28.0
H	2.25	0.6	4.1
I	6.89	1.4	10.3
J	6.28	1.7	10.7
K	2.96	1.0	6.0

EX DESIGN POINT SUMMARY			
DESIGN POINT	Q_5	Q_{100}	BASIN
1	0.1	0.5	A
2	0.4	2.6	B
3	1.8	12.6	C
4	0.3	1.5	D
5	0.4	2.5	E
6	1.2	4.6	F
7	3.8	28.0	G
8	0.6	4.1	H
9	1.4	10.3	I
10	6.0	42.8	DP7, DP8, DP9, J
11	6.5	45.0	DP10, K

1" = 100'

0 50 100 200

Scale in Feet

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CALL 1-800-922-1987

CIVIL CONSULTANTS, INC.
212 N. WAHSATCH AVE., STE 305
COLORADO SPRINGS, CO 80903
PHONE: 719.955.5485

CIRCLE A SUBDIVISION FILING NO. 1

EXISTING DRAINAGE MAP

PROJECT NO. 17-110A	FILE: \dwg\Eng Exhibits\EX Drainage Map.dwg		
DESIGNED BY: DM	SCALE	DATE: 06-22-2021	
DRAWN BY: GW	HORIZ: 1"=100'	SHEET 1 OF 1	EDM01
CHECKED BY: DM	VERT: N/A		

File: O:\70072A-Goshawk\7110 Goshawk Rd\dwg\Eng Exhibits\EX Drainage Map.dwg Plotstamp: 6/23/2021 11:28 AM

