



**PRELIMINARY DRAINAGE REPORT  
FOR  
WESTVIEW AT WOODMOOR FILING NO. 2  
1384 BUCKWOOD LANE  
MONUMENT, COLORADO**

**SEPTEMBER 6, 2022**

Prepared For:  
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Prepared By:

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Job No. 2282.00

# DRAINAGE REPORT STATEMENT

## CERTIFICATION STATEMENT:

### Engineer's Statement

This letter and plan for the drainage design of “**WESTVIEW AT WOODMOOR FILING NO. 2**” was prepared by me (or under my direct supervision) and is correct to the best of my knowledge and belief. Said letter and plan has been prepared in accordance with the City of Colorado Springs Drainage Criteria Manual and is in conformity with the master plan of the drainage basin. I understand that the City of Colorado Springs does not and will not assume liability for drainage facilities designed by others. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this letter.

\_\_\_\_\_  
L Ducett, P.E. 32339

\_\_\_\_\_  
Seal

### Developer's Statement

**Murphy's Custom Homes Inc**, hereby certifies that the drainage facilities for “**WESTVIEW AT WOODMOOR FILING NO. 2**” shall be constructed according to the design presented in this letter. I understand that the County of El Paso does not and will not assume liability for the drainage facilities designed and/or certified by my engineer and that are submitted to the County of El Paso pursuant to section 4.4 & 4.5 of the County Code; and cannot, on behalf of “**WESTVIEW AT WOODMOOR FILING NO. 2**” guarantee that final drainage design review will absolve **MURPHY'S CUSTOM HOMES, INC.** and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the final plat does not imply approval of my engineer's drainage design.

Name of Developer: Murphy's Custom Homes, Inc.

\_\_\_\_\_  
Authorized Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

13710 Struthers Road  
Colorado Springs, CO 80921

### County of El Paso Statement:

Filed in accordance with Section 4.1 & 4.5 of the Code of the County of El Paso, 2001, as amended.

\_\_\_\_\_  
For City Engineer

\_\_\_\_\_  
Date

Conditions:

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**PRELIMINARY DRAINAGE REPORT  
WESTVIEW AT WOODMOOR FILING NO. 2  
1384 BUCKWOOD LANE  
MONUMENT, COLORADO**

**PURPOSE AND JUSTIFICATION**

The purpose of this Drainage Report is to verify that the final plat and development plan for the construction of this residential site as four platted lots will not significantly increase or change drainage patterns and existing infrastructure can manage the flows per the El Paso County Drainage Criteria Manual.

This site has no previous drainage report on file.

**GENERAL DESCRIPTION**

This Drainage Report is an analysis of “WESTVIEW AT WOODMOOR FILING NO. 2”. The site is currently undeveloped with an existing single family home on Lot 1.

This site was previously platted as reception no. 210713052. The site is located at 1384 Buckwood Lane in Monument, CO, within section 11, township 11 south, range 67 west on the 6<sup>th</sup> principal meridian. It is bounded to the south by Doewood Drive and Lot 3 Nicholas H. Nance Sub (residential single family lot), to the north by Woodmoor Ridge lots 56, 57, & 58 (residential single family lots), to the east by Woodmoor Filing No. 1 Lots 10, 13, & 16 (residential single family lots), and to the west by Wildwood Way and Lot 6A Woodmoor Filing No. 1B (residential single family lot). The project is in the northeast quarter of Section 11 Township 11 south, Range 67 west of the 6<sup>th</sup> prime meridian in the City of Monument, El Paso County, Colorado.

Existing vegetation consists of native prairie grasses and shrubs with good to excellent coverage of 75% to 90%, including moderate to heavy ground cover of ponderosa pine.

Drainage from the site is tributary to the Crystal Creek Drainage Basin according to the Dirty Woman Creek and Crystal Creek El Paso County, Colorado Drainage Basin

Planning Study dated September, 1993. The Crystal Creek Drainage Basin covers roughly 6.6 square miles and trends generally east to west. Crystal Creek enters Monument Creek at Monument Lake. Basin development was approximately 85-90% complete in 1993.

The site is not in the FEMA 100 year Floodplain Map 08041C0276G dated December 7, 2018.

The soils onsite are classified as 100% Kettle gravelly loamy sand, 8 to 40 percent slopes by the Soil Survey of El Paso County, Colorado prepared by the Soil Conservation Service. The soils are in Hydrologic Soil Group B.

A copy of the existing and proposed drainage maps are included in the appendix. There are eight basins for the existing and proposed site. No changes to ground cover are proposed in this filing.

The study area consists of an existing single family home with a gravel driveway and a wooden shed. The study area is 3.1% impervious. The site currently drains toward the northwest, west, southwest, south, and southeast with slopes ranging from 2% to 30%.

## **EXISTING DRAINAGE CONDITIONS**

The site consists of six existing on-site basins and two existing off-site basins. See the existing conditions map in the appendix.

### **Basin EX1/ Design Point E1**

Basin EX1 which flows to Design Point E1 consists of 0.32 acres of mostly forested area on the northwest corner of the site. The existing flows from this area are  $Q_5=0.1$  cfs and  $Q_{100}=0.8$  cfs. These overland flows are directed offsite northwest toward Blueberry Hills Drive.

### **Basin EX2/ Design Point E2**

Basin EX2 which flows to Design Point E2 consists of 1.28 acres of mostly forested area with some areas of gravel and part of the existing house on the northeast side of the site.

The existing flows from this area are  $Q_5=0.5$  cfs and  $Q_{100}=3.3$  cfs. These flows are drain offsite to the north toward Blueberry Hills Road.

### **Basin EX3/ Design Point E3**

Basin EX3 which flows to Design Point E3 consists of 0.78 acres of mostly forested area with some areas of the existing house and wooden walkway at the east and southeast sides of the site. The existing flows from this area are  $Q_5=0.3$  cfs and  $Q_{100}=2.1$  cfs. These flows are directed offsite to the south toward Doewood Drive.

### **Basin EX4/ Design Point E4**

Basin EX4 which flows to Design Point E4 consists of 0.50 acres of mostly forested area with some areas of the existing house and deck at the central and west sides of the site. The existing flows from this area are  $Q_5=0.2$  cfs and  $Q_{100}=1.4$  cfs. These flows are directed to the existing cul-de-sac at Wildwood Way.

