

## STORMWATER MANAGEMENT PLAN (SWMP)

For

## MAYBERRY, COLORADO SPRINGS – FILING NO. 4

**PREPARED FOR:** 

COLORADO SPRINGS MAYBERRY, LLC 3296 DEVINE HEIGHTS #208 COLORADO SPRINGS, CO 80922

**PREPARED BY:** 

R & R ENGINEERS - SURVEYORS, INC. 1635 W. 13<sup>TH</sup> AVE, SUITE 310 DENVER, CO 80204 CONTACT: CLIF DAYTON, P.E. (303) 753-6730

Item Numbers refer to SWMP Checklist

Address:

Item 1. Add Qualified Stormwater Manager and	I
Contractor Information to cover/title sheet. If	
unknown, add a placeholder to be updated prio	٥r
to the pre-construction meeting:	
QUALIFIED STORMWATER MANAGER	
Name:	
Company:	
Address:	
CONTRACTOR	
Name:	
Company:	

R&R JOB #MC22249 EPC PROJECT NO. SF2317

**ORIGINAL SUBMITTAL: APRIL 2023** 

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### **1. APPLICANT/CONTACT INFORMATION**

Developer:	Colorado Springs Mayberry, LLC 3296 Devine Heights #208 Colorado Springs, CO 80922
Engineer:	R & R Engineers - Surveyors, Inc. 1635 W. 13 <sup>th</sup> Ave, Suite 310 Denver, CO 80204
Contractor:	Raw Land Detailing 10475 Accipiter Dr. Peyton, CO 80831 Attn: Larry Lee (719)-495-7770

## 2. SITE DESCRIPTION

- a. Ellicott Town Center is a proposed subdivision located west of Ellicott, Colorado in El Paso County. The development is located on the south side of State Highway 94, approximately 1-1/2 miles west of Ellicott Highway. The approved Ellicott Town Center PUD includes a total of 1,048 single-family dwelling units and 32 acres of commercial space. Colorado Springs Mayberry, LLC is moving forward with development of Ellicott Town Center Filing No. 1, consisting of 98 singlefamily residential lots near the north boundary of the project. Filing 4 is located within the Ellicott Town Center.
- b. There are no stream crossings in the project area.
- c. The proposed development consists of Eight commercial lots and a proposed street with associated infrastructure, Positive Place, which ends in a cul-del-sac. The site development activities will include site grading, utilities, pavement, curb and gutter, and related site improvements.
- d. Proposed sequence of major activities:
  - Mobilization/implementation of BMP's
  - Clearing and grubbing
  - Rough grading
  - Site Utilities
  - Roadway grading/paving
- e. Total site area = 9.78 acres (Filing No. 4); Proposed disturbed area = 9.78 acres
- f. Historic runoff coefficient, C = 0.36 Developed runoff coefficient, C = 0.88
- g. Existing vegetation on site on site: Native meadow grasses (
- h. Potential pollution sources: vehicle emissions.
- i. Non-stormwater components of discharge: none anticipated.

	SWMP Checklist Item 13.
add table of potential	Include waste disposal with
pollution sources, locations,	off-site soil tracking
and description (similar to	
SF2219 SWMP)	- 1 -

SWMP Checklist Item 9. Include percent ground cover and method used to determine ground cover (i.e., visual, aerial inspection)

doesn't match ESQCP. Please

confirm disturbance area

- j. Receiving water: Surface drainage from this site will flow southeasterly to existing natural drainage swales flowing to the West Fork of Black Squirrel Creek located east of this parcel between the site and Ellicott Highway. Black Squirrel Creek ultimately outfalls into the Arkansas River.
- k. Erosion potential and potential impacts upon discharge: According to the Web Soil Survey by the Natural Resources Conservation Service, on-site soils are comprised primarily of Truckton loamy sand and Blakeland loamy sand which are both classified as soil Group A. Group A soils have a high infiltration rate with a moderate rate of water transmission. The erosion factor K for these soils are 0.24 and 0.10 respectively. Uncontrolled soil erosion may adversely affect downstream drainageways; on-site BMP's will be provided and maintained to mitigate impacts. See soils map in appendices.

SWMP Checklist Item 6. Include construction schedule

### 3. SITE MAP

See Site Map in appendices.

## 4. BMP'S FOR STORMWATER POLLUTION PREVENTION

<u>Phase</u> Clearing and grubbing necessary for perimeter controls Initiation of perimeter controls Remaining clearing and grubbing Site grading Stabilization Removal of erosion control measures	RS/SCL	SWMP Checklist Item 5. Clearly define which construction tasks correspond to each phase of BMPs (initial, interim, and final) and/or phase of the project (pre-disturbance, site clearing, grading, etc) so it's clear when each BMP will be installed.
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- A. Erosion and Sediment Controls
  - 1) Structural Practices:
    - Vehicle Tracking Control (VTC) pad at construction entry. This will be used from Filing 3's construction entrance.
    - Inlet protection (IP) in Filing 3, downstream of Filing 4, shall remain in place until the completion of Filing 4.
    - Culvert Protection (RRC) in Filing 3, downstream of Filing 4, shall remain in place until the completion of Filing 4.
  - 2) Non-Structural Practices:
    - Preserve existing vegetation beyond limits of work
    - Temporary seeding of areas to remain disturbed for significant periods of time.
    - Permanent seeding/mulching (SM) upon completion of rough grading.

- B. Materials Handling and Spill Prevention
  - General Materials Handling Practices:
    - 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 not be located near storm drain inlets and should be equipped with covers, roofs, or secondary containment as required to prevent storm water from contacting stored materials. Chemicals that are not compatible shall be stored and segregated areas so that spilled materials cannot combine and react.
    - Disposal of materials shall be in accordance with the manufacturer's instructions and applicable local, state, and federal regulations.
    - Materials no longer required for construction shall be removed from the site as soon as possible.
  - Adequate garbage, construction waste, and sanitary waste handling and disposal facilities shall be provided as necessary to keep the site clear of obstruction and BMPs clear and functional.
  - Specific Materials Handling Practices:
    - All pollutants, including waste materials and demolition debris, that occur on-site during construction shall be handled in a way that does not contaminate storm water.
    - All chemicals including liquid products, petroleum products, water treatment chemicals, and wastes stored on site shall be covered and contained and protected from vandalism.
    - Maintenance and repair of all equipment and vehicles involving oil changes, hydraulic system drain down, de-greasing operations, 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.
    - Wheel wash water shall be settled and discharged on site by infiltration. Wheel wash water shall not be discharged to the storm water system.
    - 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 storm water runoff. Follow manufacturer's recommendations for application rates and procedures.
    - pH-modifying sources shall be managed to prevent contamination of runoff and storm water collected on site. 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.

