



## **Flying Horse North Filing No. 3 Stormwater Management Plan (SWMP)**

March 2024

HR Green Project No: 211030.20

El Paso County No. SF-2326

**Prepared For (Applicant/Owner):**

PRI #2, LLC.

Mr. Drew Balsick

Vice President / Project Manager

6385 Corporate Drive, Ste. 200

Colorado Springs, CO 80919

(719) 592-9333

**Prepared By:**

HR Green Development, LLC

Contact: Richie Lyon, P.E.

1975 Research Parkway, Suite 230, Colorado Springs, CO 80924

[Richie.Lyon@hrgreen.com](mailto:Richie.Lyon@hrgreen.com)

(719) 318-0871

**Designated Stormwater Manager:**

[TBD Name]

[TBD Company Name]

**GEC Administrator:**

[TBD Name]

[TBD Company Name]



# Table of Contents

Table of Contents ..... 1

Engineer’s Statement ..... 3

Review Engineer’s Statement ..... 3

I. Site Location & Description ..... 4

II. Construction Phasing..... 5

III. Pre-Development Conditions and Soils..... 6

IV. Description of Potential Pollutants..... 7

V. Areas and Volumes ..... 7

VI. Self-Inspections ..... 8

VII. Materials Handling..... 9

VIII. Spill Prevention & Response Plan..... 10

IX. Implementation of Control Measures..... 11

X. Final Stabilization & Long-Term Stormwater Management Plan..... 11

XI. References ..... 12

## Appendices

- A. Vicinity Map & NRCS Soil Survey & FEMA Map
- B. GEC Plans
- C. Calculations
- D. El Paso County Construction Control Measures
- E. Spill Prevention Plan
- F. SWMP Report Revision Log



▷ **PREPARING ENGINEER:**

Name: Richie Lyon, P.E.

Company: HR Green Development, LLC

Title: Project Manager

Phone Number: (719) 318-0871

Address: 1975 Research Pkwy, Suite 230 Colorado Springs 80920

▷ **PERMITEE:**

Name: Drew Balsick

Company: Flying Horse Development, LLC.

Title: Owner/Developer

Phone Number: (719) 785-3237

Address: 2138 Flying Horse Club Drive, Colorado Springs, CO 80921

▷ **DESIGNATOR STORMWATER MANAGER**

Contact:

Company:

Title:

Phone Number:

Address:

▷ **GEC ADMINISTRATOR:**

Contact:

Company:

Title:

Phone Number:

Address:



## Engineer's Statement

The Stormwater Management Plan was prepared under my direction and supervision and is correct to the best of my knowledge and belief. Said Plan has been prepared according to the criteria established by the County and State for Stormwater Management Plans.

Name: Richard D. Lyon, P.E. Date: 03/05/2024

Phone Number: 719-394-2435

Seal

## Review Engineer's Statement

The Stormwater Management Plan was reviewed and found to meet the checklist requirements except where otherwise noted or allowed by an approved deviation request.

\_\_\_\_\_ Date: \_\_\_\_\_

Review Engineer

## I. Site Location & Description

### Location

Flying Horse North Filing No. 3 is in El Paso County. The larger Flying Horse North development is bordered by Highway 83 to the west, Black Forest Road to the east, Cathedral Pines to the south, and High Forest Ranch to the north. The greater Flying Horse North area contains approximately 1,459 acres within the whole Section 36, Township 11 South, Range 66 West of the Sixth Principal Meridian, and a portion of Section 30 and 31, Township 11 South, and Range 65 West of the Sixth Principal Meridian. The Flying Horse Filing No. 3 area is 173.48 acres and the replat includes a total of 293.68 acres with existing Golf Course Tracts E and F totaling 120.20 acres.

### Legal Description

Flying Horse North Filing No. 3

### Description of Property

The Flying Horse North Filing No. 3 property is located within the Flying Horse North Golf Course general area, bordering Filing No. 1. The existing property is undeveloped with exception of a previously cut in maintenance pathway.

The Filing No. 3 area totals 173.48 acres consisting of 2.5-acre single-family residential estate lots totaling 51 lots. The development includes the single-family residential lots for future development, 60' width rights-of-way that consist of asphalt paved roadways with roadside swale sections and electric easements. There are basins to the east that are dedicated to future Flats development, one sub-basin within the Black Squirrel Creek Basin that is tributary to an existing detention facility in Filing No. 1 and one sub-basin within the East Cherry Creek Basin that is tributary to a proposed detention pond as a part of this filing. The future Flats area consists of modified urban local residential 60' right-of-way similar to a typical urban local typical roadway section with tree lawn and detached sidewalk with electric easement. Filing No. 3 construction activity only includes the urban roadway section to be constructed in the Flats area to establish the 60' right-of-way section. No Flats are proposed to be constructed at this time.

There are no existing drainageways traversing the site. Most of the site falls within the Black Squirrel Creek Basin and the remainder to the east is within the East Cherry Creek Basin. The stormwater runoff for areas of proposed development within the Black Squirrel Creek basin drain to a proposed pond at the southwest of the site and a portion drains to an existing pond built as a part of Filing No. 1. The stormwater runoff for areas of proposed development within the East Cherry Creek basin drain to a proposed pond at the northeast of the site.

### Neighboring Areas

The surrounding areas include Flying Horse North Filing No. 1 to the north and east, Flying Horse North Golf Course throughout the filing's boundary, and Cathedral Pines Filing No. 2 to the south. The land uses at the perimeter of Filing No. 3 include residential and the commercial golf course.

### Construction Activity

The proposed development is to only include construction of the roadway, utilities, and detention ponds. Construction activities include but are not limited to corridor grading, pavement installation, and final stabilization of the proposed roadways and right-of-way corridors, storm sewer and culvert pipe installation, construction of a rock chute, and pond construction for Ponds A and B which include forebays, trickle channels, micropools, outlet structures, and emergency spillways.

A vertical/final phase plan is included within the GEC and SWMP report for the future development of the 51 2.5-acre single-family residential estate lots which will include construction of homes in the vicinity of the designated pad sites shown on the plans, driveways with culvert pipes, and any hardscape and landscaping. The future Flats development area is not to be constructed at this time and is not a part of this GEC and SWMP report scope of work. A future filing will require an approved GEC and SWMP report for construction of the Flats development beyond the proposed public right-of-way covered in this report.

Construction will begin with setting up perimeter controls, followed by corridor grading for the roadways, installation of erosion control blanket for roadside swales, storm pipe and drainage structure installations. Construction will be completed with final stabilization including seeding.

Temporary stabilization measures (silt fence and vehicular tracking control) will be installed prior to construction. Stabilized staging area(s) and stockpile management area(s) are shown on the GEC plans. During construction, temporary stabilization measures, including inlet protection, temporary sediment basins, and erosion control blanket, will be utilized to control stormwater runoff. The proposed ponds will serve as temporary sediment basins to collect stormwater runoff and sediment during construction activities for disturbed areas. Other temporary sediment basins capture runoff and sediment for the areas of disturbance greater than one acre that are not tributary to the larger permanent ponds. Once final stabilization is achieved, temporary erosion control measures will be removed.

No off-site disturbance is anticipated. No control measures will be located outside the property line and limits of disturbance.

## II. Construction Phasing

### Phasing and Sequence Schedule

The proposed sequence of major construction activities and Construction Control Measures for the project as are follows:

1. Install VTC, SSA, SP, TSB and other perimeter erosion and stormwater control measures (i.e. silt fence, construction fence etc.) (Summer 2024)
2. Install Inlet Protection control measures (Summer 2024)
3. Clear, grub and grade site for improvements. Install ECB per GEC plans. (Summer 2024)
4. Excavate and install improvements including underground piping and drainage structures. (Fall 2024)
5. Landscaping, restoration and final stabilization. Ensure final stabilization achieved prior to site closure. (Fall/Winter 2024)

## 6. Remove construction BMPs (Fall/Winter 2024)

### Construction Documentation

Construction drawings are provided with this document showing the Grading and Erosion Control plan for this project and are intended to be a “living” document used by the SWMP Manager to document construction activities. See Appendix E for record log.

## III. Pre-Development Conditions and Soils

### Floodway

According to the current FEMA Flood Insurance Rate Maps FEMA FIRM 08041C0305G and FIRM 08041C0315G, revised December 7, 2018, this site is designated as Zone X (outside 0.2% chance of flood). See Appendix A for FEMA FIRM Exhibit.

### Existing Vegetation

The existing vegetative cover is 90 percent as evidenced by a field survey and aerial imagery. The existing vegetation includes native grasses and weeds, shrubs, and pinyon pine trees. Previous clearing of future planned roadways was done several years ago, and native grass and weeds have covered those areas.

### Existing Drainage Patterns

The site is tributary to the Black Squirrel Creek drainageway and the East Cherry Creek drainageway. Stormwater from the site flows into respective ponds which outlet onsite within the filing boundary. The northeast Pond A outlets due east toward the existing Flying Horse North Golf Course which ultimately drains to the East Cherry Creek. The southwest Pond B outlets due west toward Highway 83 which ultimately drains to the Black Squirrel Creek. There are no stream crossings located in within the construction boundary.

### Existing Slopes

Unresolved from Submittal 1: SWMP Checklist Item 13 - Provide size and type of stormwater outfall - is it a XX" diameter pipe outfalling to a channel? Clarify?

The Filing No. 3 area consists of varied slopes between 2% and 20% with several peaks and gullies throughout the property.

### Soils

According to the US Department of Agriculture Natural Resources Conservation Service Soil Survey of El Paso County, Colorado, the primary soil through the filing is Elbeth sandy loam within the Black Squirrel Creek Basin area and Peyton sandy loam and Peyton-Pring complex within the East Cherry Creek basin area. All soil types within the filing are within Hydrologic Soil Group B. Runoff coefficients for this study were selected based on "A/B" type soils. This agrees with the MDDP report which also identified these soil classifications and hydrologic soil groups for the area. A copy of the soil map for the site can be found in Appendix A.

The existing soil types have a slight potential for erosion which can be mitigated by employing appropriate downstream construction BMPs before/during/after construction to limit potential impacts to stormwater discharges. The potential impacts are sediment discharge into the existing stormwater conveyance system.