### **Basin EX5/Design Point E5**

Basin EX5 which flows to Design Point E5 consists of 0.37 acres of mostly forested area with a small part of the existing home and deck at the central and west sides of the site. The existing flows from this area are  $Q_5=0.1$  cfs and  $Q_{100}=0.9$  cfs. These flows are directed offsite to the west toward the existing cul-de-sac at Wildwood Way.

### **Basin EX6/Design Point E6**

Basin EX6 which flows to Design Point E6 consists of 0.55 acres of mostly forested area with part of the existing house and deck at the central and southwest sides of the site. The existing flows from this area are  $Q_5=0.3$  cfs and  $Q_{100}=1.4$  cfs. These flows are directed offsite to the south toward Doewood Drive.

### **Offsite Basin EOS1/Design Point EOSA**

Basin EOS1 which flows to Design Point EOSA consists of 0.10 acres of a mix of forested land, gravel, and asphalt pavement and includes part of the existing cul-de-sac at Buckwood Lane at the east side of the site. The existing flows from this area are  $Q_5=0.2$

cfs and  $Q_{100}=0.5$  cfs. These flows are directed onto the site from the east side. This offsite basin has minimal impact on the drainage pattern on the property.

### **Offsite Basin EOS2/Design Point EOSB**

Basin EOS2 which flows to Design Point EOSB consists of 0.05 acres of a mix of forested land, gravel, and asphalt pavement and includes part of the existing cul-de-sac at Buckwood Lane at the east side of the site. The existing flows from this area are  $Q_5=0.0$  cfs and  $Q_{100}=0.1$  cfs. These flows are directed onto the site from the east side. This offsite basin has minimal impact on the drainage pattern on the property.

## **PROPOSED DRAINAGE CONDITIONS**

In the proposed condition (see proposed conditions map in the appendix) the overall drainage pattern for the site remains the same as the existing pattern. In order to predict future conditions as the result of future developments on adjacent lots, runoff coefficients were assumed to be that of 1 acre residential for proposed basins P1 & P2, and  $\frac{1}{2}$  acre residential for proposed basins P3, P4, P5, and P6. There are eight proposed basins:

### **Basin P1/ Design Point 1**

Basin P1 which flows to Design Point 1 consists of 0.32 acres of mostly forested area on the northwest corner of the site. The proposed flows from this area are  $Q_5=0.3$  cfs and  $Q_{100}=1.1$  cfs, using the runoff coefficient of 1 acre residential in anticipation of future development. These overland flows are directed offsite northwest toward Blueberry Hills Drive.

### **Basin P2/ Design Point 2**

Basin P2 which flows to Design Point 2 consists of 1.28 acres of mostly forested area on the central and north sides of the site. The proposed flows from this area are  $Q_5=1.1$  cfs and  $Q_{100}=4.2$  cfs, using the runoff coefficient of 1 acre residential in anticipation of future development. These flows are drain offsite to the north toward Blueberry Hills Road.

### **Basin P3/ Design Point 3**

Basin P3 which flows to Design Point 3 consists of 0.78 acres of mostly forested area at the central and south sides of the site. The proposed flows from this area are  $Q_5=0.7$  cfs and  $Q_{100}=2.7$  cfs, using the runoff coefficient of  $\frac{1}{2}$  acre residential in anticipation of future development. These flows are directed offsite to the south toward Doewood Drive.

### **Basin P4/ Design Point 4**

Basin P4 which flows to Design Point 4 consists of 0.50 acres of mostly forested area at the central and west sides of the site. The proposed flows from this area are  $Q_5=0.5$  cfs and  $Q_{100}=1.7$  cfs, using the runoff coefficient of  $\frac{1}{2}$  acre in anticipation of future development.. These flows are directed to the existing cul-de-sac at Wildwood Way.

### **Basin P5/Design Point 5**

Basin P5 which flows to Design Point 5 consists of 0.37 acres of mostly forested area at the central and west sides of the site. The proposed flows from this area are  $Q_5=0.3$  cfs and  $Q_{100}=1.3$  cfs, using the runoff coefficient of  $\frac{1}{2}$  acre residential in anticipation of future development. These flows are directed offsite to the west toward the existing cul-de-sac at Wildwood Way.

### **Basin P6/Design Point 6**

Basin P6 which flows to Design Point 6 consists of 0.55 acres of mostly forested area at the central and west sides of the site. The proposed flows from this area are  $Q_5=0.5$  cfs and  $Q_{100}=1.7$  cfs, using the runoff coefficient of  $\frac{1}{2}$  acre residential in anticipation of future development. These flows are directed offsite to the south toward Doewood Drive.

### **Offsite Basin POS1/Design Point OS3**

Basin EOS1 which flows to Design Point EOSA consists of 0.10 acres of a mix of forested land, gravel, and asphalt pavement and includes part of the existing cul-de-sac at Buckwood Lane at the east side of the site. The proposed flows from this area are  $Q_5=0.2$  cfs and  $Q_{100}=0.5$  cfs. These flows are directed onto the site from the east side.



#### **Offsite Basin POS2/Design Point OS4**

Basin EOS2 which flows to Design Point EOSB consists of 0.05 acres of a mix of forested land, gravel, and asphalt pavement and includes part of the existing cul-de-sac at Buckwood Lane at the east side of the site. The proposed flows from this area are  $Q_5=0.0$  cfs and  $Q_{100}=0.1$  cfs. These flows are directed onto the site from the east side.

In an effort to protect receiving water and as part of the “four step process to minimize adverse impacts of urbanization” this site was analyzed in the following manner:

1. Reduce Runoff – Portions of the site route runoff over landscaping areas before it reaches curbs or storm inlets. These above-mentioned items will reduce the volume of runoff using ponding and infiltration.
2. Treat Slowly Release WQCV – Not included. The steep slopes on all sides of the property severely limit the opportunity to include WQCV system(s).
3. Stabilize Stream Channel – There are no channels on or adjacent to the site.
4. Source Controls - As no materials storage or industrial operations are proposed for the site, no source controls have been proposed.

Please see detailed calculations in the appendix.

## **HYDROLOGIC CALCULATIONS**

Hydrologic calculations were performed using the City of Colorado Springs Storm Drainage Design Criteria Manual Volumes 1 & 2 May 2014. The Rational Method was used to estimate storm water runoff anticipated from design storms with 5-year and 100-year recurrence intervals. The Rational Method was used because it is the simplest method, that is applicable to the site, and allowed by the Drainage Criteria Manual.

## **WATER QUALITY**

Water quality for this development is not required due to the absence of any proposed grading on the site.