- Equipment maintenance and fueling: Contractor shall implement appropriate spill prevention and response procedures
- Spill Prevention and Response Procedures:
  - The primary objective in responding to a spill is to quickly contain the material(s) and prevent or minimize their migration into storm water runoff and conveyance systems. If the release has impacted on-site storm water, it is critical to contain the released materials on site and prevent their release into receiving waters.
  - Spill Response Procedures:
    - 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.
    - If spills represent an imminent threat of escaping on-site facilities and entering the receiving waters, site personnel shall respond immediately to contain the release and notify the superintendent after the situation has stabilized.
    - The site superintendent, or his designee, shall be responsible for completing a spill reporting form and for reporting the spill to the appropriate agency.
    - Spill response equipment shall be inspected and maintained as necessary to replace any materials used in spill response activities.
  - Spill kits shall be on-hand at all fueling sites. Spill kit location(s) shall be reported to the SWMP Administrator.
  - Absorbent materials shall be on-hand at all fueling areas for use in containing inadvertent spills. Containers shall be on-handat all fueling sites for disposal of used absorbents.
  - Recommended components of spill kits include the following:
    - Oil absorbent pads (one bale)
    - Oil absorbent booms (40 feet)
    - 55-gallon drums (2)
    - 9-mil plastic bags (10)
    - Personal protective equipment including gloves and goggles
- 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. The discharge of water containing waste cement to the storm drainage system is prohibited.
- Concrete Batch Plant: This project will not have an on-site dedicated batch plant.
- Notification Procedures:
  - In the event of an accident or spill, the SWMP Administrator shall be notified as a minimum.

- Depending on the nature of the spill material involved, the Colorado Department of Public Health and Environment (24-hour spill reporting line: 877-518-5608), downstream water users, or other agencies may also need to be notified.
- 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.

## 5. FINAL STABILIZATION AND LONG-TERM STORMWATER MANAGEMENT

- Permanent seeding will be provided to achieve long-term stabilization of the site.
- Seed Mix: "Foothills Mix" or approved equal:
- Seeding Application Rate: Drill seed 0.25" to 0.5" into the soil. In small areas not accessible to a drill, hand broadcast at double the rate and rake 0.25" to 0.5" into the soil. Apply seed at the following rates:
  - Dryland: 20-25 lbs/acre
  - Irrigated: 40 lbs/acre
- Soil Stabilization Practices:
  - Mulching Application: Apply 1-1/2 tons of certified weed free hay per acre mechanically crimped into the soil in combination with an organic mulch tackifier. On slopes and ditches requiring a blanket, the blanket shall be placed in lieu of much and mulch tackifier.
- Soil Conditioning and Fertilizer Requirements:
  - Soil conditioner, organic amendment shall be applied to all seeded areas at 3 CY / 1000 SF.
  - Fertilizer shall consist of 90% fungal biomass (mycelium) and 10% potassiummagnesia with a grade of 6-1-3 or approved equal. Fertilizer shall be applied as recommended by seed supplier.
- Final stabilization is reached when all soil-disturbing activities at the site have been completed, and uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.

## 6. OTHER CONTROLS

- Contractor shall dispose of all waste materials at a permitted off-site disposal site.
- Vehicle tracking pads from Mayberry Filing No. 3 BMP's will remain in place to limit off-site soil tracking.

#### change to "QSM"

every 14 days

### 7. INSPECTION AND MAINTENANCE

- A. Inspection Schedules:
  - Contractor shall inspect BMPs bi-weekly as a minimum, and immediately (within 24 hours) after any precipitation or snowmelt event that causes surface erosion (i.e. that results in stormwater running across the ground), to ensure that BMPs are maintained in effective operating condition.

### B. Inspection Procedures:

- 1. Site Inspection / Observation Items:
  - Construction site perimeter and discharge points (including discharges into a storm sewer system)
  - All disturbed areas
  - Areas used for material / waste storage that are exposed to precipitation
  - Other areas having a significant potential for stormwater pollution, such as demolition areas or concrete washout locations, or locations where vehicles enter or leave the site
  - Erosion and sediment control measures identified in the SWMP
  - Any other structural BMPs that may require maintenance, such as secondary containment around fuel tanks, or the condition of spill response kits.
- 2. Inspection requirements:
  - Determine if there is any evidence of, or potential for, pollutants entering the drainage system.
  - Review BMPs to determine if they still meet design and operational criteria in the SWMP, and if they continue to adequately control pollutants at the site.
  - Upgrade and/or revise any BMPs not operating in accordance with the SWMP and update the SWMP to reflect any revisions.
- C. BMP Maintenance / Replacement and Failed BMPs:
  - Contractor shall remove sediment that has been collected by perimeter controls, such as silt fence and inlet protection, on a regular basis to prevent failure of BMPs, and remove potential of sediment from being discharged from the site in the event of BMP failure.
  - Removed sediment must be moved to an appropriate location where it will not become an additional pollutant source, and should never be placed in ditches or streams.
  - Contractor shall update Erosion Control Plans as required with any new BMPs added during the construction period.

- Contractor shall address BMPs that have failed or have the potential to fail without maintenance or modifications, as soon as possible, immediately in most cases, to prevent discharge of pollutants.
- D. Record Keeping and Documenting Inspections:
  - Contractor shall maintain records of all inspection reports, including signed inspection logs, at the project site.
  - Permittee shall document inspection results and maintain a record of the results for a period of 3 years following expiration or inactivation of permit coverage.
  - Site inspection records shall include the following:
    - Inspection date
    - > Name and title of personnel making the inspection
    - > Location of discharges of sediment or other pollutants from the site
    - Location(s) of BMPs that need to be maintained
    - Location(s) of BMPs that failed to operate as designed or proved inadequate for a particular location
    - Location(s) where additional BMPs are needed that were not in place at the time of inspection
    - Deviations from the minimum inspection schedule