Unresolved from Submittal 1: SWMP Checklist Item 14 - Provide the location and description of any anticipated allowable non-stormwater discharge. If no non-stormwater discharge is anticipated add a statement clarifying that.

## IV. Description of Potential Pollutants

Potential sources of sediment to stormwater runoff include earth moving and concrete activities associated with grading, residential structure construction including concrete foundations and hardscape, and landscaping.

Potential pollutants and sources other than sediment to stormwater runoff include trash, debris, fueling and equipment failure. Materials of significance stored on the project site include: sediment, concrete washout, cement, trash & debris, fuels and oils.

Construction activities can produce a variety of pollutants that can potentially cause stormwater contamination. Grading activities remove rocks, vegetation and other erosion controlling surfaces and can result in the exposure of underlying soil to the elements, which can then be displaced into water sources.

Wind and erosion and vehicular transport can produce sediment debris.

Potential Sources of Pollution:

1. Potential sources of pollution from construction activities include

- a. Disturbed or stored soils
- b. Vehicle tracking of sediment
- c. Loading & unloading operations
- d. Outdoor Storage activities
- e. Vehicle and Equipment Maintenance/Fueling
- f. Dust or Particulate Generating Processes
- g. Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents etc.
- h. On-site waste management (waste piles, liquid wastes, dumpsters)
- i. Concrete truck/equipment washing (washing truck chute and associated fixtures)
- j. Dedicated asphalt, concrete batch plants and masonry mixing stations
- k. Non-industrial waste (worker trash and portable toilets)

Unresolved from Submittal 1: SWMP Checklist Item 12 - This line is checked "N/A" but in this text it is stated that batch plants are a source of pollution. If N/A - remove or below provide spill prevention for batch plants.

## V. Areas and Volumes

Unresolved from Submittal 1: verify - the ESQCP states that 185 ac is to be disturbed. Verify quantity and update so both match.

The filing total 166.4 acres that is expected to be disturbed per the Grading and Erosion Control Plan for roadway construction and the full vertical construction of each single-family lot development assuming future lot development requires full lot disturbance which is a conservative estimate. The initial construction activity will be for construction of the roadway which has anticipated limits of disturbance/construction of approximately 37.5 acres or 22.5 percent of the filing. These numbers are adjusted using a fill factor of 1.10.

### Initial Roadway Construction Phase:

Cut Quantity : 136,700 c.y.

Fill Quantity: 137,420 c.y.

Net: 2,280 c.y. cut.

The full build-out earthwork quantities cannot be quantified at this stage as each respective lot disturbance and construction will vary by architecture, layout, and plot plan.



## VI. Self-Inspections

Self-inspections of the Construction Control Measures must be completed by the certified GEC Administrator. The below provides the minimum to satisfy the El Paso County self-inspection requirements. A more frequent self-inspection schedule may be required to ensure Control Measures are operating in compliance with the approved GEC plan.

### 1. Inspection Schedules:

- a. The GEC Administrator shall make a thorough inspection of the Control Measures:
  - i. At least once every fourteen (14) calendar days.
  - ii. Within 24 hours following any precipitation event (i.e. rain, snow, hail etc.) that causes surface erosion.
    - Alternatively, the GEC Administrator can perform a thorough inspection of the Control Measures once every seven (7) days and forego post-precipitation inspections.
- b. For sites where construction activities have completed and final stabilization measures installed but final stabilization has not yet been achieved, the GEC Administrator shall make a thorough inspection of the Control Measures:
  - i. At least once every month
  - ii. Within 72 hours following any precipitation event that causes surface erosion

### 2. Inspection Procedures:

- a. Site Inspection & Observation Items:
  - i. Limits of disturbance perimeter and stormwater discharge points
  - ii. All disturbed areas to ensure necessary Construction Control Measures are in place to control potential stormwater runoff.
  - iii. Areas used for material/waste storage.
  - iv. Any areas having a signification potential for storm water pollution (i.e site entrances, concrete washout areas etc.)
  - v. All Construction Control Measures identified on the GEC plans.
- b. Inspection Requirements:
  - i. Determine any locations, or potential locations, where pollutants and stormwater may be exiting the site/entering the receiving waters.
  - ii. Evaluate Construction Control measures and determine if they are constructed in accordance with the latest revision of the approved GEC plan and operating effectively.
  - iii. Provide recommendations for the need of additional Construction Control measures and the maintenance of existing measures in disrepair to ensure complication with the El Paso County Stormwater Construction Manual.
- c. Construction Control Measure Maintenance/Replacement:
  - i. The GEC administrator shall ensure sediment has been removed from perimeter controls and relocated to an area without the potential for sediment to discharge from the site
  - ii. The GEC administrator shall ensure diversion ditches and temporary sediment ponds have not accumulated excess sediment that impedes their functionality.

- iii. The GEC administrator shall ensure that failed Control Measures are repaired/reinstalled within three (3) calendar days, according to the El Paso County Stormwater Control Measure details, to ensure pollutants and/or sediment do not discharge from the site. GEC details are provided in Appendix B.
- d. Documentation:
  - i. Update the GEC plan to document the installation/revision of Control Measures
  - ii. Identify Control Measure deficiencies and that noncompliance is resolved within three (3) calendar days.
  - iii. Identify Self-Inspection schedule in most recent inspection form
  - iv. Complete and submit Self-Inspection forms to the El Paso County within five (5) business days of the completed inspection
  - v. Ensure Self-Inspections are available, either physically or electronically, throughout the duration of the project
  - vi. Self-Inspection Report shall contain at least the following:
    - Inspection Date
    - Name and title of the GEC Administrator performing inspection
    - Location(s) of illicit discharges of stormwater, sediment or pollutants from the site
    - Location(s) of Construction Control Measures in need of maintenance/repair
    - Location(s) of Construction Control Measures that failed to operate as designed or proved inadequate
    - Location(s) of additional Construction Control Measures not shown on the latest, approved revision of the GEC plan
    - Any deviations from the minimum inspection schedule
    - **Signature of GEC Administrator**

Unresolved from Submittal 1: SWMP Checklist Item 25 - Record keeping procedures to include signature on inspection logs

## VII. Materials Handling

1. General Materials Handling Practices:
  - a. Potential pollutants shall be stored and used in a manner consistent with the manufacturer's instructions in a secure location. To the extent practical, material storage areas should be located away from storm drain inlets and should be equipped with covers, roofs or secondary containment as required to prevent stormwater from contacting stored materials. Chemicals that are not compatible shall be stored in segregated areas so that spill materials cannot combine and react.
  - b. Disposal of materials shall be in accordance with the manufacturer's instructions and applicable local, state, and federal regulations.
  - c. Materials no longer required for construction shall be removed from the site as soon as possible.
  - d. Adequate garbage, construction waste, and sanitary waste handling and disposal facilities shall be provided as necessary to keep the site clear of obstruction and Control Measures clear and functional.
2. Specific Materials Handling Practices:
  - a. All pollutants, including waste materials and demolition debris, that occur onsite during construction shall be handled in a way that does not contaminate stormwater.
  - b. All chemicals including liquid products, petroleum products, water treatment chemicals, and wastes stored onsite shall be covered and protected from vandalism.



Unresolved from Submittal 1: SWMP Checklist Item 12 - This line is checked "N/A" but above in this text it is stated that batch plants are a source of pollution. If N/A - remove earlier mention and add a statement in section VIII that there will be no dedicated batch plants on site

- c. Maintenance, fueling, and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, degreasing operation, fuel tank drain down and removal, and other activities which may result in the accidental release of contaminants, shall be conducted under cover during wet weather and on an impervious surface to prevent release of contaminants onto the ground. Materials spilled during maintenance operations shall be cleaned up immediately and properly disposed of.
- d. Wheel wash water shall be settled and discharged onsite by infiltration.
- e. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Follow manufacturer's recommendations for application rates and procedures.
- f. pH-modifying sources shall be managed to prevent contamination of runoff and stormwater collected onsite. The most common sources of pH-modifying materials are bulk cement, cement kiln dust (CKD), fly ash, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

## VIII. Spill Prevention & Response Plan

1. The primary objective in responding to a spill is to quickly contain the material and prevent or minimize their mitigation into stormwater runoff and conveyance systems. If the release has impacted onsite stormwater, it is critical to contain the released materials onsite and prevent their release into receiving waters.
2. Spill Response Procedures:
  - a. Notify site superintendent immediately when a spill, or the threat of a spill, is observed. The superintendent shall assess the situation and determine the appropriate response.
  - b. If spills represent an imminent threat of escaping onsite facilities and entering the receiving waters, site personnel shall respond immediately to contain the release and notify the superintendent once the situation has stabilized.
  - c. The site superintendent shall be responsible for completing a spill reporting form and for reporting the spill to the appropriate agency.
  - d. Spill response equipment shall be inspected and maintained as necessary to replace any materials used in spill response activities.
3. Spill kits shall be on-hand at all fueling sites. Spill kit locations shall be reported to the GEC administrator.
4. Absorbent materials shall be on-hand at all fueling areas for use in containing advertent spills. Containers shall be on-hand at all fueling sites for disposal of used absorbents.
5. Recommended components of spill kits include the following:
  - a. Oil absorbent pads
  - b. Oil absorbent booms
  - c. 55-gallon drums
  - d. 9-mil plastic bags
  - e. Personal protective equipment including gloves and goggles
6. Concrete wash water: unless confined in a pre-defined, bermed containment area, the cleaning of concrete truck delivery chutes is prohibited at the job site.
7. Notification procedures:
  - a. In the event of an accident or spill, the GEC administrator shall be notified.

- b. Depending on the nature of the spill and material involved, the Colorado Department of Public Health and Environment, downstream water users, or other agencies may also need to be notified.
- c. Any spill of oil which 1) violates water quality standards, 2) produces a “sheen” on a surface water, or 3) causes a sludge or emulsion, or any hazardous substance release, or hazardous waste release which exceeds the reportable quantity, must be reported immediately by telephone to the National Response Center Hotline at (800) 424-8802.