## **EROSION CONTROL**

No erosion control plan is anticipated due to the absence of any proposed grading on the site.

## **CONSTRUCTION COST OPINION**

No construction of facilities is planned.

## **MAINTENANCE**

As no facilities are proposed, there will be no maintenance.

## **DRAINAGE FEES**

### Crystal Creek Drainage Basin

Drainage Fee: 0.635 impervious acres x \$21,134.00=\$13,420.09

Bridge Fee: 0.635 impervious acres x \$1,156.00=\$734.06

Total Due \$14,154.15 at time of final plat.

The fees listed above are in accordance with the El Paso County Drainage Basin Fees, Resolution No. 21-468.

## **SUMMARY**

This development (Westview at Woodmoor Filing No. 2) will not adversely affect the downstream and surrounding developments. Proposed onsite flows from the new lots will be safely conveyed offsite similar to the existing flows via overland flow. Water quality and detention will not be required as there is no area to be graded. This site does not have an existing drainage report on file.

**PREPARED BY:  
TERRA NOVA ENGINEERING, INC.**

This Drainage Letter is in conformance with the El Paso County Drainage Criteria Manual, Volumes 1 & 2, October 2018.

Luanne Ducett, P.E.  
President  
Jobs/2282.00 FDR

## **BIBLIOGRAPHY**

“Dirty Woman Creek and Crystal Creek El Paso County, Colorado Drainage Basin Planning Study, September 1993.”

“El Paso County Drainage Criteria Manual, Volumes 1 & 2, October 2018.”

## **VICINITY MAP**



7393 ft

7129 ft

PROJECT  
LOCATION



Lake  
Woodmoor

Woodmoor

Country Club at  
Woodmoor

Monument  
Cemetery

**USGS SOIL MAP**

Soil Map—El Paso County Area, Colorado  
(1384 Buckwood Lane)



Map Scale: 1:1,210 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84





## MAP LEGEND

### Area of Interest (AOI)

 Area of Interest (AOI)

### Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

### Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

### Water Features



Streams and Canals

### Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

### Background



Aerial Photography

## MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: El Paso County Area, Colorado  
Survey Area Data: Version 19, Aug 31, 2021

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

Date(s) aerial images were photographed: Jun 9, 2021—Jun 12, 2021

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

## Map Unit Legend

| Map Unit Symbol                    | Map Unit Name                                      | Acres in AOI | Percent of AOI |
|------------------------------------|--|--------------|----------------|
| 41                                 | Kettle gravelly loamy sand, 8 to 40 percent slopes | 3.6          | 100.0%         |
| <b>Totals for Area of Interest</b> |  | <b>3.6</b>   | <b>100.0%</b>  |

## El Paso County Area, Colorado

### 41—Kettle gravelly loamy sand, 8 to 40 percent slopes

#### Map Unit Setting

*National map unit symbol:* 368h

*Elevation:* 7,000 to 7,700 feet

*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Kettle and similar soils:* 85 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Kettle

##### Setting

*Landform:* Hills

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Sandy alluvium derived from arkose

##### Typical profile

*E - 0 to 16 inches:* gravelly loamy sand

*Bt - 16 to 40 inches:* gravelly sandy loam

*C - 40 to 60 inches:* extremely gravelly loamy sand

##### Properties and qualities

*Slope:* 8 to 40 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat excessively drained

*Runoff class:* Medium

*Capacity of the most limiting layer to transmit water (Ksat):* High  
(2.00 to 6.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Available water supply, 0 to 60 inches:* Low (about 3.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7e

*Hydrologic Soil Group:* B

*Ecological site:* F048AY908CO - Mixed Conifer

*Hydric soil rating:* No

#### Minor Components

##### Pleasant

*Percent of map unit:*

*Landform:* Depressions

*Hydric soil rating:* Yes

**Other soils**

*Percent of map unit:*

*Hydric soil rating:* No

**Data Source Information**

Soil Survey Area: El Paso County Area, Colorado

Survey Area Data: Version 19, Aug 31, 2021

**FEMA MAP**

**NOTES TO USERS**

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

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

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

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

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

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

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

NGS Information Services  
NOAA, NIMS12  
National Geodetic Survey  
SSMC-3, #9202  
1315 East-West Highway  
Silver Spring, MD 20910-3282

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

**Base Map** information shown on this FIRM was provided in digital format by El Paso County, Colorado Springs Utilities, City of Fountain, Bureau of Land Management, National Oceanic and Atmospheric Administration, United States Geological Survey, and Anderson Consulting Engineers, Inc. These data are current as of 2006.

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

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

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

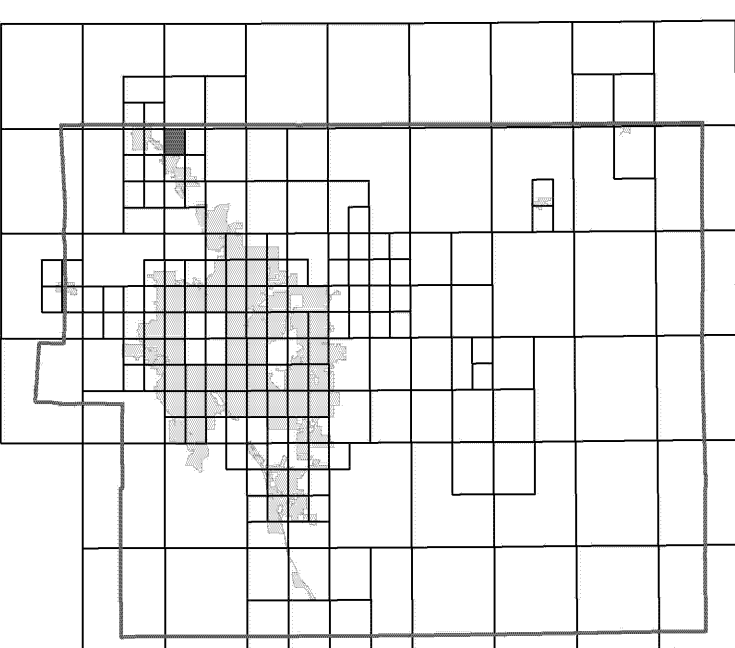
Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this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

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

**El Paso County Vertical Datum Offset Table**

| Flooding Source   | Vertical Datum Offset (ft) |
|---|----------------------------|
| REFER TO SECTION 3.3 OF THE EL PASO COUNTY FLOOD INSURANCE STUDY FOR STREAM BY STREAM VERTICAL DATUM CONVERSION INFORMATION |                            |