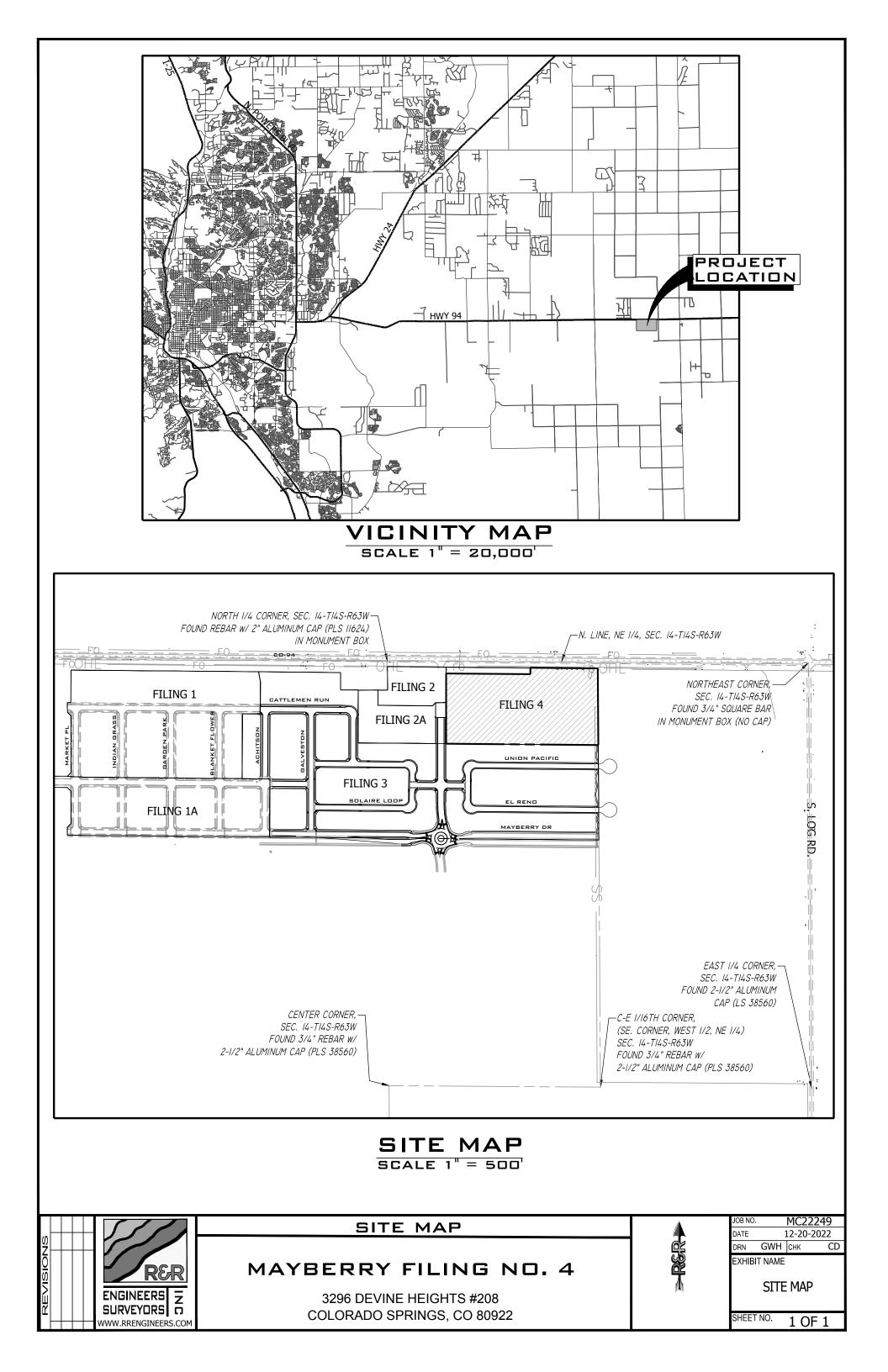
SWMP Checklist Item 25: add: signature of personnel making the inspection

SWMP Checklist Item 14. Discuss Location and description of any anticipated allowable non-stormwater discharge. If N/A, add a note stating no non-stormwater components of discharge, such as springs, landscape irrigation return flows, construction dewatering, or other discharges will be encountered during the project.

SWMP Checklist Item 21. 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.

SWMP Checklist Item 26. Add a note stating that this project does not rely on control measures owned or operated by another entity.

## **APPENDIX A – SITE MAP**



# **APPENDIX B – SOILS MAP**



United States Department of Agriculture

Natural Resources Conservation

Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for El Paso County Area, Colorado



# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/? cid=nrcs142p2\_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# **How Soil Surveys Are Made**

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

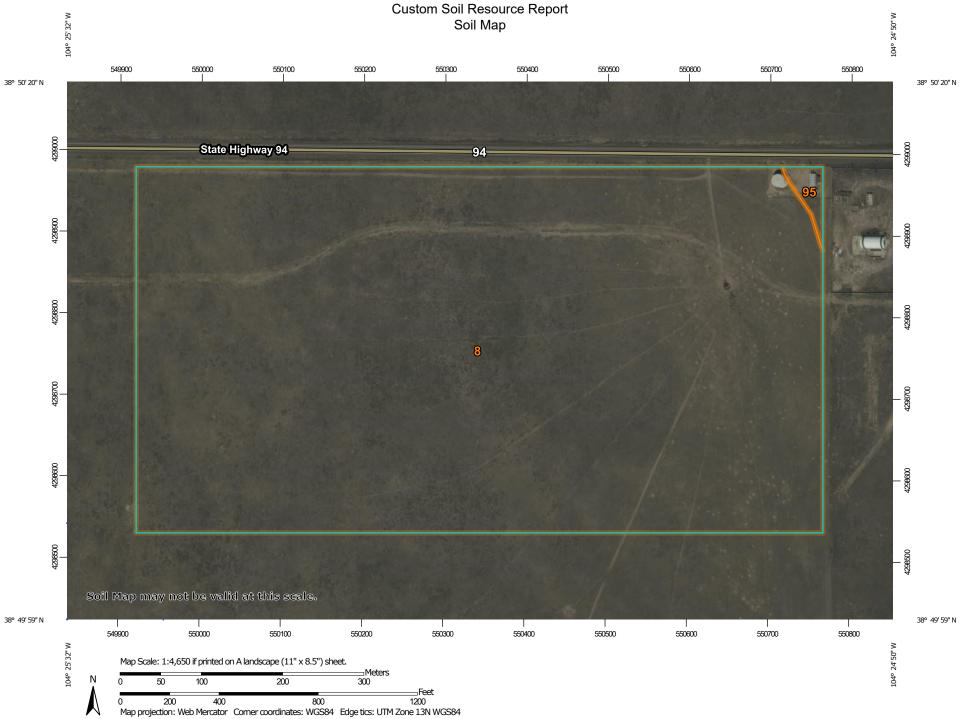
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.