## IX. Implementation of Control Measures

Stormwater control measures must be installed according to El Paso County design specifications, presented in Appendix D, and the approved Grading and Erosion Control plan this report supports. Within the context of this CSWMP’s construction activities the following control measures, at a minimum, are required:

- Perimeter Silt Fence
- Vehicle Tracking Control
- Stabilized Staging Area
- Stockpile Management
- Inlet Protection
- Culvert Inlet Protection
- Temporary Outlet Protection
- Erosion Control Blanket
- Diversion Ditches (Earth Dikes & Drainage Swales)
- Temporary Sediment Basins
- Seeding & Mulching

Unresolved from Submittal 1: SWMP Checklist Items 18 and 19 - Provide a narrative for all structural and non-structural BMPs, not just a list.

Unresolved from Submittal 1: SWMP Checklist Item 13 - Discuss SW pollutant control measures for waste disposal and off-site soil tracking.

Unresolved from Submittal 1: GEC Plan also includes Rock socks, check dams, and CWA. Include those BMPs in the SWMP narrative.

Additional control measures may be required at the discretion of the County Stormwater Inspector.

## X. Final Stabilization & Long-Term Stormwater Management Plan

1. Temporary seeding and mulching will be installed to provide interim stabilization prior to final landscaping installation (Refer to approved Landscape Plan). Final stabilization will be achieved at time of final landscaping. See approved landscaping plans for final stabilization details. Final stabilization is met when 70% of pre disturbance levels, not including noxious weeds, are stabilized. Final stabilization must be achieved prior to removal of temporary stormwater control measures. Anticipated date of final stabilization is Fall 2023; however this is subject to change. Long term stormwater management will be provided in the onsite, private full spectrum detention pond. See the Permanent Control Measure Plans for construction details of the permanent full spectrum detention pond. See below for seeding and mulching details:
  - a. Prior to seeding, fill any eroded rills and gullies with topsoil.
  - b. Ensure all areas are seeded and mulched per the County Stormwater Construction Manual.
  - c. Continue monthly self-inspections of final stabilization methods and the stormwater management system to ensure proper function. If repairs are needed, reseed and re-mulch as needed.
  - d. Control noxious weeds in a manner acceptable to the GEC inspector.

Unresolved from Submittal 1 - There are two ponds. Pond A in the north eastern region of the development and Pond B in the southwestern region of the development.

- e. Seed Mix: See Appendix D for approved seed mixes.
- f. Seeding Requirements:
  - i. Drill seed whenever possible, seed depth must be 1/3 to 1/2 inch when drill-seeding. Cross drilling should be used whenever possible with the seed divided between the two operations. The second drilling should be perpendicular to the first.
  - ii. When drill seeding is not possible or on slopes greater than 3:1, hydro-seeding with tackifier may be substituted at the discretion of the GEC inspector. Hydro-seeding must be lightly raked into soil. Seeding rates are presented in Appendix D.
  - iii. All seeded areas must be mulched.
- g. Mulching Requirements:
  - i. Mulching shall be completed as soon as practical after seeding but no more than fourteen (14) days after planting. Erosion control blanket can be used in place of the below mulching methods.
  - ii. Hay or straw mulch:
    - 1. Only certified weed-free and certified-seed free mulch may be used. Must be applied at 2 tons/acre and adequately secured.
    - 2. Crimping shall not be used on slopes greater than 3:1, tackifier must be used in place.
  - iii. Hydraulic mulching:
    - 1. Allowable on steep slopes or areas with limited access
    - 2. If hydro-seeding is used, mulching must be applied secondly.
    - 3. Wood cellulose fibers mixed with water must be applied at a rate of 2,000-2,500 lbs/acre, and tackifier applied at a rate of 100 lbs/acre.

Unresolved from Submittal 1:  
SWMP Checklist Item 26 - Provide  
a statement clarifying if the project  
relies on control measures  
owned/operated by another entity.

## XI. References

El Paso County – Drainage Criteria Manual, latest revision October 31, 2018

El Paso County – Engineering Criteria Manual, latest revision October 14, 2020

Mile High Flood District Urban Storm Drainage Criteria Manual Volumes 1, 2, and 3; latest revisions

Unresolved from Submittal 1: SWMP Checklist Item 21 - Add text providing procedure describing how the SWMP is to be revised. Add text stating that the SWMP should be viewed as a "living document" that is continuously being reviewed and modified as a part of the overall process of evaluating and managing SW quality issues at the site. The QSM shall amend the SWMP when there is a change in design, construction, O&M of the site which would require the implementation of new or revised BMPs or if the SWMP proves to be ineffective in achieving the general objectives of controlling pollutants in SW discharges associated with construction activity or when BMPs are no longer necessary and are removed.



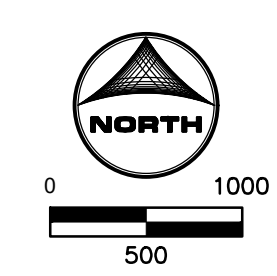
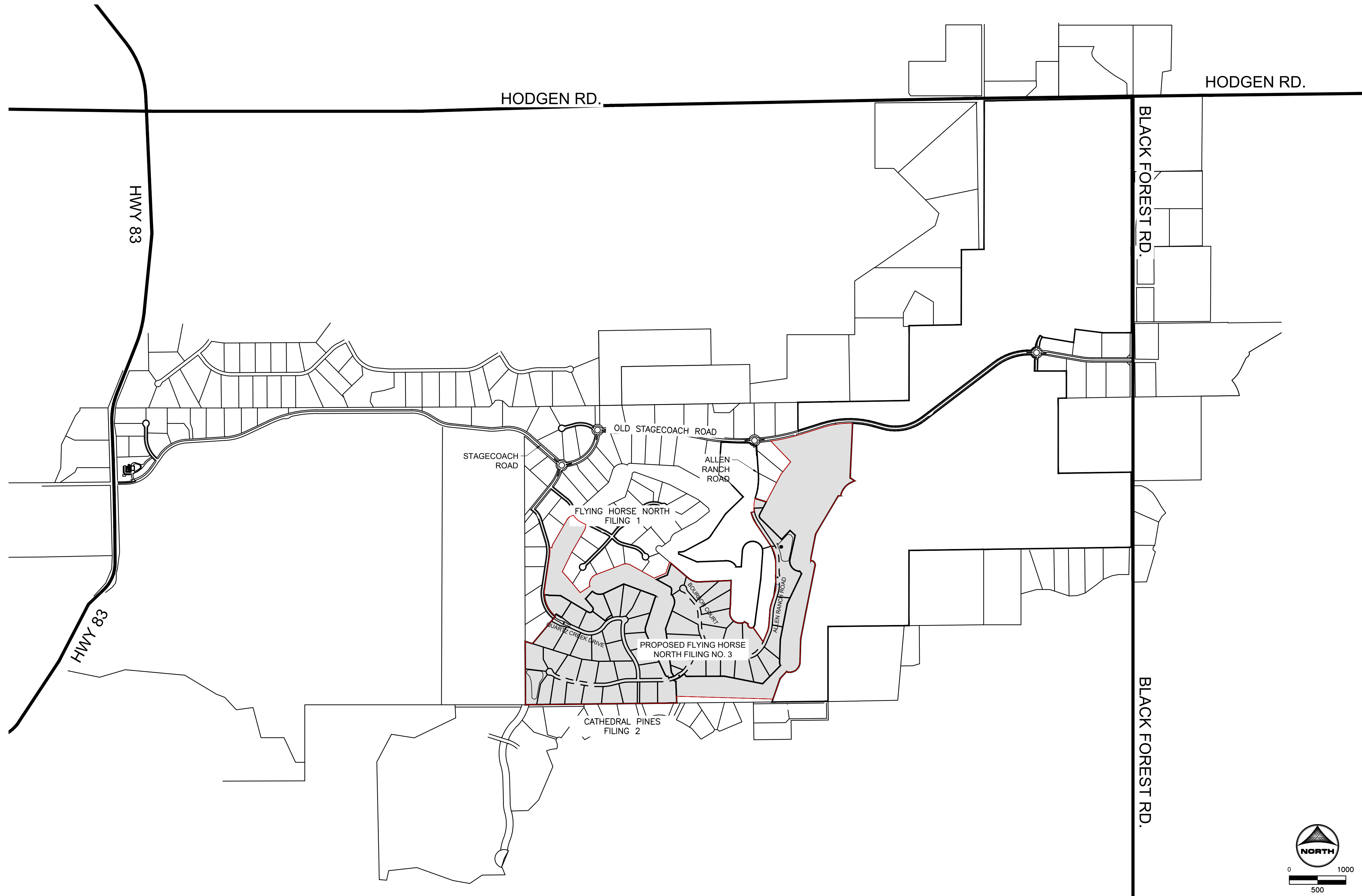
Flying Horse North Filing No. 3  
Stormwater Management Plan  
Project No.: 211030.20  
El Paso County, Colorado

## **APPENDIX A – VICINITY MAP & NRCS SOIL SURVEY & FEMA MAP**

---

# FLYING HORSE NORTH FILING NO. 3 VICINITY MAP

A TRACT OF LAND BEING A PORTION OF SECTION 36, TOWNSHIP 11 SOUTH,  
RANGE 66 WEST OF THE 6TH P.M., AND A PORTION OF THE NORTHWEST QUARTER OF  
SECTION 31, TOWNSHIP 11 SOUTH, RANGE 65 WEST OF THE 6TH P.M.,  
CITY OF COLORADO SPRINGS, COUNTY OF EL PASO, STATE OF COLORADO



LYON, RICHEL, 3/5/2024 5:59 AM  
  
 HR GREEN - Xref: xref-1-dh01-1030; Vicinity-Map; xc--dgn--030.202; xc--row--030.202

DRAWN BY: DLH      JOB DATE: 3/5/2024  
 APPROVED: KMH      JOB NUMBER: 211030  
 CAD DATE: 3/5/2024  
 CAD FILE: J:\2021\211030\CAD\Drawings\Estates\_CDs\Vicinity\_Map

BAR IS ONE INCH ON  
 OFFICIAL DRAWINGS.  
 0"      1"  
 IF NOT ONE INCH,  
 ADJUST SCALE ACCORDINGLY.