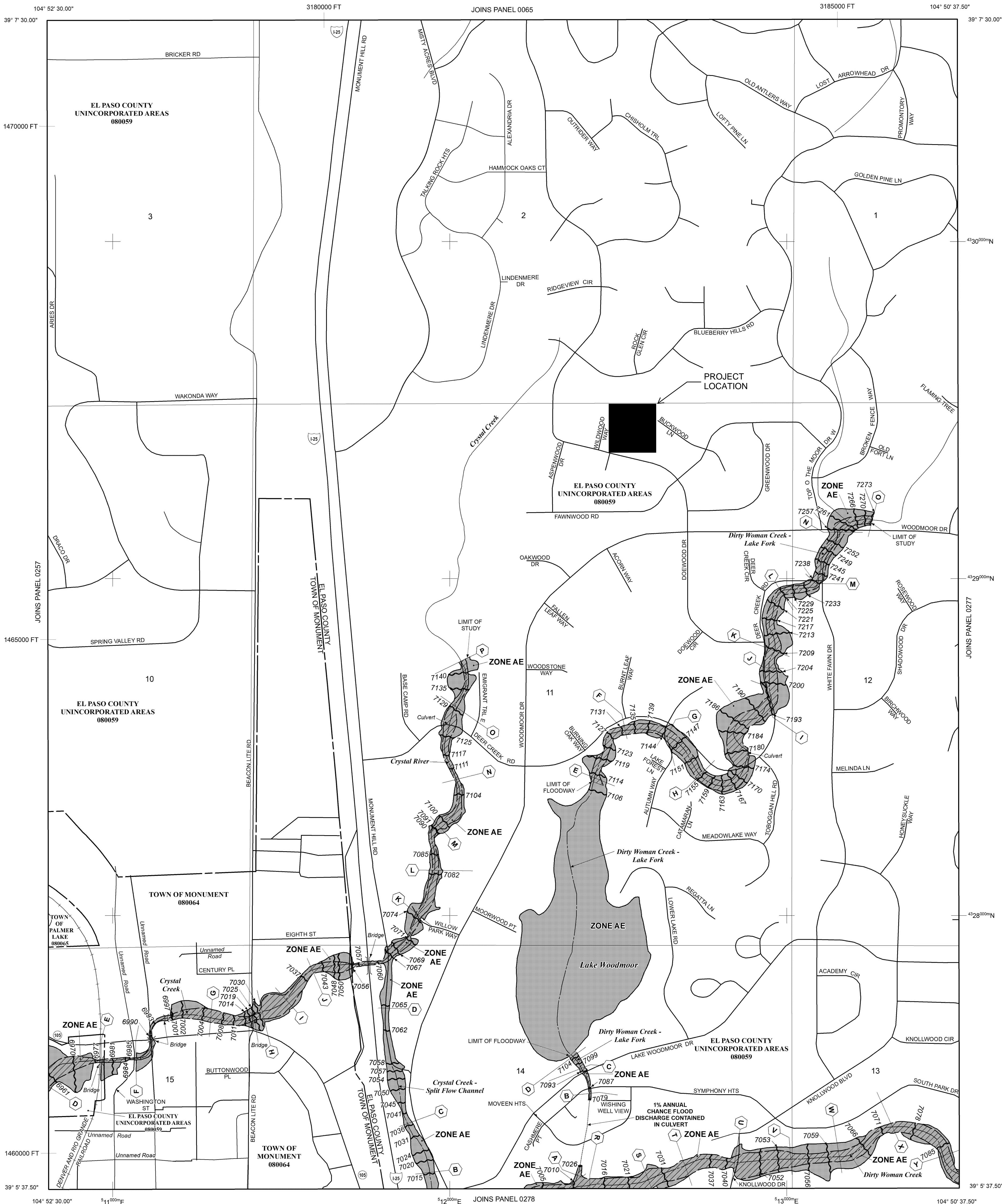
**Panel Location Map**



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



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



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 11 SOUTH, RANGE 67 WEST.

**LEGEND**

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject, to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.
- ZONE A** No Base Flood Elevations determined.
- ZONE AE** Base Flood Elevations determined.
- ZONE AH** Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
- ZONE AO** Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
- ZONE AR** Special Flood Hazard Area Formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
- ZONE A99** Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
- ZONE V** Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
- ZONE VE** Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.
- FLOODWAY AREAS IN ZONE AE
- The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.
- OTHER FLOOD AREAS
- ZONE X** Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot, or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
- OTHER AREAS
- ZONE X** Areas determined to be outside the 0.2% annual chance floodplain.
- ZONE D** Areas in which flood hazards are undetermined, but possible.
- COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS
- OTHERWISE PROTECTED AREAS (OPAs)

- CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.
- Floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- Base Flood Elevation value where uniform within zone; elevation in feet\* (EL 987)

- \* Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- Cross section line
- Transsect line

- Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 1000-meter Universal Transverse Mercator grid ticks, zone 13
- 5000-foot grid ticks; Colorado State Plane coordinate system, central zone (FIPS/CONE 5002), Lambert Conformal Conic Projection
- Bench mark (see explanation in Notes to Users section of this FIRM panel)
- River Mile

- MAP REPOSITORIES
- Refer to Map Repositories list on Map Index

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

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

- For community map revision history prior to countywide mapping, refer to the Community Map History Table located in the Flood Insurance Study report for this jurisdiction.
- To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

- MAP SCALE 1" = 500'
- 250 0 500 1000 FEET
- 150 0 150 300 METERS

**NFIP** **PANEL 0276G**

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

**PANEL 276 OF 1300**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY           | NUMBER | PANEL | SUFFIX |
|---------------------|--------|-------|--------|
| EL PASO COUNTY      | 080059 | 0276  | G      |
| MONUMENT TOWN OF    | 080064 | 0276  | G      |
| PALMER LAKE TOWN OF | 080065 | 0276  | G      |

Notice: This map was released on 05/15/2020 to make a correction. This version replaces any previous versions. See the Notice-to-User Letter that accompanied this correction for details.