	MAP L	EGEND	)	MAP INFORMATION		
Area of In	terest (AOI)	38	Spoil Area	The soil surveys that comprise your AOI were mapped at		
	Area of Interest (AOI)	٥	Stony Spot	1:24,000.		
Soils		۵	Very Stony Spot	Warning: Soil Map may not be valid at this scale.		
	Soil Map Unit Polygons	\$2	Wet Spot			
~	Soil Map Unit Lines	Δ	Other	Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil		
	Soil Map Unit Points		Special Line Features	line placement. The maps do not show the small areas of		
•	Point Features Blowout	Water Fea	atures	contrasting soils that could have been shown at a more detailed scale.		
ອ	Borrow Pit	$\sim$	Streams and Canals			
×		Transpor	tation	Please rely on the bar scale on each map sheet for map		
*	Clay Spot	+++	Rails	measurements.		
<u>ہ</u>	Closed Depression	~	Interstate Highways	Source of Map: Natural Resources Conservation Service		
X	Gravel Pit	~	US Routes	Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)		
000	Gravelly Spot	$\sim$	Major Roads	Coordinate System. Web Mercator (EPSG.3657)		
٥	Landfill	~	Local Roads	Maps from the Web Soil Survey are based on the Web Mercator		
A.	Lava Flow	Backgrou	ind	projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the		
علله	Marsh or swamp	Mar.	Aerial Photography	Albers equal-area conic projection, should be used if more		
奈	Mine or Quarry			accurate calculations of distance or area are required.		
0	Miscellaneous Water			This product is generated from the USDA-NRCS certified data as		
0	Perennial Water			of the version date(s) listed below.		
$\vee$	Rock Outcrop			Soil Survey Area: El Paso County Area, Colorado		
+	Saline Spot			Survey Area Data: Version 20, Sep 2, 2022		
0 0 0 0	Sandy Spot			Soil map units are labeled (as space allows) for map scales		
-	Severely Eroded Spot			1:50,000 or larger.		
0	Sinkhole			Date(s) aerial images were photographed: Sep 11, 2018—Oct		
\$	Slide or Slip			20, 2018		
ø	Sodic Spot			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**

		1	
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
8	Blakeland loamy sand, 1 to 9 percent slopes	93.6	99.4%
95 Truckton loamy sand, 1 to 9 percent slopes		0.6	0.6%
Totals for Area of Interest		94.2	100.0%

## **Map Unit Descriptions**

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## El Paso County Area, Colorado

#### 8-Blakeland loamy sand, 1 to 9 percent slopes

#### **Map Unit Setting**

National map unit symbol: 369v Elevation: 4,600 to 5,800 feet Mean annual precipitation: 14 to 16 inches Mean annual air temperature: 46 to 48 degrees F Frost-free period: 125 to 145 days Farmland classification: Not prime farmland

#### **Map Unit Composition**

Blakeland and similar soils: 98 percent Minor components: 2 percent Estimates are based on observations, descriptions, and transects of the mapunit.

#### **Description of Blakeland**

#### Setting

Landform: Flats, hills Landform position (three-dimensional): Side slope, talf Down-slope shape: Linear Across-slope shape: Linear Parent material: Alluvium derived from sedimentary rock and/or eolian deposits derived from sedimentary rock

#### **Typical profile**

A - 0 to 11 inches: loamy sand AC - 11 to 27 inches: loamy sand C - 27 to 60 inches: sand

#### **Properties and qualities**

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat excessively drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water supply, 0 to 60 inches: Low (about 4.5 inches)

#### Interpretive groups

Land capability classification (irrigated): 3e Land capability classification (nonirrigated): 6e Hydrologic Soil Group: A Ecological site: R049XB210CO - Sandy Foothill Hydric soil rating: No

#### **Minor Components**

#### Other soils

Percent of map unit: 1 percent

Hydric soil rating: No

#### Pleasant

Percent of map unit: 1 percent Landform: Depressions Hydric soil rating: Yes

#### 95—Truckton loamy sand, 1 to 9 percent slopes

#### Map Unit Setting

National map unit symbol: 2yvrm Elevation: 5,800 to 7,100 feet Mean annual precipitation: 12 to 19 inches Mean annual air temperature: 46 to 50 degrees F Frost-free period: 90 to 155 days Farmland classification: Not prime farmland

#### Map Unit Composition

*Truckton and similar soils:* 87 percent *Minor components:* 13 percent *Estimates are based on observations, descriptions, and transects of the mapunit.* 

#### **Description of Truckton**

#### Setting

Landform: Interfluves, fan remnants Down-slope shape: Linear Across-slope shape: Linear Parent material: Wind re-worked alluvium derived from arkose

#### **Typical profile**

A - 0 to 4 inches: loamy sand Bt1 - 4 to 12 inches: sandy loam Bt2 - 12 to 19 inches: sandy loam C - 19 to 80 inches: sandy loam

#### **Properties and qualities**

Slope: 1 to 9 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
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
Calcium carbonate, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.1 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

#### Interpretive groups

Land capability classification (irrigated): 6e Land capability classification (nonirrigated): 6e Hydrologic Soil Group: A Ecological site: R049XB210CO - Sandy Foothill Hydric soil rating: No

#### **Minor Components**

#### Blakeland

Percent of map unit: 5 percent Landform: Interfluves, hills Landform position (two-dimensional): Summit, shoulder, backslope Landform position (three-dimensional): Crest, side slope Down-slope shape: Linear, convex Across-slope shape: Linear, convex Ecological site: R049XB210CO - Sandy Foothill Hydric soil rating: No

#### Bresser

Percent of map unit: 5 percent Landform: Interfluves, terraces Landform position (three-dimensional): Tread Down-slope shape: Linear Across-slope shape: Linear Ecological site: R049XB210CO - Sandy Foothill Hydric soil rating: No