NO.	DATE	BY	REVISION DESCRIPTION

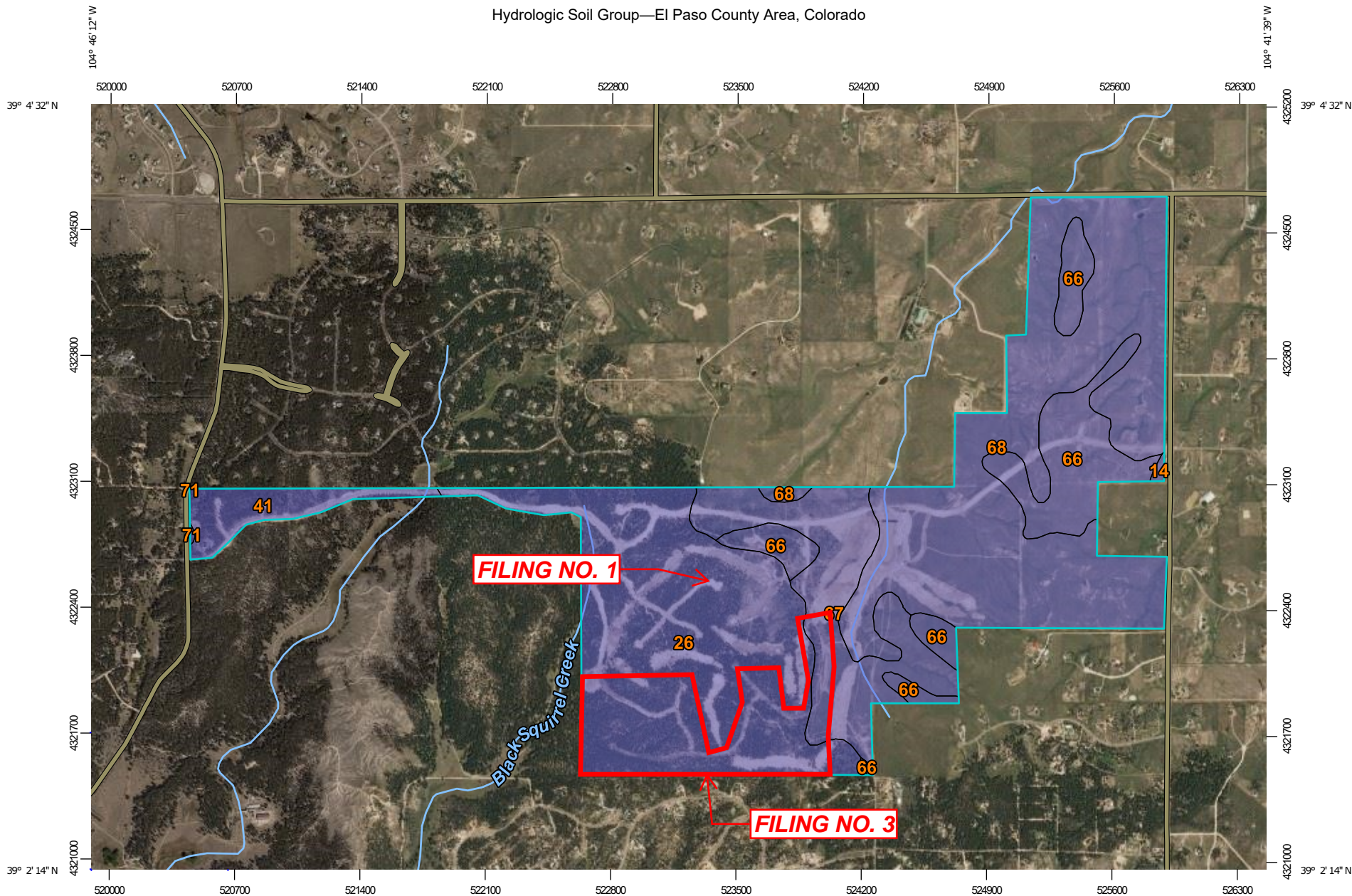
HR GREEN - COLORADO SPRINGS  
 1975 RESEARCH PARKWAY SUITE 230  
 COLORADO SPRINGS, CO 80920  
 PHONE: 719.300.4140  
 FAX: 713.965.0044

FLYING HORSE NORTH FILING 3  
 PRI #2, LLC.  
 EL PASO COUNTY, CO

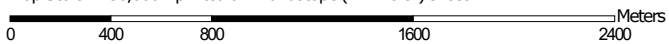
CONSTRUCTION DOCUMENTS  
 VICINITY MAP

SHEET  
**VM**  
 1

Hydrologic Soil Group—El Paso County Area, Colorado



Map Scale: 1:30,000 if printed on A landscape (11" x 8.5") 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 Rating Polygons

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Lines

 A  
 A/D  
 B  
 B/D  
 C  
 C/D  
 D  
 Not rated or not available

#### Soil Rating Points

 A  
 A/D  
 B  
 B/D

 C  
 C/D  
 D  
 Not rated or not available

### 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.

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: Aug 19, 2018—May 26, 2019

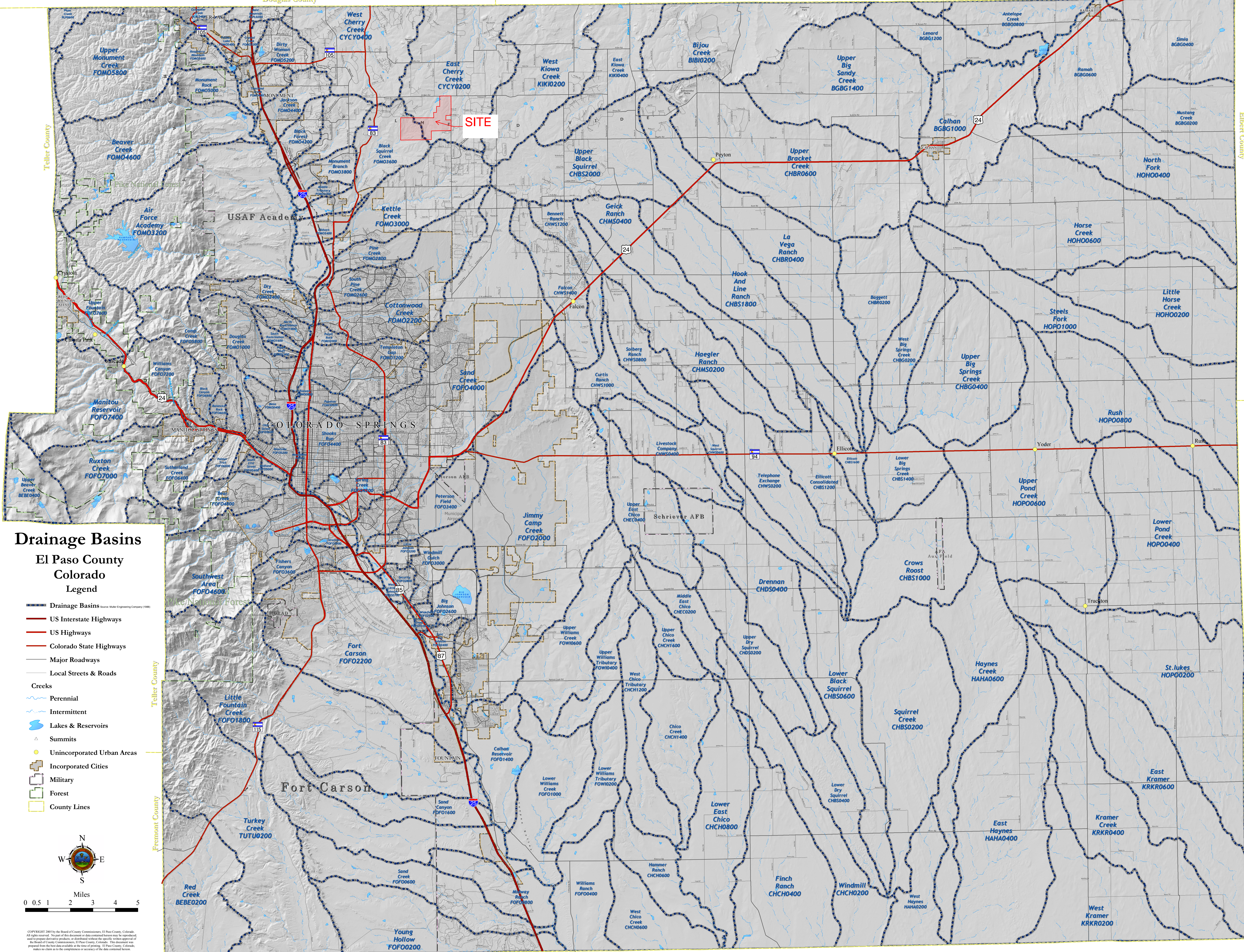
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
14	Brussett loam, 1 to 3 percent slopes	B	1.9	0.1%
26	Elbeth sandy loam, 8 to 15 percent slopes	B	474.2	33.7%
41	Kettle gravelly loamy sand, 8 to 40 percent slopes	B	53.4	3.8%
66	Peyton sandy loam, 1 to 5 percent slopes	B	160.9	11.4%
67	Peyton sandy loam, 5 to 9 percent slopes	B	182.8	13.0%
68	Peyton-Pring complex, 3 to 8 percent slopes	B	533.4	37.9%
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	0.6	0.0%
<b>Totals for Area of Interest</b>			<b>1,407.3</b>	<b>100.0%</b>

Douglas County

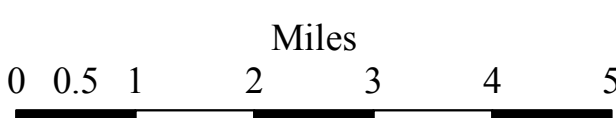
Elbert County



# Drainage Basins

## El Paso County Colorado Legend

- Drainage Basins (Source: Mule Engineering Company 1988)
- US Interstate Highways
- US Highways
- Colorado State Highways
- Major Roadways
- Local Streets & Roads
- Creeks**
- Perennial
- Intermittent
- Lakes & Reservoirs
- Summits
- Unincorporated Urban Areas
- Incorporated Cities
- Military
- Forest
- County Lines



Copyright 2007 by the Board of County Commissioners, El Paso County, Colorado. All rights reserved. No part of this document or data contained herein may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording, or by any information storage and retrieval system, without the prior written permission of the Board of County Commissioners, El Paso County, Colorado. This document was prepared from the best data available at the time of printing. El Paso County, Colorado, makes no claim as to the completeness or accuracy of the data contained herein.

Teller County

Fremont County

Elbert County

Lincoln County

Pueblo County

**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, NUNCS12  
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.