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

**MAP NUMBER**  
08041C0276G

**MAP REVISED**  
DECEMBER 7, 2018

Federal Emergency Management Agency

## **HYDROLOGIC CALCULATIONS**

**HEMBRE ESTATES FILING NO. 1**  
**AREA RUNOFF COEFFICIENT (C) SUMMARY**

**EXISTING**

|              |                   | <i>DEVELOPED / IMPERVIOUS</i> |           |             | <i>UNDEVELOPED / NON-IMPERVIOUS</i> |           |             | <i>WEIGHTED</i> |             | <i>WEIGHTED CA</i> |              |
|--------------|-------------------|-------------------------------|-----------|-------------|-------------------------------------|-----------|-------------|-----------------|-------------|--------------------|--------------|
| <b>BASIN</b> | <b>TOTAL AREA</b> | <b>AREA</b>                   | <b>C5</b> | <b>C100</b> | <b>AREA</b>                         | <b>C5</b> | <b>C100</b> | <b>C5</b>       | <b>C100</b> | <b>CA5</b>         | <b>CA100</b> |
|              | <i>(Acres)</i>    | <i>(Acres)</i>                |           |             | <i>(Acres)</i>                      |           |             |                 |             |                    |              |
| <i>EX1</i>   | 0.32              | 0.00                          | 0.08      | 0.35        | 0.32                                | 0.08      | 0.35        | 0.08            | 0.35        | 0.03               | 0.11         |
| <i>EX2</i>   | 1.28              | 0.02                          | 0.68      | 0.78        | 1.26                                | 0.08      | 0.35        | 0.09            | 0.36        | 0.11               | 0.46         |
| <i>EX3</i>   | 0.78              | 0.02                          | 0.66      | 0.76        | 0.76                                | 0.08      | 0.35        | 0.09            | 0.36        | 0.07               | 0.28         |
| <i>EX4</i>   | 0.50              | 0.02                          | 0.81      | 0.88        | 0.48                                | 0.08      | 0.35        | 0.11            | 0.37        | 0.05               | 0.19         |
| <i>EX5</i>   | 0.37              | 0.00                          | 0.90      | 0.96        | 0.37                                | 0.08      | 0.35        | 0.08            | 0.35        | 0.03               | 0.13         |
| <i>EX6</i>   | 0.55              | 0.04                          | 0.81      | 0.88        | 0.51                                | 0.08      | 0.35        | 0.13            | 0.39        | 0.07               | 0.21         |
| <i>EOS1</i>  | 0.10              | 0.03                          | 0.83      | 0.90        | 0.07                                | 0.08      | 0.35        | 0.30            | 0.51        | 0.03               | 0.05         |
| <i>EOS2</i>  | 0.05              | 0.00                          | 0.67      | 0.77        | 0.05                                | 0.08      | 0.35        | 0.08            | 0.35        | 0.00               | 0.02         |

Total                      3.95                      0.13

Calculated by:           JS            
Date:           9/6/2022            
Checked by:           LD          

**DEVELOPED**

|              |                   | <i>DEVELOPED / IMPERVIOUS</i> |           |             | <i>UNDEVELOPED / NON-IMPERVIOUS</i> |           |             | <i>WEIGHTED</i> |             | <i>WEIGHTED CA</i> |              |
|--------------|-------------------|-------------------------------|-----------|-------------|-------------------------------------|-----------|-------------|-----------------|-------------|--------------------|--------------|
| <b>BASIN</b> | <b>TOTAL AREA</b> | <b>AREA</b>                   | <b>C5</b> | <b>C100</b> | <b>AREA</b>                         | <b>C5</b> | <b>C100</b> | <b>C5</b>       | <b>C100</b> | <b>CA5</b>         | <b>CA100</b> |
|              | <i>(Acres)</i>    | <i>(Acres)</i>                |           |             | <i>(Acres)</i>                      |           |             |                 |             |                    |              |
| <i>P1</i>    | 0.32              | 0.32                          | 0.20      | 0.44        | 0.00                                | 0.08      | 0.35        | 0.20            | 0.44        | 0.06               | 0.14         |
| <i>P2</i>    | 1.28              | 1.28                          | 0.20      | 0.44        | 0.00                                | 0.08      | 0.35        | 0.20            | 0.44        | 0.26               | 0.56         |
| <i>P3</i>    | 0.78              | 0.78                          | 0.22      | 0.46        | 0.00                                | 0.08      | 0.35        | 0.22            | 0.46        | 0.17               | 0.36         |
| <i>P4</i>    | 0.50              | 0.50                          | 0.22      | 0.46        | 0.00                                | 0.08      | 0.35        | 0.22            | 0.46        | 0.11               | 0.23         |
| <i>P5</i>    | 0.37              | 0.37                          | 0.22      | 0.46        | 0.00                                | 0.08      | 0.35        | 0.22            | 0.46        | 0.08               | 0.17         |
| <i>P6</i>    | 0.55              | 0.55                          | 0.22      | 0.46        | 0.00                                | 0.08      | 0.35        | 0.22            | 0.46        | 0.12               | 0.25         |
| <i>POS1</i>  | 0.10              | 0.03                          | 0.83      | 0.90        | 0.07                                | 0.08      | 0.35        | 0.30            | 0.51        | 0.03               | 0.05         |
| <i>POS2</i>  | 0.05              | 0.00                          | 0.67      | 0.77        | 0.05                                | 0.08      | 0.35        | 0.08            | 0.35        | 0.00               | 0.02         |

Total                      3.95                      3.83

Calculated by:           JS            
Date:           9/6/2022            
Checked by:           LD