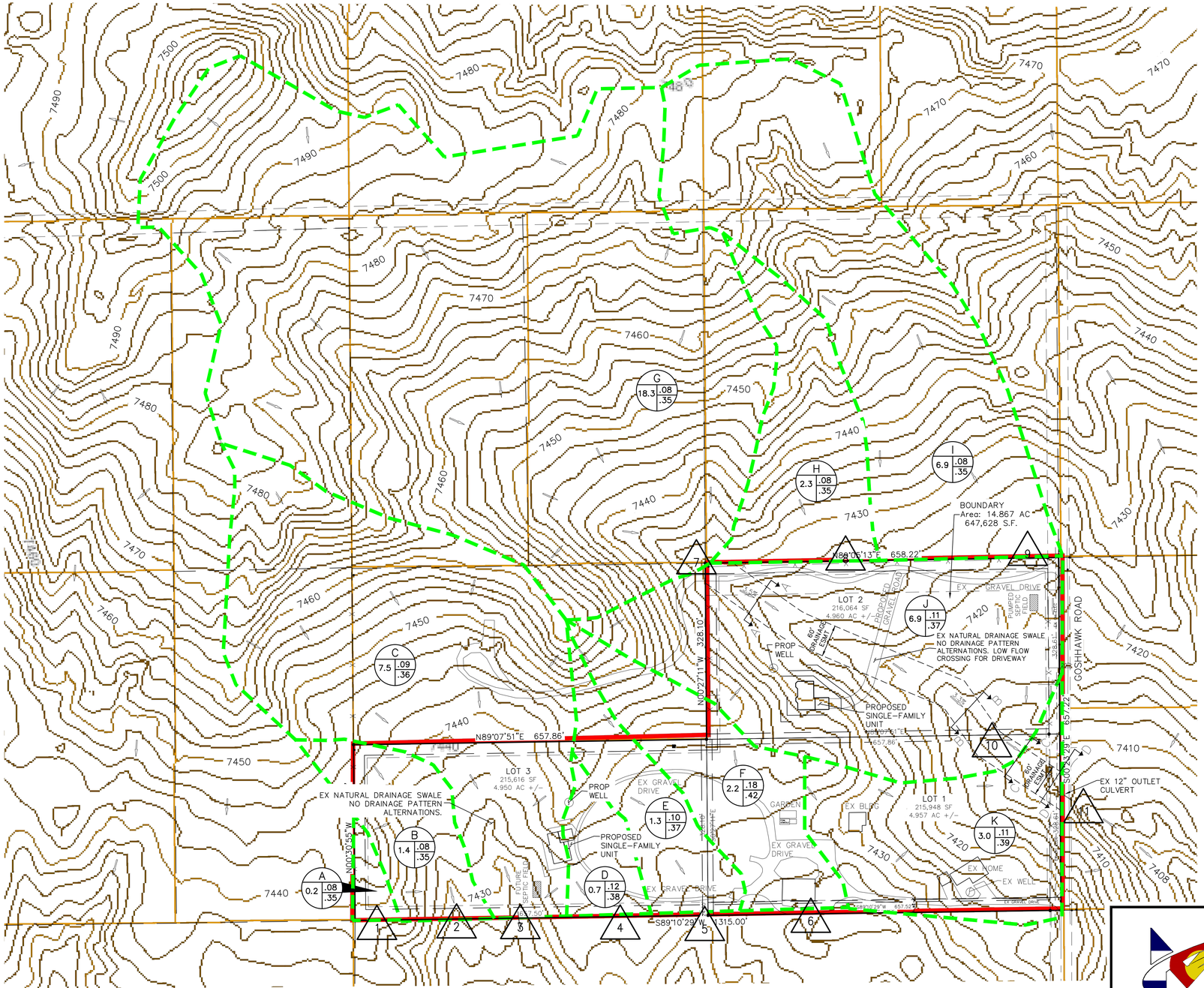
PROPOSED DRAINAGE MAP

FINAL DRAINAGE LETTER FOR
CIRCLE A SUBDIVISION FILING NO. 1

COUNTY OF EL PASO, STATE OF COLORADO

PROPOSED DRAINAGE MAP

JUNE 2021



LEGEND

BASIN DESIGNATION — Z; ACRES — 25; C5 — .25; C100 — .35

- 6 — SURFACE DESIGN POINT
- BASIN BOUNDARY
- SITE BOUNDARY
- 6920 — EXISTING CONTOUR
- FUTURE CONTOUR
- EXISTING FLOW DIRECTION ARROW
- FLOW DIRECTION
- H.P. — HIGH POINT
- L.P. — LOW POINT

1" = 100'

0 50 100 200

Scale in Feet

BASIN SUMMARY			
BASIN	AREA (ACRES)	Q_5	Q_{100}
A	0.23	0.1	0.5
B	1.39	0.4	2.6
C	7.48	2.0	12.9
D	0.69	0.3	1.5
E	1.35	0.4	2.5
F	2.23	1.2	4.6
G	18.29	3.8	28.0
H	2.25	0.6	4.1
I	6.89	1.4	10.3
J	6.28	2.0	11.0
K	2.96	1.0	6.0

DESIGN POINT SUMMARY			
DESIGN POINT	Q_5	Q_{100}	BASIN
1	0.1	0.5	A
2	0.4	2.6	B
3	2.0	12.9	C
4	0.3	1.5	D
5	0.4	2.5	E
6	1.2	4.6	F
7	3.8	28.0	G
8	0.6	4.1	H
9	1.4	10.3	I
10	6.3	43.1	DP7, DP8, DP9, J
11	6.7	45.2	DP10, K

CROSS SECTION SUMMARY			
SECTION	Q_{100} (CFS)	V_{100} (FTS)	D_{100} (INCHES)
A	11.0	3.2	5.0
B	43.0	4.3	8.0
C	43.0	4.0	8.4
D	45.2	3.5	7.3

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CIRCLE A SUBDIVISION FILING NO. 1

PROPOSED DRAINAGE MAP

PROJECT NO. 17-110A	FILE: \dwg\Eng Exhibits\Proposed Drainage Map.dwg		
DESIGNED BY: DM DRAWN BY: GW CHECKED BY: DM	SCALE HORIZ: 1"=100' VERT: N/A	DATE: 06-22-2021 SHEET 1 OF 1	PDM01