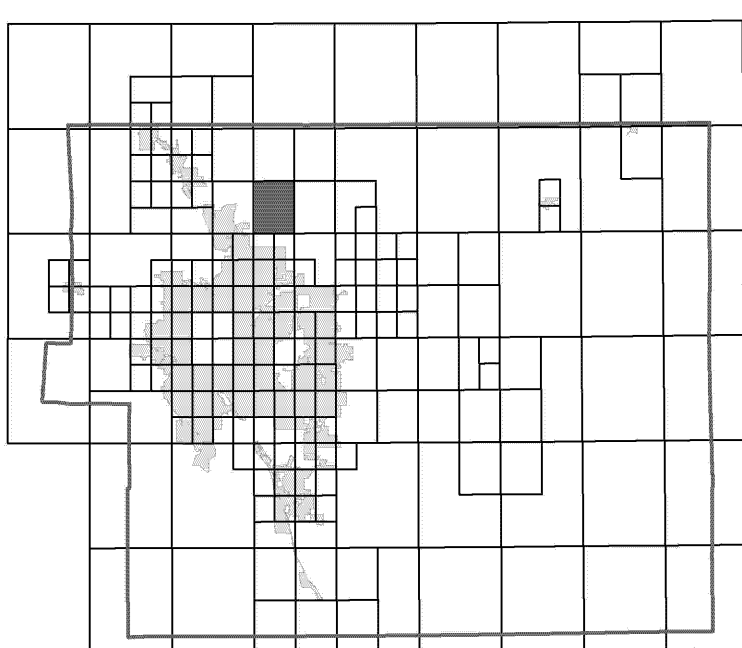
Contact **FEMA Map Service Center (MSC)** via the FEMA Map Information eXchange (FMIX) 1-877-336-2627 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this 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	

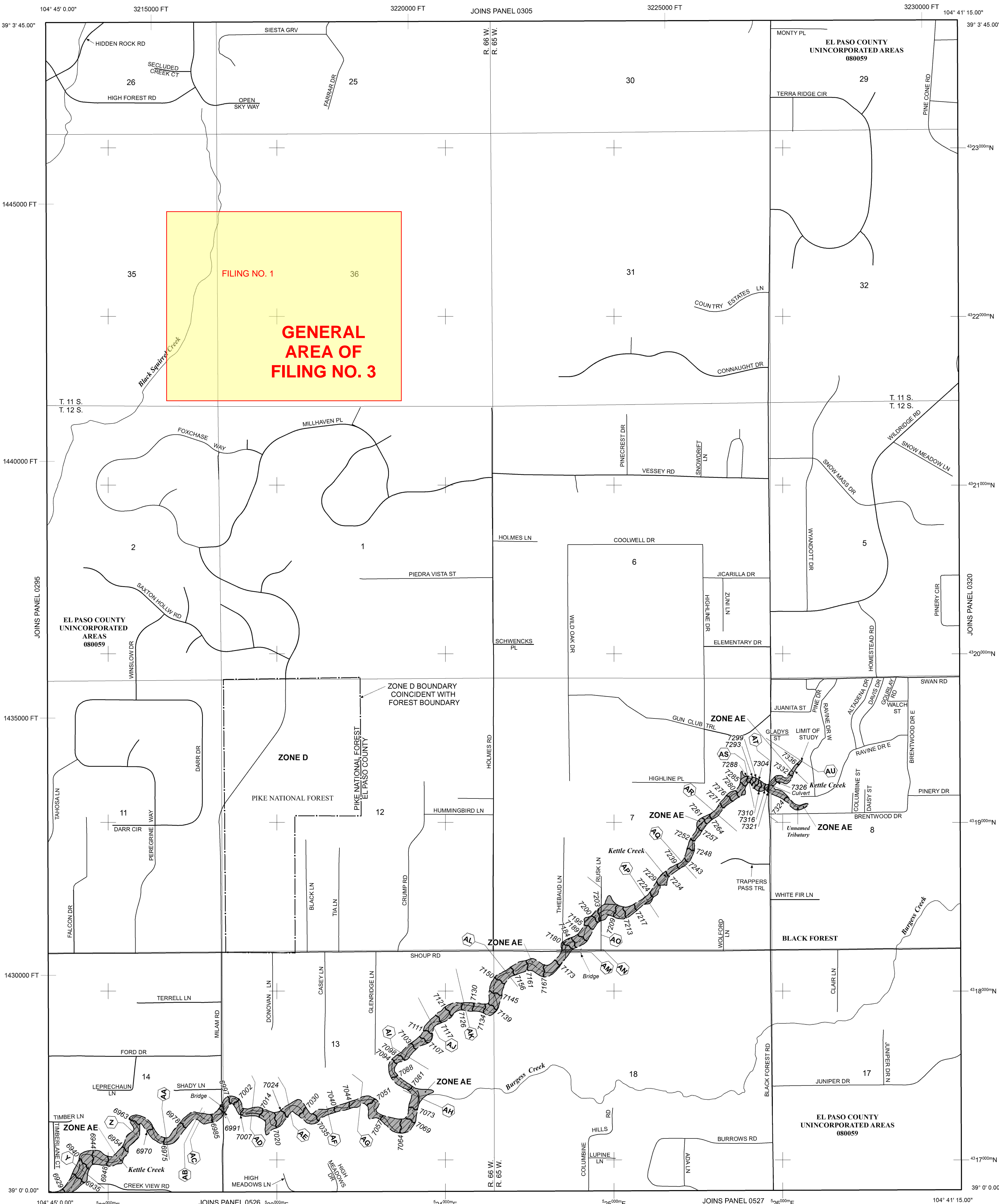
**Panel Location Map**



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



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



**LEGEND**

- SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD
- The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being 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.

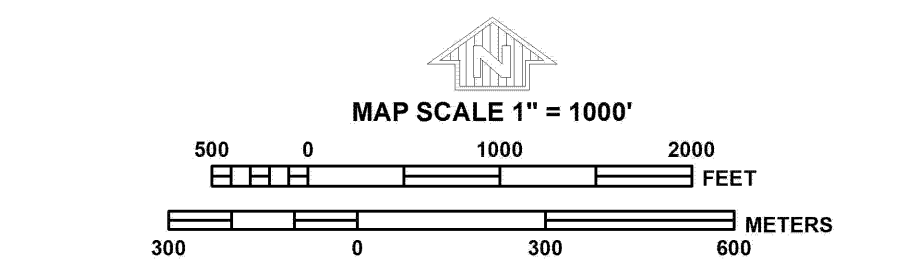
- Base Flood Elevation line and value; elevation in feet\* (EL 987)
- Cross section line
- Transsect line

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

- 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.



**NFIP** **PANEL 0315G**

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

**PANEL 315 OF 1300**  
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:  
COMMUNITY NUMBER PANEL SUFFIX  
EL PASO COUNTY 080059 0315 0

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**  
08041C0315G

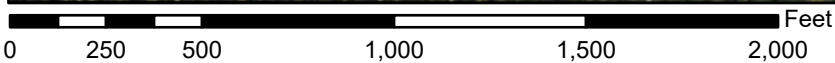
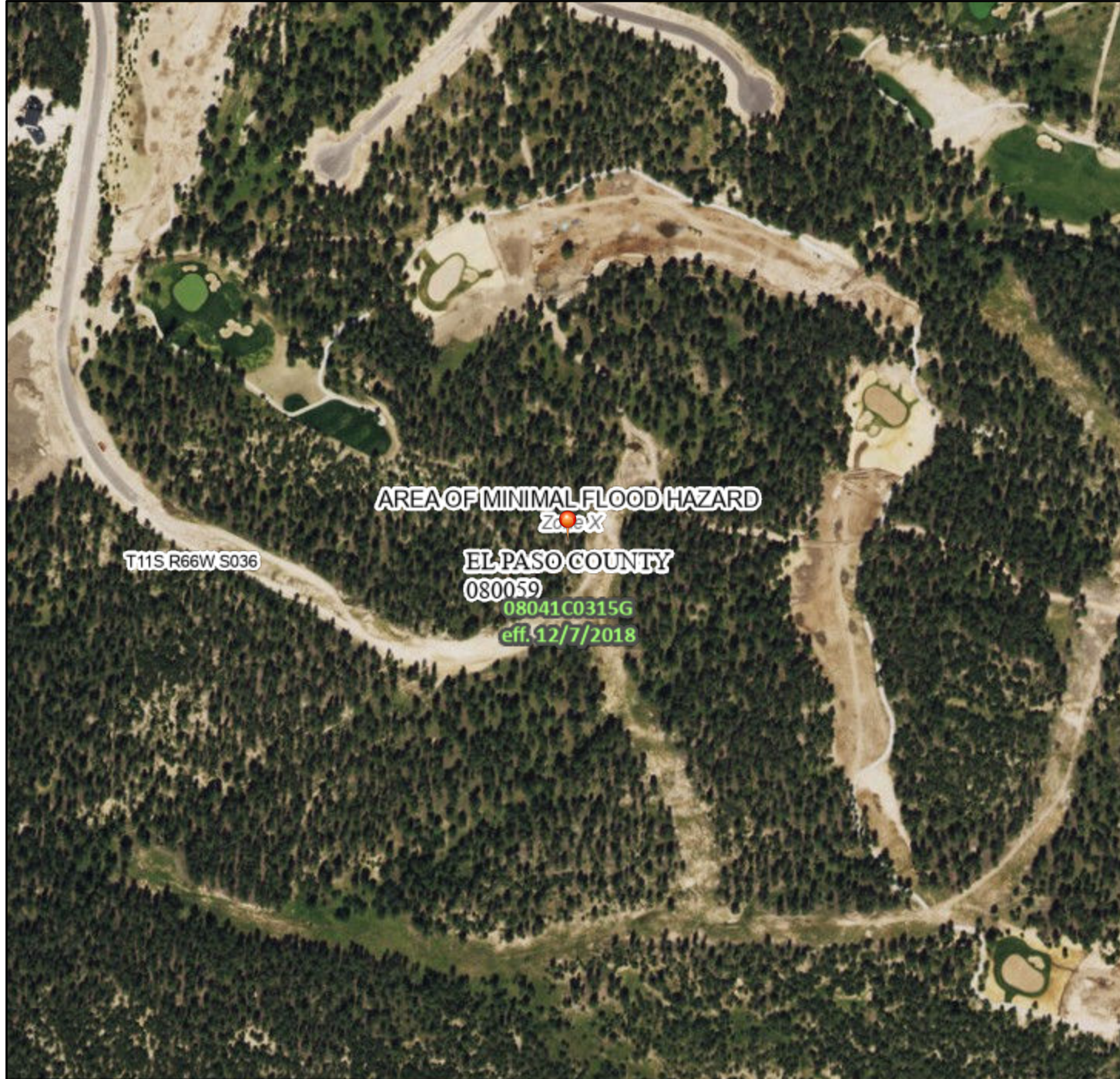
**MAP REVISED**  
DECEMBER 7, 2018