## HEMBRE ESTATES FILING NO. 1 RUNOFF SUMMARY

### EXISTING

| BASIN       | AREA<br>TOTAL<br>(Acres) | WEIGHTED                                      |                  | OVERLAND       |                |                  |                         | STREET / CHANNEL FLOW |              |                   |                         | T <sub>c</sub> | INTENSITY                 |                             | TOTAL FLOWS                |                              |
|-------------|--------------------------|---|------------------|----------------|----------------|------------------|-------------------------|-----------------------|--------------|-------------------|-------------------------|----------------|---------------------------|-----------------------------|----------------------------|------------------------------|
|             |                          | C <sub>5</sub>                                | C <sub>100</sub> | C <sub>5</sub> | Length<br>(ft) | Slope<br>(ft/ft) | T <sub>t</sub><br>(min) | Length<br>(ft)        | Slope<br>(%) | Velocity<br>(fps) | T <sub>t</sub><br>(min) | TOTAL<br>(min) | I <sub>5</sub><br>(in/hr) | I <sub>100</sub><br>(in/hr) | Q <sub>5</sub><br>(c.f.s.) | Q <sub>100</sub><br>(c.f.s.) |
|             |                          | <small>* For Calcs See Runoff Summary</small> |                  |                |                |                  |                         |                       |              |                   |                         |                |                           |                             |                            |                              |
| <b>EX1</b>  | 0.32                     | 0.08  | 0.35             | 0.08           | 100            | 0.17             | 7.3                     | 154                   | 21.4%        | 2.3               | 1.1                     | 8.4            | 4.3                       | 7.6                         | 0.1                        | 0.8                          |
| <b>EX2</b>  | 1.28                     | 0.09  | 0.36             | 0.09           | 100            | 0.13             | 7.8                     | 236                   | 19.5%        | 2.2               | 1.8                     | 9.6            | 4.1                       | 7.2                         | 0.5                        | 3.3                          |
| <b>EX3</b>  | 0.78                     | 0.09  | 0.36             | 0.09           | 100            | 0.18             | 7.0                     | 189                   | 7.9%         | 1.4               | 2.2                     | 9.2            | 4.2                       | 7.3                         | 0.3                        | 2.1                          |
| <b>EX4</b>  | 0.50                     | 0.11  | 0.37             | 0.11           | 100            | 0.13             | 7.8                     | 176                   | 14.2%        | 1.9               | 1.6                     | 9.3            | 4.2                       | 7.3                         | 0.2                        | 1.4                          |
| <b>EX5</b>  | 0.37                     | 0.08  | 0.35             | 0.08           | 100            | 0.12             | 8.2                     | 207                   | 14.7%        | 1.9               | 1.8                     | 10.0           | 4.1                       | 7.1                         | 0.1                        | 0.9                          |
| <b>EX6</b>  | 0.55                     | 0.13  | 0.39             | 0.13           | 100            | 0.06             | 9.7                     | 195                   | 9.2%         | 1.5               | 2.1                     | 11.8           | 3.8                       | 6.6                         | 0.3                        | 1.4                          |
| <b>EOS1</b> | 0.10                     | 0.30  | 0.51             | 0.30           | 59             | 0.10             | 5.1                     | 0                     | 0.0%         | 1.6               | 0.0                     | 5.1            | 5.0                       | 9.0                         | 0.2                        | 0.5                          |
| <b>EOS2</b> | 0.05                     | 0.08  | 0.35             | 0.08           | 60             | 0.03             | 9.9                     | 0                     | 0.0%         | 0.9               | 0.0                     | 9.9            | 4.1                       | 7.1                         | 0.0                        | 0.1                          |

Calculated by:            JS

Date:            9/6/2022

Checked by:            LD

### DEVELOPED

| BASIN       | AREA<br>TOTAL<br>(Acres) | WEIGHTED                                      |                  | OVERLAND       |                |                  |                         | STREET / CHANNEL FLOW |              |                   |                         | T <sub>c</sub> | INTENSITY                 |                             | TOTAL FLOWS                |                              |
|-------------|--------------------------|---|------------------|----------------|----------------|------------------|-------------------------|-----------------------|--------------|-------------------|-------------------------|----------------|---------------------------|-----------------------------|----------------------------|------------------------------|
|             |                          | C <sub>5</sub>                                | C <sub>100</sub> | C <sub>5</sub> | Length<br>(ft) | Slope<br>(ft/ft) | T <sub>t</sub><br>(min) | Length<br>(ft)        | Slope<br>(%) | Velocity<br>(fps) | T <sub>t</sub><br>(min) | TOTAL<br>(min) | I <sub>5</sub><br>(in/hr) | I <sub>100</sub><br>(in/hr) | Q <sub>5</sub><br>(c.f.s.) | Q <sub>100</sub><br>(c.f.s.) |
|             |                          | <small>* For Calcs See Runoff Summary</small> |                  |                |                |                  |                         |                       |              |                   |                         |                |                           |                             |                            |                              |
| <b>P1</b>   | 0.32                     | 0.20  | 0.44             | 0.20           | 100            | 0.17             | 6.4                     | 154                   | 21.4%        | 2.3               | 1.1                     | 7.6            | 4.5                       | 7.9                         | 0.3                        | 1.1                          |
| <b>P2</b>   | 1.28                     | 0.20  | 0.44             | 0.20           | 100            | 0.13             | 7.0                     | 236                   | 19.5%        | 2.2               | 1.8                     | 8.8            | 4.3                       | 7.5                         | 1.1                        | 4.2                          |
| <b>P3</b>   | 0.78                     | 0.22  | 0.46             | 0.22           | 100            | 0.18             | 6.1                     | 189                   | 7.9%         | 1.4               | 2.2                     | 8.4            | 4.3                       | 7.6                         | 0.7                        | 2.7                          |
| <b>P4</b>   | 0.50                     | 0.22  | 0.46             | 0.22           | 100            | 0.13             | 6.9                     | 176                   | 14.2%        | 1.9               | 1.6                     | 8.5            | 4.3                       | 7.6                         | 0.5                        | 1.7                          |
| <b>P5</b>   | 0.37                     | 0.22  | 0.46             | 0.22           | 100            | 0.12             | 7.1                     | 207                   | 14.7%        | 1.9               | 1.8                     | 8.9            | 4.2                       | 7.4                         | 0.3                        | 1.3                          |
| <b>P6</b>   | 0.55                     | 0.22  | 0.46             | 0.22           | 100            | 0.06             | 8.8                     | 195                   | 9.2%         | 1.5               | 2.1                     | 10.9           | 3.9                       | 6.8                         | 0.5                        | 1.7                          |
| <b>POS1</b> | 0.10                     | 0.30  | 0.51             | 0.30           | 59             | 0.10             | 5.1                     | 0                     | 0.0%         | 1.6               | 0.0                     | 5.1            | 5.0                       | 9.0                         | 0.2                        | 0.5                          |
| <b>POS2</b> | 0.05                     | 0.08  | 0.35             | 0.08           | 60             | 0.03             | 9.9                     | 0                     | 0.0%         | 0.9               | 0.0                     | 9.9            | 4.1                       | 7.1                         | 0.0                        | 0.1                          |