#### Urban land

Percent of map unit: 2 percent Hydric soil rating: No

#### Ellicott, occasionally flooded

Percent of map unit: 1 percent Landform: Flood plains, drainageways Down-slope shape: Linear Across-slope shape: Linear, concave Ecological site: R067BY031CO - Sandy Bottomland Hydric soil rating: No

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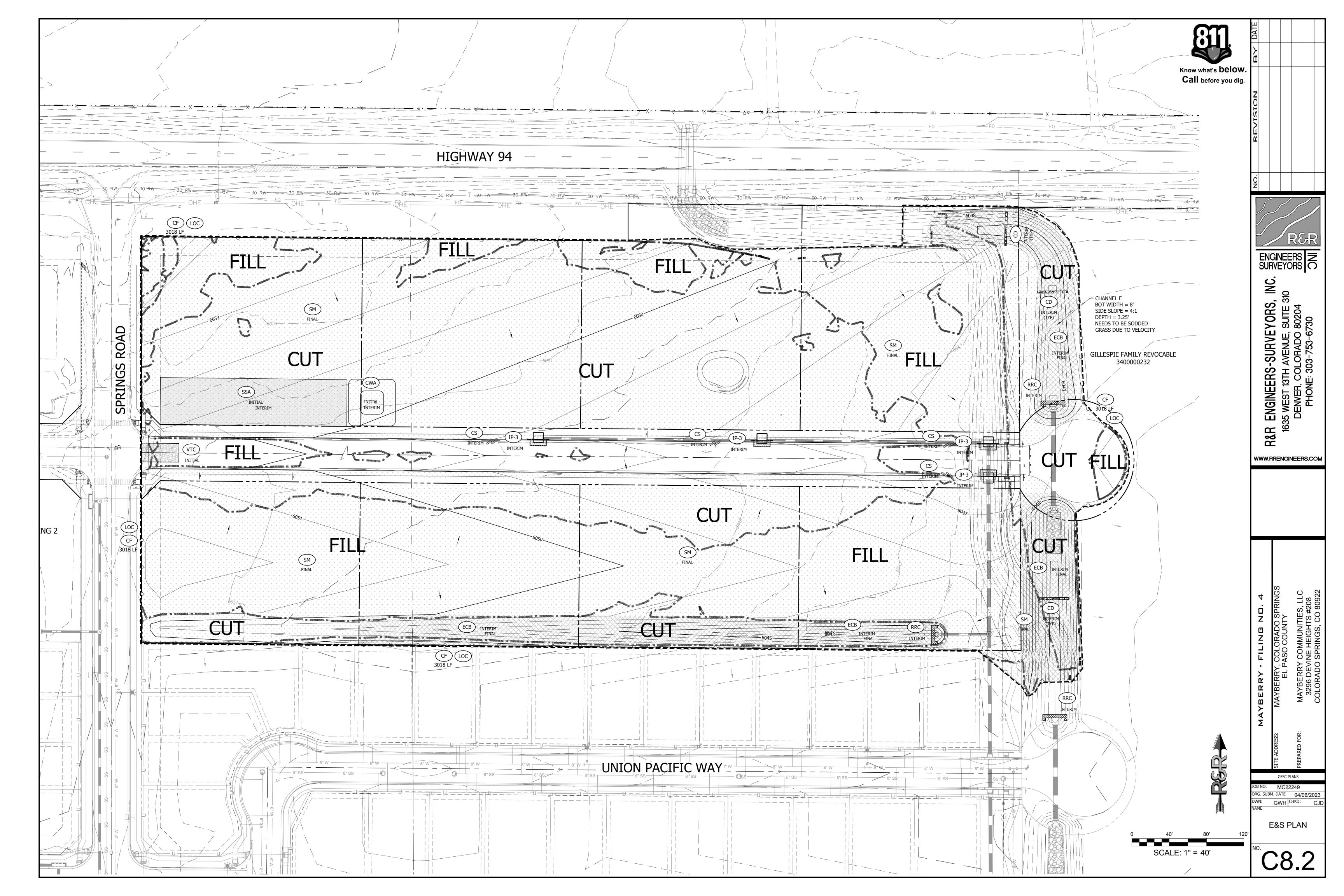
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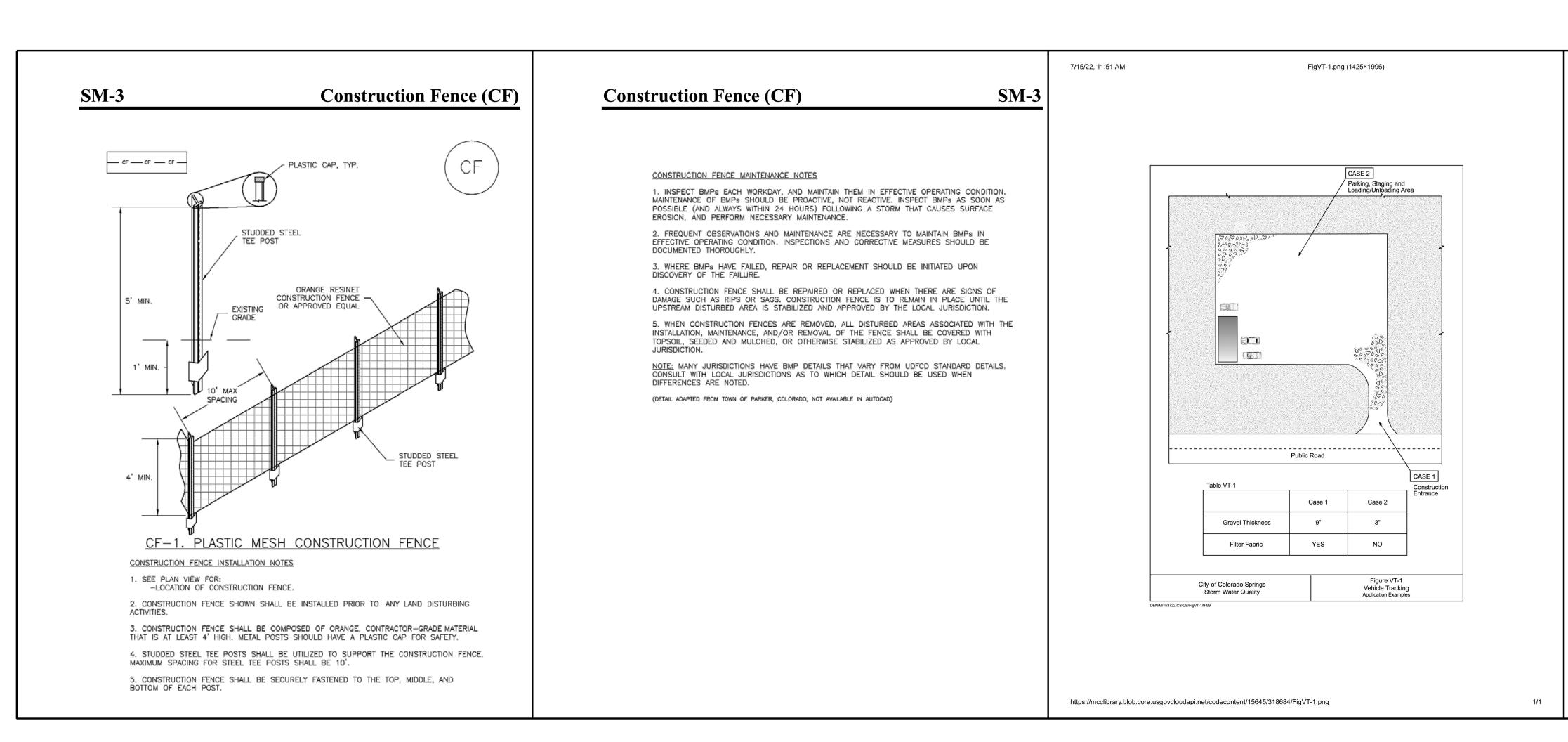
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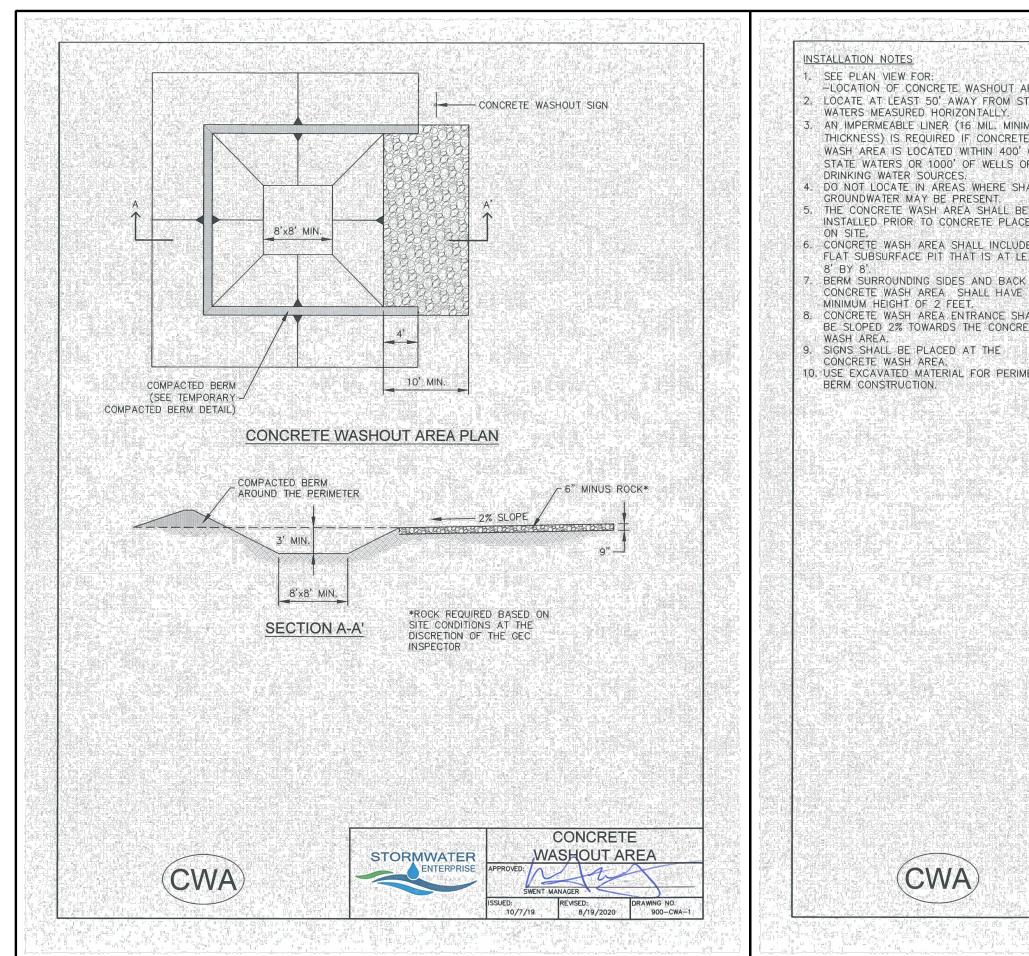
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## **APPENDIX C – EROSION CONTROL PLAN**