Federal Emergency Management Agency

# National Flood Hazard Layer FIRMMette



104°44'16"W 39°2'59"N



1:6,000

104°43'38"W 39°2'31"N

Basemap Imagery Source: USGS National Map 2023

## Legend

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

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		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 <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
OTHER FEATURES		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation 17.5
		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
MAP PANELS		Digital Data Available
		No Digital Data Available
		Unmapped



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

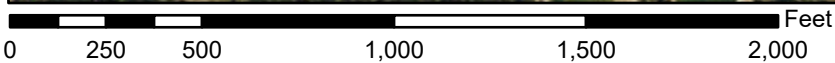
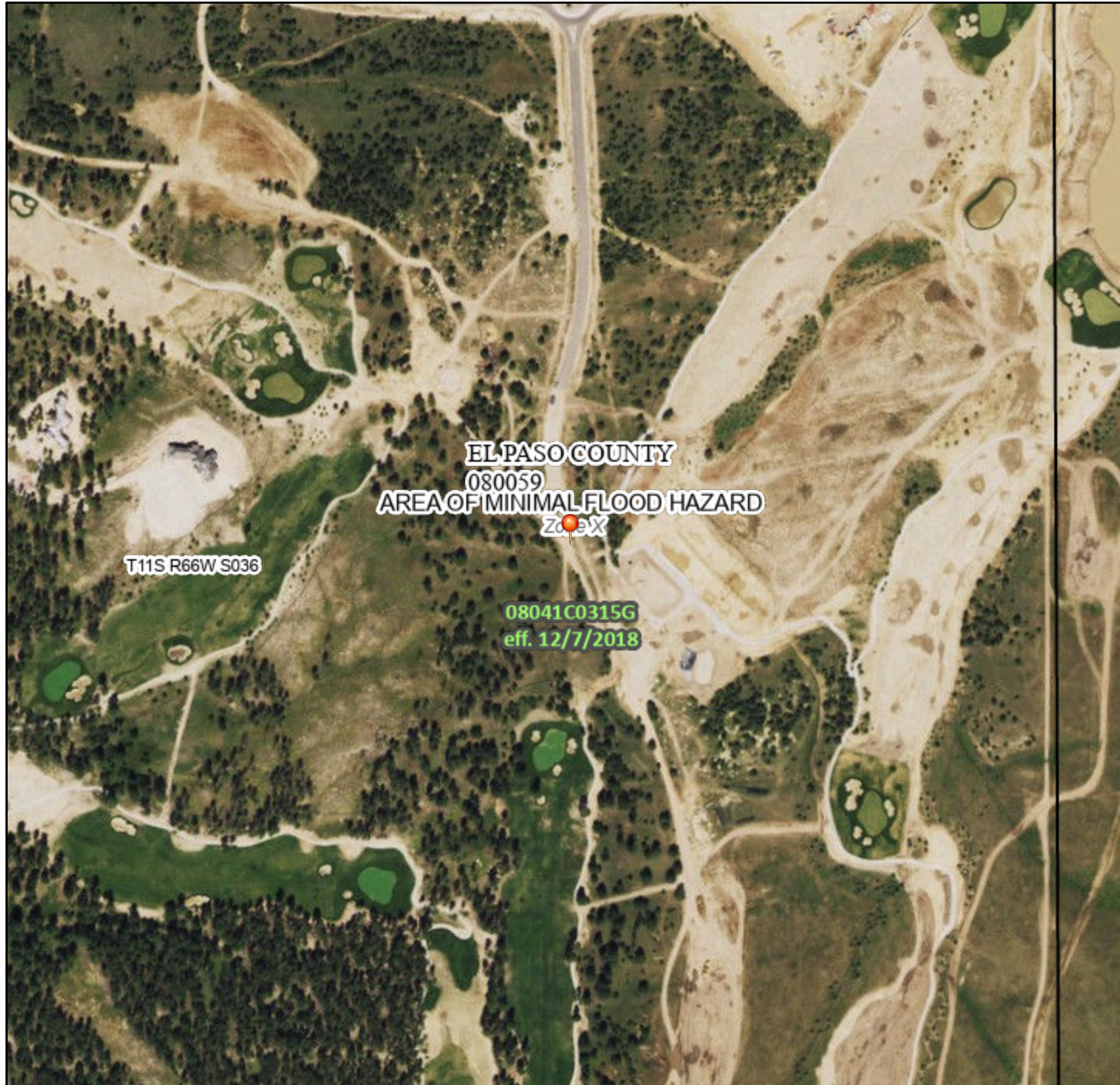
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **8/2/2023 at 11:16 AM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded 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.

# National Flood Hazard Layer FIRMette



104°43'45"W 39°3'17"N



1:6,000

104°43'8"W 39°2'49"N

Basemap Imagery Source: USGS National Map 2023

## Legend

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

<b>SPECIAL FLOOD HAZARD AREAS</b>		Without Base Flood Elevation (BFE) <i>Zone A, V, A99</i>
		With BFE or Depth <i>Zone AE, AO, AH, VE, AR</i>
		Regulatory Floodway
<b>OTHER AREAS OF FLOOD HAZARD</b>		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 <i>Zone X</i>
		Future Conditions 1% Annual Chance Flood Hazard <i>Zone X</i>
		Area with Reduced Flood Risk due to Levee. See Notes. <i>Zone X</i>
		Area with Flood Risk due to Levee <i>Zone D</i>
<b>OTHER AREAS</b>		NO SCREEN Area of Minimal Flood Hazard <i>Zone X</i>
		Effective LOMRs
<b>GENERAL STRUCTURES</b>		Area of Undetermined Flood Hazard <i>Zone D</i>
		Channel, Culvert, or Storm Sewer
		Levee, Dike, or Floodwall
<b>OTHER FEATURES</b>		20.2 Cross Sections with 1% Annual Chance Water Surface Elevation
		17.5
		8 Coastal Transect
		5.13 Base Flood Elevation Line (BFE)
		Limit of Study
<b>MAP PANELS</b>		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped
		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 **8/2/2023 at 11:04 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.



Flying Horse North Filing No. 3  
Stormwater Management Plan  
Project No.: 211030.20  
El Paso County, Colorado

## **APPENDIX B – GEC PLANS**



## **APPENDIX C – CALCULATIONS**



**SEDIMENT BASIN A - POND A INITIAL PHASE**  
**SEDIMENT BASIN STAGE-STORAGE CALCULATIONS**

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	ft.
							in Cu-Ft*	in Acre-Ft*	
7559.0	0								
7560.0	1091		365		365	0.008			
7561.0	7411		3,782		4,147	0.095			
7562.0	17259		11,993		16,140	0.371	16,784	0.385	7,562.03
7563.0	23517		20,307		36,447	0.837	50,353	1.156	7,563.53
7564.0	28715		26,073		62,520	1.435			
7565.0	34100		31,369		93,889	2.155			
7566.0	40636		37,320		131,209	3.012			
7567.0	48445		44,483		175,693	4.033			
7568.0	57141		52,733		228,426	5.244			
7569.0									
7570.0									
7571.0									
7572.0									
7573.0									
7574.0									
7575.0									
7576.0									
7577.0									
7578.0									
7579.0									
7580.0									

COLUMN 1	COLUMN 2	CENTROID EL.
ORIFICE 1-1	ORIFICE 1-2	7,562.03
ORIFICE 2-1	ORIFICE 2-2	7,562.36
ORIFICE 3-1	ORIFICE 3-2	7,562.69
ORIFICE 4-1	ORIFICE 4-2	7,563.02
ORIFICE 5-1	ORIFICE 5-2	7,563.35

SED Basin riser pipe orifice calculations		
$A_0 =$		area per row of orifices spaced on 4" centers (in <sup>2</sup> )
$V =$	1.1559	design volume (acre feet) * < 15 ac.
$T_0 =$	72	time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)
$H =$	1.502	depth of volume (ft)
$S =$	0.0001	Trickel channel slope (ft/ft) [Use 0.0001 for flat slope]
		$S = 0\%$
$A_0 =$	2.9919 in <sup>2</sup>	2.9831 in <sup>2</sup>
$Dia =$	1.95 in	*EXCEEDS 1", USE TWO COLUMNS @ $A_0 = 0.55$ in <sup>2</sup>
	3.90	Dia = /2      0.55 in <sup>2</sup> = 13/16 in. dia.
	7.80	Dia = /4
	15.59	Dia = /8
	31.18	Dia = /16
	62.36	Dia = /32

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	17.140	Acre	
Undisturbed area-acres	8.150	Acre	
Total Area-acres	25.290	Acre	
Sediment volume	50,353	cu-ft	1.1559 Acres-ft
Volume below lowest hole	16,784	cu-ft	0.3853 Acres-ft
Volume above lowest hole	50,353	cu-ft	1.1559 Acres-ft
Total Volume	67,121	cu-ft	1.5409 Acres-ft

**Note:** Enter values in highlighted cells only.

**SEDIMENT BASIN B - POND B INITIAL PHASE**  
**SEDIMENT BASIN STAGE-STORAGE CALCULATIONS**

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	Cu-Ft
							in Cu-Ft*	in Acre-Ft*	
7365.0	0								
7366.0	3911		1,306		1,306	0.030			
7367.0	9957		6,703		8,009	0.184			
7368.0	18895		14,189		22,198	0.510	42,007		7,368.86
7369.0	27693		23,154		45,352	1.041			
7370.0	33822		30,706		76,059	1.746			
7371.0	38334		36,054		112,113	2.574	126,020		7,371.35
7372.0	42141		40,222		152,336	3.497			
7373.0	45586		43,852		196,188	4.504			
7374.0	49080		47,322		243,510	5.590			
7375.0	52621		50,840		294,350	6.757			
7376.0	56208		54,405		348,755	8.006			
7377.0	61950		59,056		407,811	9.362			
7378.0									
7379.0									
7380.0									
7381.0									
7382.0									
7383.0									
7384.0									
7385.0									
7386.0									