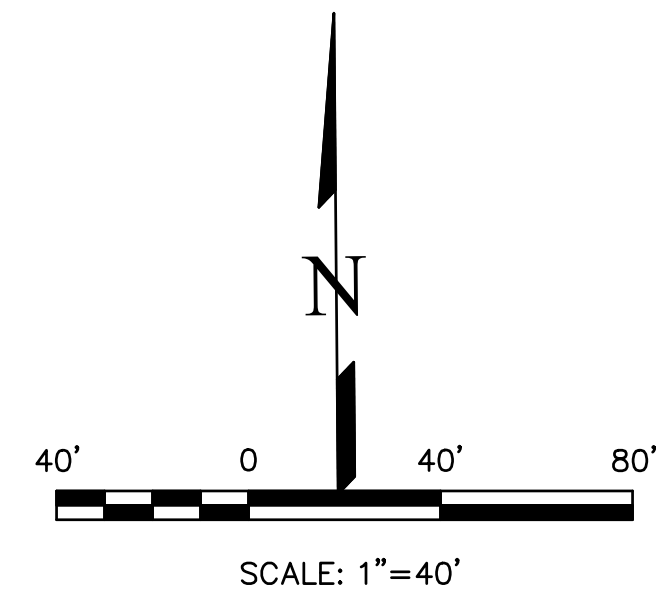
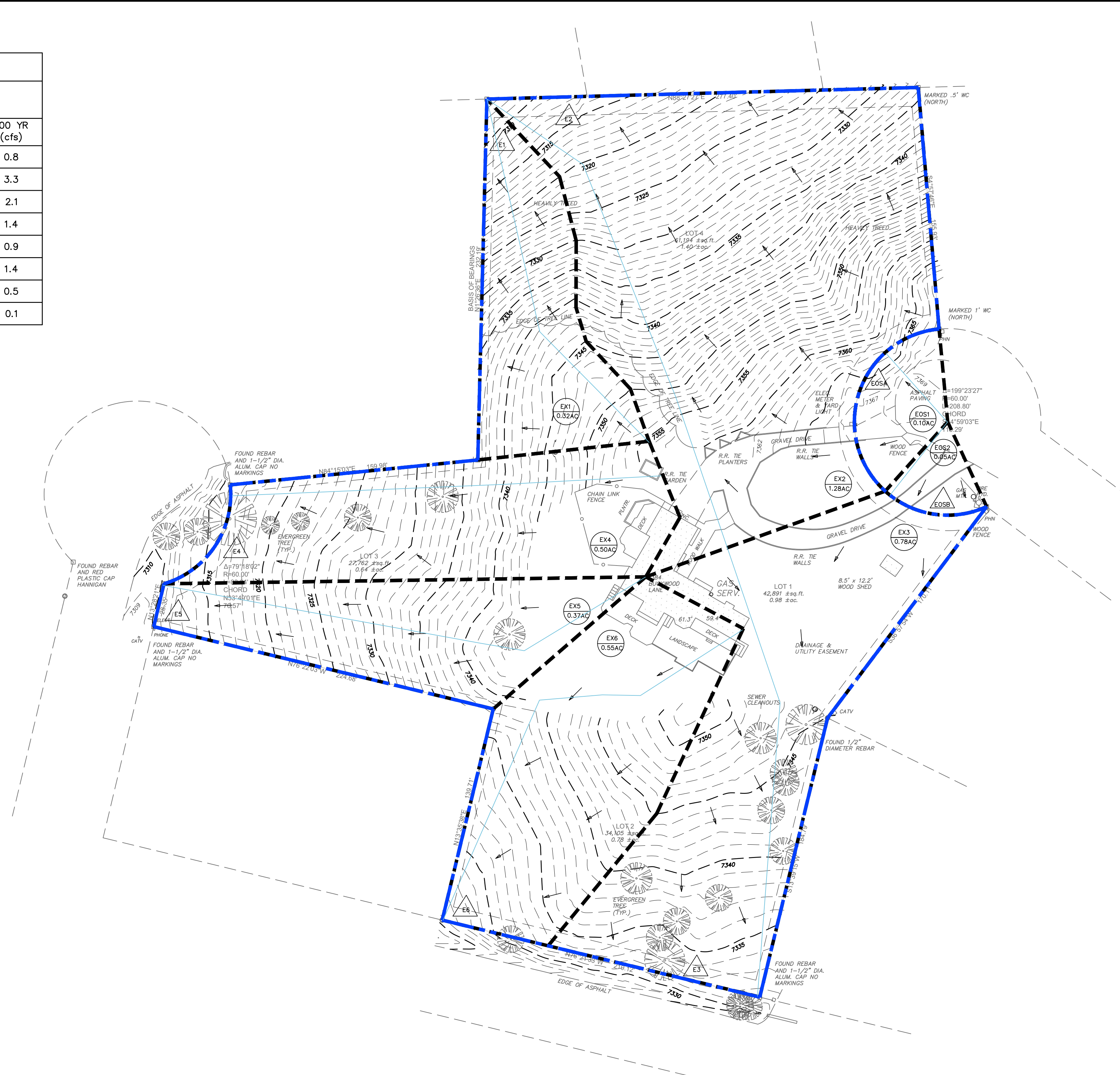
Calculated by:            JS

Date:            9/6/2022

Checked by:            LD

**EXISTING CONDITION  
DRAINAGE MAP**

| EXISTING DRAINAGE SUMMARY |              |            |              |
|---------------------------|--------------|------------|--------------|
| BASIN NAME                | AREA (ACRES) | FLOW       |              |
|                           |              | 5 YR (cfs) | 100 YR (cfs) |
| EX1                       | 0.32         | 0.1        | 0.8          |
| EX2                       | 1.28         | 0.5        | 3.3          |
| EX3                       | 0.78         | 0.3        | 2.1          |
| EX4                       | 0.50         | 0.2        | 1.4          |
| EX5                       | 0.37         | 0.1        | 0.9          |
| EX6                       | 0.55         | 0.3        | 1.4          |
| EOS1                      | 0.10         | 0.2        | 0.5          |
| EOS2                      | 0.05         | 0.00       | 0.1          |



**LEGEND**

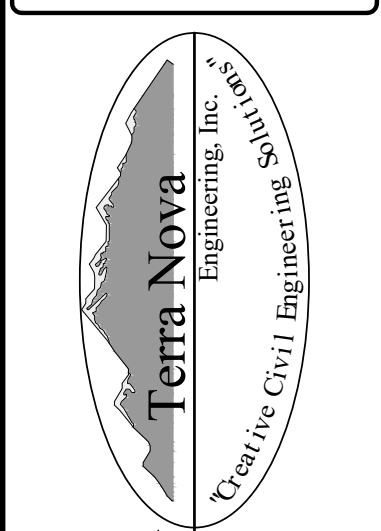
- P-7  
12.22 BASIN DESIGNATION
- 12.22 AREA IN BASIN (AC)
- D DESIGN POINT
- BASIN BOUNDARY
- - - 6130 EXISTING CONTOURS - MAJOR
- - - 6132 EXISTING CONTOURS - MINOR
- PROPERTY LINE
- FLOW ARROW
- TIME OF CONCENTRATION PATH