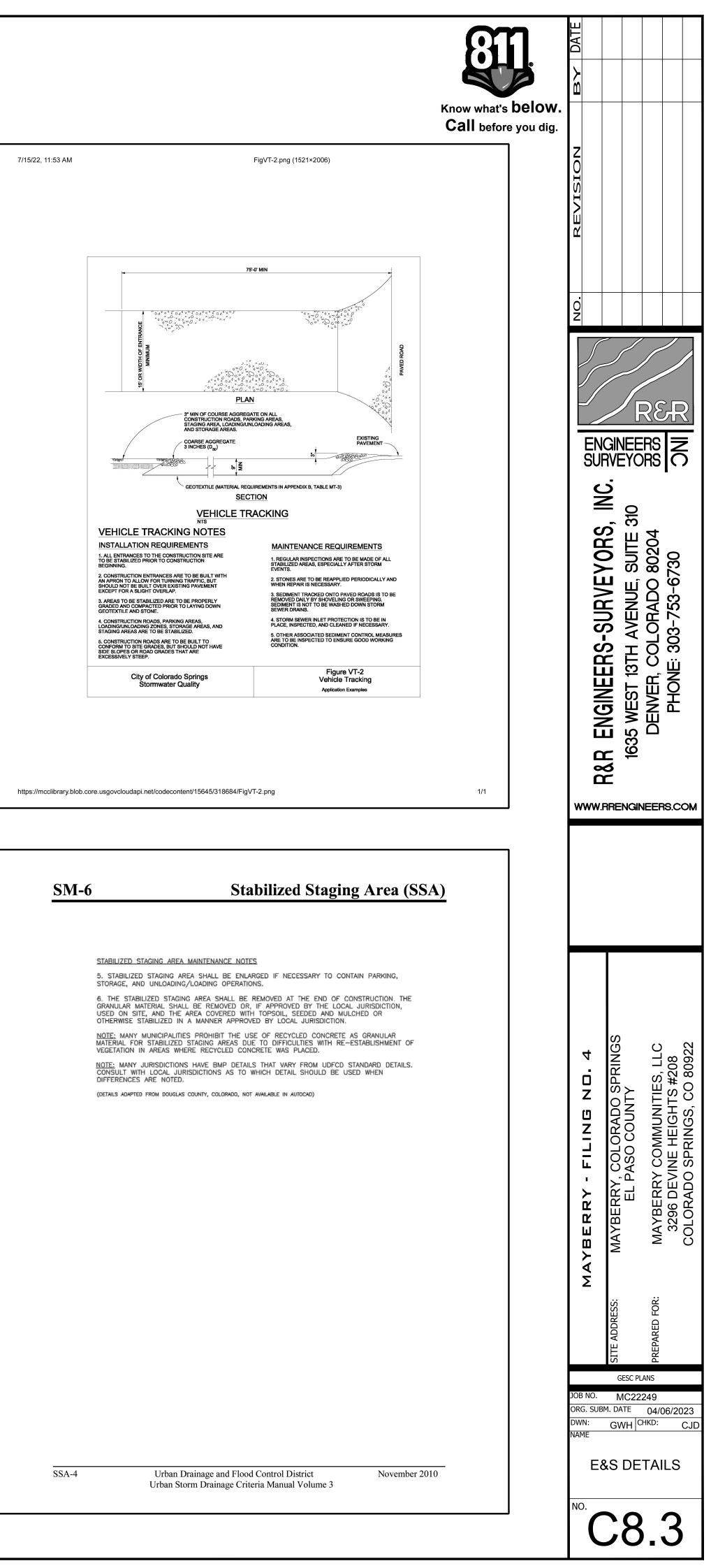


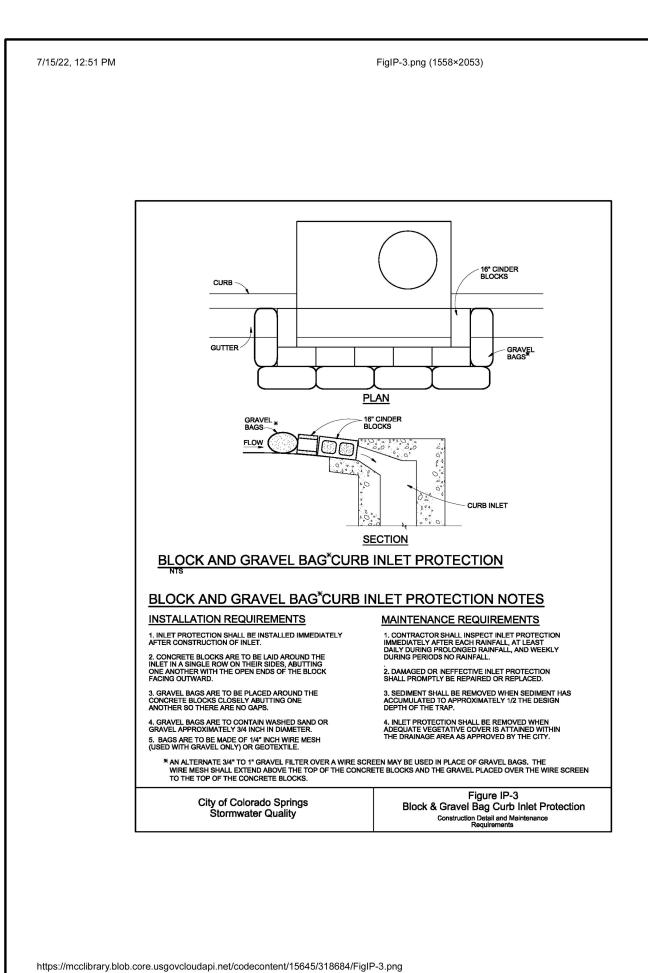
**APPENDIX D – BMP DETAILS** 





MAINTENANCE NOTES 1. FREQUENT OBSERVATIONS AND MAINTENANCE ARE A NECESSARY TO MAINTAIN CONTROL MEASURES IN EFFECTIVE E OPERATING CONDITION. INSPECTIONS AND CORRECTIVE	Stabilized Staging Area (SSA)SM-6
<ul> <li>MEASURES SHOULD BE DOCUMENTED THOROUGHLY.</li> <li>THE CONCRETE WASH AREA SHALL BE REPAIRED, CLEANED, OR ENLARGED AS NECESSARY TO MAINTAIN CAPACITY FOR CONCRETE WASTE. CONCRETE MATERIALS ACCUMULATED IN THE PIT SHALL BE REMOVED ONCE THE MATERIALS HAVE REACHED A DEPTH OF <sup>3</sup>/<sub>3</sub> THE HEIGHT OF THE CONCRETE WASH AREA.</li> <li>CONCRETE WASHOUT WATER, WASTED PIECES OF CONCRETE, AND ALL OTHER DEBRIS IN THE SUBSURFACE PIT SHALL BE TRANSPORTED FROM THE JOB SITE IN A WATER—TIGHT CONTAINER AND DISPOSED OF PROPERLY.</li> <li>THE CONCRETE WASH AREA SHALL REMAIN IN PLACE UNTIL ALL CONCRETE FOR THE PROJECT IS PLACED.</li> <li>PERMANENTLY STABILIZE AREA AFTER CONCRETE WASH AREA IS REMOVED.</li> </ul>	CONSTRUCTION SITE ACCESS
	STABILIZED CONSTRUCTION ENTRANCE (SEE DETAILS VTC-1 TO VTC-3) SF/CF SF/CF SF/CF SF/CF SF/CF SF/CF
	EXISTING ROADWAY SSA-1. STABILIZED STAGING AREA
	STABILIZED STAGING AREA INSTALLATION NOTES
	<ul> <li>SEE PLAN VIEW FOR</li> <li>-LOCATION OF STAGING AREA(S).</li> <li>-CONTRACTOR MAY ADJUST LOCATION AND SIZE OF STAGING AREA WITH APPROVAL</li> <li>FROM THE LOCAL JURISDICTION.</li> </ul>