COLUMN 1	COLUMN 2	CENTROID EL.
ORIFICE 1-1	ORIFICE 1-2	7,368.86
ORIFICE 2-1	ORIFICE 2-2	7,369.19
ORIFICE 3-1	ORIFICE 3-2	7,369.52
ORIFICE 4-1	ORIFICE 4-2	7,369.85
ORIFICE 5-1	ORIFICE 5-2	7,370.18
ORIFICE 6-1	ORIFICE 6-2	7,370.51
ORIFICE 7-1	ORIFICE 7-2	7,370.84
ORIFICE 8-1	ORIFICE 8-2	7,371.17

SED Basin riser pipe orifice calculations		
$A_0 =$	area per row of orifices spaced on 4" centers (in <sup>2</sup> )	
V=	2.8930 design volume (acre feet) * <15 ac.	
$T_0 =$	72 time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)	
H=	2.490 depth of volume (ft)	
S=	0.0001 Trickle channel slope (ft/ft) [Use 0.0001 for flat slope]	
		S=0%
$A_0 =$	6.1337 in <sup>2</sup>	6.1159 in <sup>2</sup>
Dia	2.79 in	*EXCEEDS 1", USE TWO COLUMNS @ $A_0=3.05$ in <sup>2</sup>
	5.58	Dia=1/2      3.05 in <sup>2</sup> = 2.0 in. dia.
	11.16	Dia=4
	22.32	Dia=8
	44.65	Dia=16
	89.30	Dia=32

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	28.100	Acre	
Undisturbed area-acres	100.300	Acre	
Total Area-acres	128.400	Acre	
Sediment volume	126,020	cu-ft	2.8930 Acres-ft
Volume below lowest hole	42,007	cu-ft	0.9643 Acres-ft
Volume above lowest hole	126,020	cu-ft	2.8930 Acres-ft
Total Volume	167,985	cu-ft	3.8564 Acres-ft

Note: Enter values in highlighted cells only.

**SEDIMENT BASIN C**  
**SEDIMENT BASIN STAGE-STORAGE CALCULATIONS**

Elevation	Area S.F.	Area Acre	Volume Cu. Ft.	Volume Acre-Ft	Cumm Vol Cu. Ft.	Cumm Vol Acre-Ft	Proration Enter Vol. in Cu-Ft*	Proration Enter Vol. in Acre-Ft*	Elev. Cu-Ft
7484.0	2771								
7485.0	3642		3,197		3,197	0.073	5,870		7,485.65
7486.0	4614		4,119		7,315	0.168	11,740		7,486.86
7487.0	5686		5,141		12,456	0.286			
7488.0	6860		6,264		18,720	0.430			
7489.0									
7490.0									
7491.0									
7492.0									
7493.0									
7494.0									
7495.0									
7496.0									
7497.0									
7498.0									
7499.0									
7500.0									
7501.0									
7502.0									
7503.0									
7504.0									
7505.0									

<u>COLUMN 1</u>	<u>CENTROID EL.</u>
ORIFICE 1	7,485.65
ORIFICE 2	7,485.98
ORIFICE 3	7,486.31
ORIFICE 4	7,486.64

SED Basin riser pipe orifice calculations		
$A_0 =$	area per row of orifices spaced on 4" centers (in <sup>2</sup> )	
V=	0.1348 design volume (acre feet) * <15 ac.	
$T_D =$	72 time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)	
H=	1.212 depth of volume (ft)	
S=	0.0001 Trickle channel slope (ft/ft) [Use 0.0001 for flat slope]	
		S=0%
$A_0 =$	0.4168 in <sup>2</sup>	0.4156 in <sup>2</sup>
Dia	0.73 in	use 3/4"
	1.46 Dia=/2	
	2.91 Dia=/4	
	5.83 Dia=/8	
	11.66 Dia=/16	
	23.31 Dia=/32	

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	3.000	Acre	
Undisturbed area-acres	1.880	Acre	
Total Area-acres	4.880	Acre	
Sediment volume	11,740	cu-ft	0.2695 Acres-ft
Volume below lowest hole	5,870	cu-ft	0.1348 Acres-ft
Volume above lowest hole	5,870	cu-ft	0.1348 Acres-ft
Total Volume	11,740	cu-ft	0.2695 Acres-ft

**Note: Enter values in highlighted cells only.**

**SEDIMENT BASIN D-1**  
**SEDIMENT BASIN STAGE-STORAGE CALCULATIONS**

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	Cu-Ft
							in Cu-Ft*	in Acre-Ft*	
7398.0	2052								
7399.0	2803		2,418		2,418	0.056	4,100		7,399.52
7400.0	3654		3,219		5,637	0.129	8,200		7,400.62
7401.0	4607		4,121		9,758	0.224			
7402.0	5660		5,124		14,883	0.342			
7403.0									
7404.0									
7405.0									
7406.0									
7407.0									
7408.0									
7409.0									
7410.0									
7411.0									
7412.0									
7413.0									
7414.0									
7415.0									
7416.0									
7417.0									
7418.0									
7419.0									

COLUMN 1	CENTROID EL.
ORIFICE 1	7,399.52
ORIFICE 2	7,399.85
ORIFICE 3	7,400.18
ORIFICE 4	7,400.51

SED Basin riser pipe orifice calculations			
A <sub>0</sub> =	area per row of orifices spaced on 4" centers (in <sup>2</sup> )		
V =	0.0941	design volume (acre feet)	* <15 ac.
T <sub>D</sub> =	72	time to drain the prescribed volume (hrs)	(Typically 72 hours for EURV)
H =	1.099	depth of volume (ft)	
S =	0.0001	Trickel channel slope (ft/ft)	[Use 0.0001 for flat slope]
		S=0%	
A <sub>0</sub> =	0.2973 in <sup>2</sup>	0.2964 in <sup>2</sup>	
Dia	0.61 in	use 5/8"	
	1.23	Dia=/2	
	2.46	Dia=/4	
	4.91	Dia=/8	
	9.83	Dia=/16	
	19.66	Dia=/32	

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	2,000	Acres	
Undisturbed area-acres	2,000	Acres	
Total Area-acres	4,000	Acres	
Sediment volume	8,200	cu-ft	0.1882 Acres-ft
Volume below lowest hole	4,100	cu-ft	0.0941 Acres-ft
Volume above lowest hole	4,100	cu-ft	0.0941 Acres-ft
Total Volume	8,200	cu-ft	0.1882 Acres-ft

**Note:** Enter values in highlighted cells only.

**SEDIMENT BASIN D-2**  
**SEDIMENT BASIN STAGE-STORAGE CALCULATIONS**

Elevation	Area	Area	Volume	Volume	Cumm Vol	Cumm Vol	Proration	Proration	Elev.
	S.F.	Acre	Cu. Ft.	Acre-Ft	Cu. Ft.	Acre-Ft	Enter Vol.	Enter Vol.	Cu-Ft
							in Cu-Ft*	in Acre-Ft*	
7397.0	2052								
7398.0	2803		2,418		2,418	0.056	4,100		7,398.52
7399.0	3654		3,219		5,637	0.129	8,200		7,399.62
7400.0	4607		4,121		9,758	0.224			
7401.0	5660		5,124		14,883	0.342			
7402.0									
7403.0									
7404.0									
7405.0									
7406.0									
7407.0									
7408.0									
7409.0									
7410.0									
7411.0									
7412.0									
7413.0									
7414.0									
7415.0									
7416.0									
7417.0									
7418.0									

COLUMN 1	CENTROID EL.
ORIFICE 1	7,398.52
ORIFICE 2	7,398.85
ORIFICE 3	7,399.18
ORIFICE 4	7,399.51

SED Basin riser pipe orifice calculations			
$A_0 =$			area per row of orifices spaced on 4" centers (in <sup>2</sup> )
V=	0.0941		design volume (acre feet) * <15 ac.
$T_D =$	72		time to drain the prescribed volume (hrs) (Typically 72 hours for EURV)
H=	1.099		depth of volume (ft)
S=	0.0001		Trickel channel slope (ft/ft) [Use 0.0001 for flat slope]
			S=0%
$A_0 =$	0.2973	in <sup>2</sup>	0.2964 in <sup>2</sup>
Dia	0.61	in	use 5/8"
	1.23		Dia=/2
	2.46		Dia=/4
	4.91		Dia=/8
	9.83		Dia=/16
	19.66		Dia=/32

SEDIMENT VOLUME CALCULATIONS			
Disturbed area-acres	2,000	Acres	
Undisturbed area-acres	2,000	Acres	
Total Area-acres	4,000	Acres	
Sediment volume	8,200	cu-ft	0.1882 Acres-ft
Volume below lowest hole	4,100	cu-ft	0.0941 Acres-ft
Volume above lowest hole	4,100	cu-ft	0.0941 Acres-ft
Total Volume	8,200	cu-ft	0.1882 Acres-ft

**Note:** Enter values in highlighted cells only.

<u>BMP FEATURE</u>	<u>TOTAL TRIBUTARY AREA (AC)</u>	<u>DISTURBED AREA (AC)</u>	<u>UNDISTURBED AREA (AC)</u>	<u>BOTTOM SIZE (FT)</u>	<u>SEDIMENT VOLUME (AC-FT)</u>	<u>BASIN VOLUME (AC-FT)</u>	<u>BOTTOM ELEVATION</u>	<u>CREST ELEVATION</u>	<u>CREST WxL (FT)</u>	<u>TOP OF POND ELEVATION</u>	<u>LOWEST ORIFICE ELEVATION</u>	<u>AREA OF ORIFICES (SQ IN)</u>	<u># OF ORIFICE COLUMNS</u>	<u>DIA. OF ORIFICES</u>	<u>RISER PIPE INVERT</u>	<u>DAYLIGHT ELEVATION</u>	<u>OUTLET PIPE LENGTH (FT)</u>	<u>OUTLET PIPE SLOPE</u>
SB-A	25.29	17.14	8.15	146' x 211'	1.16	5.24	7559.00	7568.00	25' x 40'	7568.00	7562.03	2.98	2	13/16"	7560.70	7558.50	88	2.5%
SB-B	128.40	28.10	100.30	210' x 440'	2.89	9.36	7365.00	7376.00	50' x 32'	7377.00	7368.86	6.12	2	2"	7367.53	7364.50	67	4.5%
SB-C	4.88	3.00	1.88	38.5' x 77'	0.27	0.29	7484.00	7487.00	14' x 16'	7488.00	7485.65	0.42	1	3/4"	7484.32	7484.00	40	0.8%
SB-D1	4.00	2.00	2.00	33.5' x 67'	0.19	0.22	7398.00	7401.00	12' x 16'	7402.00	7399.52	0.30	1	5/8"	7398.19	7398.00	40	0.5%
SB-D2	4.00	2.00	2.00	33.5' x 67'	0.19	0.22	7397.00	7400.00	12' x 16'	7401.00	7398.52	0.30	1	5/8"	7397.19	7397.00	40	0.5%

\*ORIFICES TO BE EVERY 3" FROM LOWEST ORIFICE ELEVATION TO THE TOP OF RISER PIPE, TOTAL NUMBER OF ORIFICES VARY.