- NOTES:**
- EXISTING VEGETATION CONSISTS OF NATIVE PRAIRIE GRASSES AND SHRUBS WITH GOOD TO EXCELLENT COVERAGE OF 75% TO 90%, INCLUDING MODERATE TO HEAVY GROUND COVER OF PONDEROSA PINE
  - AT THE TIME OF FINAL CONSTRUCTION EROSION CONTROL BLANKETS WILL NEED TO BE INSTALLED ON ALL 3:1 SLOPES

| REVISIONS NO. | DESCRIPTION | DATE |
|---------------|-------------|------|
|               |             |      |
|               |             |      |
|               |             |      |
|               |             |      |

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED FOR THE REVIEWING AGENCY BY TERRA NOVA ENGINEERING, INC. APPROVES THEIR USE ONLY FOR THE PROJECT AND PURPOSES AUTHORIZED BY WRITTEN AUTHORIZATION.

PREPARED FOR:  
**MURPHY'S CUSTOM HOMES**  
 ATTN: SARAH MARTIN  
 1384 BUCKWOOD LANE  
 MONUMENT, CO 80132  
 (719) 233-2883



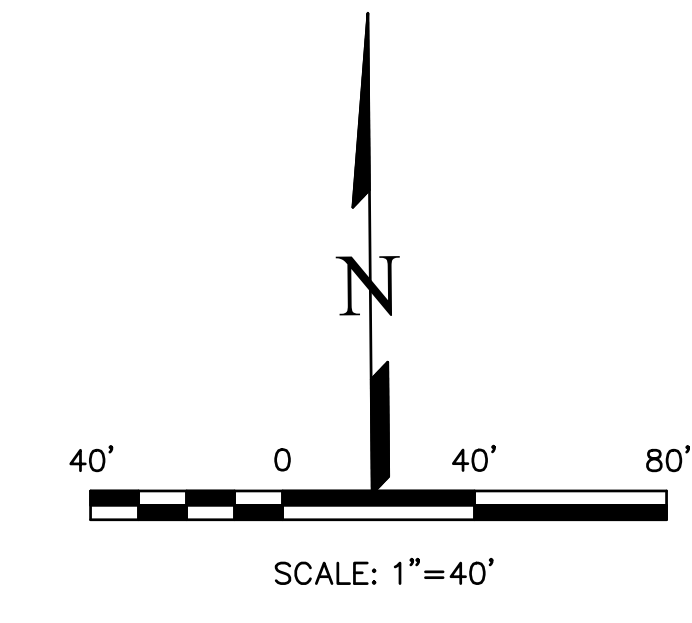
721 S. 2900 STREET  
 COLORADO SPRINGS, CO 80904  
 OFFICE: 719-635-6422  
 FAX: 719-635-6426  
 www.tnastic.com

**WESTVIEW AT WOODMOOR FILING NO. 2**  
 DEVELOPMENT PLAN  
 EXISTING CONDITION DRAINAGE MAP

DESIGNED BY JS  
 DRAWN BY JS  
 CHECKED BY LD  
 H-SCALE 1"=40'  
 V-SCALE N/A  
 JOB NO. 2282.00  
 DATE ISSUED 9/6/22  
 SHEET NO. 1 OF 2

**PROPOSED CONDITION  
DRAINAGE MAP**

| EXISTING DRAINAGE SUMMARY |              |            |              |
|---------------------------|--------------|------------|--------------|
| BASIN NAME                | AREA (ACRES) | FLOW       |              |
|                           |              | 5 YR (cfs) | 100 YR (cfs) |
| P1                        | 0.32         | 0.3        | 1.1          |
| P2                        | 1.28         | 1.1        | 4.2          |
| P3                        | 0.78         | 0.7        | 2.7          |
| P4                        | 0.50         | 0.5        | 1.7          |
| P5                        | 0.37         | 0.3        | 1.3          |
| P6                        | 0.55         | 0.5        | 1.7          |
| POS1                      | 0.10         | 0.2        | 0.5          |
| POS2                      | 0.05         | 0.00       | 0.1          |



**LEGEND**

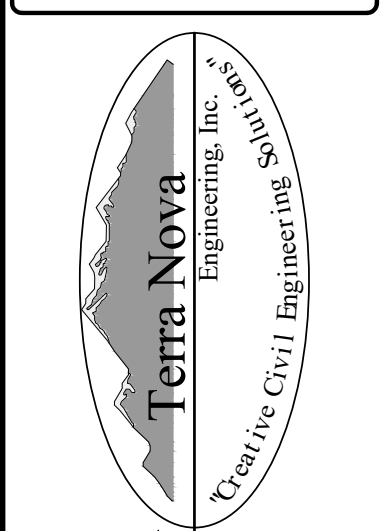
- P-7  
12.22 BASIN DESIGNATION
- 12.22 AREA IN BASIN (AC)
- D DESIGN POINT
- BASIN BOUNDARY
- - - 6130 EXISTING CONTOURS - MAJOR
- - - 6132 EXISTING CONTOURS - MINOR
- - - - - PROPERTY LINE
- FLOW ARROW
- TIME OF CONCENTRATION PATH

- NOTES:**
- EXISTING VEGETATION CONSISTS OF NATIVE PRAIRIE GRASSES AND SHRUBS WITH GOOD TO EXCELLENT COVERAGE OF 75% TO 90%, INCLUDING MODERATE TO HEAVY GROUND COVER OF PONDEROSA PINE
  - AT THE TIME OF FINAL CONSTRUCTION EROSION CONTROL BLANKETS WILL NEED TO BE INSTALLED ON ALL 3:1 SLOPES

| REVISIONS | NO. | DESCRIPTION | DATE |
|-----------|-----|-------------|------|
|           |     |             |      |
|           |     |             |      |
|           |     |             |      |

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**WESTVIEW AT WOODMOOR FILING NO. 2**  
 DEVELOPMENT PLAN  
 PROPOSED CONDITION DRAINAGE MAP

DESIGNED BY JS  
 DRAWN BY JS  
 CHECKED BY LD  
 H-SCALE 1"=40'  
 V-SCALE N/A  
 JOB NO. 2282.00  
 DATE ISSUED 9/6/22  
 SHEET NO. 2 OF 2