	2. STABILIZED STAGING AREA SHOULD BE APPROPRIATE FOR THE NEEDS OF THE SITE. OVERSIZING RESULTS IN A LARGER AREA TO STABILIZE FOLLOWING CONSTRUCTION.
	3. STAGING AREA SHALL BE STABILIZED PRIOR TO OTHER OPERATIONS ON THE SITE.
	4. THE STABILIZED STAGING AREA SHALL CONSIST OF A MINIMUM 3" THICK GRANULAR MATERIAL.
	5. UNLESS OTHERWISE SPECIFIED BY LOCAL JURISDICTION, ROCK SHALL CONSIST OF DOT SECT. #703, AASHTO #3 COARSE AGGREGATE OR 6" (MINUS) ROCK.
	6. ADDITIONAL PERIMETER BMPs MAY BE REQUIRED INCLUDING BUT NOT LIMITED TO SILT FENCE AND CONSTRUCTION FENCING.
	STABILIZED STAGING AREA MAINTENANCE NOTES
	<ol> <li>INSPECT BMPS EACH WORKDAY, AND MAINTAIN THEM IN EFFECTIVE OPERATING CONDITION. MAINTENANCE OF BMPS SHOULD BE PROACTIVE, NOT REACTIVE. INSPECT BMPS AS SOON AS POSSIBLE (AND ALWAYS WITHIN 24 HOURS) FOLLOWING A STORM THAT CAUSES SURFACE EROSION, AND PERFORM NECESSARY MAINTENANCE.</li> </ol>
	2. FREQUENT OBSERVATIONS AND MAINTENANCE ARE NECESSARY TO MAINTAIN BMPs IN EFFECTIVE OPERATING CONDITION. INSPECTIONS AND CORRECTIVE MEASURES SHOULD BE DOCUMENTED THOROUGHLY.
	3. WHERE BMPs HAVE FAILED, REPAIR OR REPLACEMENT SHOULD BE INITIATED UPON DISCOVERY OF THE FAILURE.
CONCRETE	4. ROCK SHALL BE REAPPLIED OR REGRADED AS NECESSARY IF RUTTING OCCURS OR UNDERLYING SUBGRADE BECOMES EXPOSED.
SWERE-WANAGER ISSUED: REVISED 10/7/19 8/19/2020 DRAWING NO. 900-CWA-2	November 2010Urban Drainage and Flood Control DistrictSSA-3Urban Storm Drainage Criteria Manual Volume 3





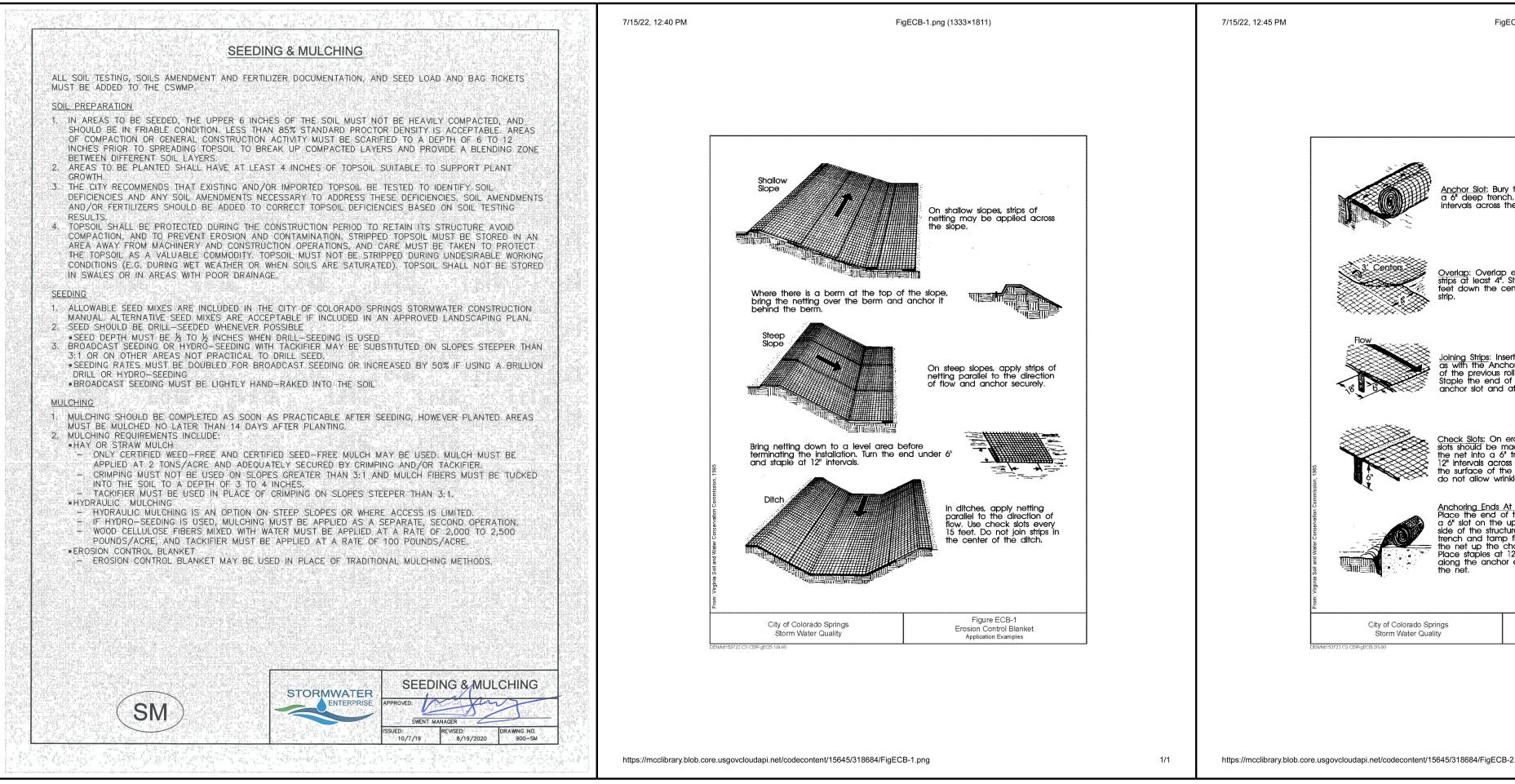


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