Flying Horse North Filing No. 3  
Stormwater Management Plan  
Project No.: 211030.20  
El Paso County, Colorado

## **APPENDIX D – EL PASO COUNTY CONSTRUCTION CONTROL MEASURES**

---



Flying Horse North Filing No. 3  
Stormwater Management Plan  
Project No.: 211030.20  
El Paso County, Colorado

## **APPENDIX E – SPILL PREVENTION PLAN**

---



# Spill Prevention, Control and Countermeasure (SPCC) Plan

**Facility Name:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
\_\_\_\_\_

**Contact Name:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_  
**Fax:** \_\_\_\_\_  
**Email:** \_\_\_\_\_

**Certification:** I hereby certify that I have examined the facility, and, being familiar with the provisions of 40 CFR part 112, attest that this SPCC plan has been prepared, or updated within 5 years, in accordance with good engineering practices and meets the requirements listed in 40 CFR part 112.

**This plan has been certified by:**

**Date of certification:** \_\_\_\_\_

*Engineer's Seal*

**Copies of this plan are located at the facility and are available to all employees.**

**Location(s) of plan(s):** \_\_\_\_\_

**I. FACILITY INFORMATION**

- a. Facility Name: \_\_\_\_\_
- b. Mailing Address: \_\_\_\_\_  
\_\_\_\_\_
- c. Physical address if different: \_\_\_\_\_  
\_\_\_\_\_
- d. Owner Name: \_\_\_\_\_
- e. Owner Address: \_\_\_\_\_  
\_\_\_\_\_
- f. Primary Contact Name: \_\_\_\_\_  
Work Phone Number: \_\_\_\_\_  
Home Phone Number: \_\_\_\_\_  
Mobile Phone Number: \_\_\_\_\_
- g. Secondary Contact Name: \_\_\_\_\_  
Work Phone Number: \_\_\_\_\_  
Home Phone Number: \_\_\_\_\_  
Mobile Phone Number: \_\_\_\_\_
- h. Date of Initial Operation: \_\_\_\_\_

**II. SITE ASSESSMENT**

**a. Location:**

Describe where facility is located. For example, "This site is located along Broad Creek about 2 miles north of its confluence with the Choptank River at Holland Point. Road access is from. . . . The site is located on Talbot County ADC map 22 (H5). Latitude is \_\_\_\_ and longitude is \_\_\_\_."

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### III. FACILITY DESCRIPTION

a. Acres of land: \_\_\_\_\_

**b. Facilities and Equipment:**

Place an X beside all that apply.

- \_\_\_ Garage for vehicle processing
- \_\_\_ Parts store
- \_\_\_ On-site crusher
- \_\_\_ Impervious crush pad for crusher
- \_\_\_ Impervious pad for outside vehicle processing
- \_\_\_ Spill kit/emergency equipment
- \_\_\_ Refrigerant (Freon) extractor

- \_\_\_ Parts washer
- \_\_\_ Other structures and major equipment:

Please list: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**c. Services:**

Place an X beside all that apply.

- \_\_\_ Dismantler/Recycler
- \_\_\_ Sell used parts
- \_\_\_ Sell vehicles for scrap
- \_\_\_ Crushing
- \_\_\_ Auto body/repair shop
- \_\_\_ Sell used cars

\_\_\_ Other services:

Please list: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**d. Fixed Storage:**

List capacity and contents of each storage container. For example, "One 6,000 gallon above ground tank containing diesel fuel." Be sure to include diesel, gasoline, waste oil, heating oil, kerosene, paint thinner and other solvents. Also describe the construction of the containers, secondary containment for each, liquid level indicators, alarms and method of corrosion protection for each container. \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**e. Non-Fixed Storage:**

List capacity and contents of each storage container. For example, "One 55 gallon drum for recycled oil." Be sure to indicate what each container is used for, its condition and construction and how secondary containment is provided. \_\_\_\_\_

---

---

---

---

---

---

---

---

---

---

---

---

**f. Total quantity of stored materials:**

The combined quantity of the materials listed above: \_\_\_\_\_ gallons

**IV. OIL SPILL HISTORY**

Place an X on the appropriate line and proceed accordingly.

\_\_\_\_\_ There has never been a significant spill at the above named facility.

\_\_\_\_\_ There have been one or more significant spills at the above named facility. Details of such spill(s) are described below.

For each spill that occurred, supply the following information:

- Type and amount of oil spilled
- Location, date and time of spill(s)
- Watercourse affected
- Description of physical damage
- Cost of damage
- Cost of clean-up
- Cause of spill
- Action taken to prevent recurrence

---

---

---

---

---

---

---

---

---

---

---

## V. POTENTIAL SPILL VOLUMES AND RATES

Fill in all applicable blanks. Be prepared to show the engineer documentation of flow rates. Your fuel vendor and the manufacturer of your storage and dispensing equipment should be able to provide this documentation.

<u>Potential Event</u>	<u>Volume Released</u>	<u>Spill Rate</u>
Complete failure of a full tank*	___ gallons	instantaneous
Partial failure of a full tank*	1 to ___ gallons	gradual to instantaneous
Tank overflow**	1 to ___ gallons	up to ___ gallons per minute
Leaking during unloading***	up to ___ gallons	up to ___ gallons per minute
Pipe failure****	up to ___ gallons	up to ___ gallons per minute
Leaking pipe or valve****	several ounces to gallons	up to ___ gallons per minute
Fueling operations****	several ounces to gallons	up to ___ gallons per minute
Oil and grease	several ounces to quarts	spotting

- \* Volume of largest tank
- \*\* Calculate using the rate at which fuel is dispensed from the delivery truck into your tank(s).
- \*\*\* Calculate using the rate at which petroleum would be withdrawn from the tank if it should have to be emptied (e.g., if it was being taken out of service).
- \*\*\*\* Calculate based on the specifications of your equipment.

## VI. SPILL PREVENTION AND CONTROL

### a. Spill Prevention:

Provide specific descriptions of containment facilities and practices. Include description of items such as double-walled tanks, containment berms, emergency shut-offs, drip pans, fueling procedures and spill response kits. Also, describe how and when employees are trained in proper handling procedures and spill prevention and response procedures.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

**b. Spill discharge and flow:**

For each potential spill source, describe where petroleum would flow in the event of a spill. For example, “The 6,000 gallon diesel tank has a pre-manufactured secondary containment system capable of holding 110 percent of the total volume of the tank” and, “A spill from engine repair would be contained inside the shop building and quickly cleaned up with oil absorbents.” Incorporate site map by reference (see instructions under *Appendices*).

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

**c. Spill response:**

Identify what equipment would be deployed by whom and in what situation. Also, include phone numbers for response agencies, *e.g.*, U.S. Coast Guard, fire department, spill response contractors, etc. A copy of your spill response plan may be attached as an appendix to this SPCC plan in lieu of completing this section.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

**d. Security**

Provide a description of how all containers are protected when the facility is not in operation or unattended. Include a description of fencing, access control, gates, locks, etc. that prevent access by unauthorized individuals.

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

---

## VII. FACILITY INSPECTIONS

### a. Routine Inspections

Name facilities and the frequency with which they are inspected. For example, “The fuel pumps are inspected daily. The materials storage area is inspected monthly.” Describe all facility containers, piping, etc. that is to be inspected. Name the person who has responsibility to implement preventative maintenance programs, oversee on-site inspections, coordinate employee training, maintain records, update the plan as necessary, and ensure that reports are submitted to the proper authorities.

---

---

---

---

---

### b. Annual Inspections

Include a description of annual comprehensive inspections. For example, “A site inspection is also conducted annually by appropriate responsible personnel to verify that the description of potential pollutant sources are accurate, that the map reflects current site conditions, and that the controls to reduce the pollutants identified in this plan are being implemented and are adequate. This annual inspection will be conducted above and beyond the routine inspections done focusing on designated equipment and areas where potential sources are located.”

---

---

---

---

---

---

---

## VIII. RECORD KEEPING

Describe record keeping procedures. For example, “Record keeping procedures consist of maintaining all records a minimum of three years. The following items will be kept on file: current SPCC plan, internal site reviews, training records, and documentation of any spills or maintenance conducted in regards to these sites.” *Maintenance Inspection, Employee Training, and Record Keeping* logs are included in this template for your use.

---

---

---

---

---

# IX. MAINTENANCE INSPECTIONS

Maintenance Coordinator: \_\_\_\_\_ . Maintenance Coordinator responsibilities include implementation of preventative maintenance programs and oversight of on-site inspections.

Use this table to record inspections:

Facility Inspected	Date of Inspection	Name of Inspector	Result Pass/Fail	Comments



## **X. RECORD KEEPING OF INCIDENTAL SPILLS**

Record Keeper: \_\_\_\_\_. Record Keeper responsibilities include maintaining records of incidents, updating the SPCC plan as necessary and ensuring reports are submitted to the proper authorities when necessary.

<b>Incident No.</b>	<b>Type of Incident</b>	<b>Date of Occurrence</b>	<b>How it was Cleaned Up</b>



## **APPENDIX F – CSWMP REPORT REVISION LOG**



### SWMP REPORT REVISION LOG

REVISION #	DATE	BY	COMMENTS