

Stormwater Management Plan
For
Academy Village Filing No. 3
El Paso County, CO

August 2017

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CERTIFICATION

I hereby affirm that this Stormwater Management Plan for the Academy Village Filing No. 3 project was prepared under my direct supervision in accordance with the provisions of the Colorado Water Quality Control Act and the El Paso County Drainage Criteria Manual Volume II. JR Engineering does not and will not assume liability for the implementation of the methods, requirements and standards set forth in this report.

Mark Heine, P.E.
For and On Behalf of JR Engineering

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1.0 SITE DESCRIPTION

1.1. Introduction

This report represents the Stormwater Management Plan for construction of Academy Village Filing No. 3. It was prepared to meet the regulatory requirements of the El Paso County Drainage Criteria Manual Volume II as well as the Colorado Department of Health, Water Quality Control Division in compliance with the provisions of the Colorado Water Quality Control Act, and the Federal Water Pollution Control Act.

This plan serves as a consolidated document for information on water quality protection for the subject site and areas immediately adjacent. It should also be noted that this plan is a living document that will need to be updated and maintained throughout the construction process. The intent of this plan is to provide the contractor a tool to consolidate records, logs, permits, applications, etc. as well as guidance on water quality protection. The plan incorporates elements that can be found in the contract plans and specifications as well as in the El Paso County Drainage Criteria Manual Volume II.

1.2. Current Conditions

Academy Village Filing No. 3 is located in the southeast quarter of section 1, township 12 south, range 67 west of the 6th P.M., County of El Paso, State of Colorado. More specifically, Academy Village Filing No. 3 is approximately 0.709 ac. piece of property that is currently undeveloped and is comprised of relatively flat grasslands.

The site generally slopes from the east to the west with slopes ranging between 1% and 3% to an existing swale. The property is generally covered with sparse native grasses. The site drains north within the swale towards an existing RCP at the north end of the sites.

provide current % cover

1.3. Nature and Purpose of Construction

The future use of the site (0.709 ac.) entails construction of one office building. See Appendix A for a Vicinity Map.

1.4. Wetlands and Receiving Waters

The contributing area is composed of two onsite basins. The contributing area has slopes of 1% to 3% with the whole range distributed throughout the entire site. Historically the site conveys runoff, via a swale, to a 24" RCP located at the north end of the site. All proposed storm drainage infrastructure improvements are

tributary to the Smith Creek which lies to the south of the site and ultimately conveys the flows to Monument Valley Creek.

According to FEMA there are no major drainageways located within the site. The entire site is located within and adjacent to Zone X, as determined by the Flood Insurance Rate Map (FIRM) Panel Number 08041C0287F, dated March 17, 1997. The FIRM Map is included in Appendix D.

1.5. Rainfall Erodibility & Erosion Sediment Control Methods

Attached at the end of this report is a drawing that describes the proposed site conditions, as well as the locations of the erosion control Best Management Practices (BMPs). The Erosion Control Plan depicts the anticipated drainage patterns after major grading activities and the anticipated locations for BMPs such as silt fence, inlet protection, and staging areas. It has been assumed that the majority of the surrounding areas will remain in their present state during the construction of this project.

The Contractor will be responsible for implementing and maintaining the erosion and sediment control measures described in the document and the accompanying design drawings. The Contractor may designate these tasks to certain subcontractors as he sees fit, but the ultimate responsibility for implementing these controls and their proper function at each phase of the project remains with the Contractor. The order of major activities will be as follows:

1. Install vehicle tracking control and other perimeter soil erosion control measures.
2. Clear and rough grade for improvements.
3. Excavate and install improvements including underground piping, manholes, and drainage structures.
4. Fine grading.
5. Final stabilization.
6. Clean up.

Construction Sequence Chart

	<i>Mobilization</i>	<i>Demolition</i>	<i>Grading</i>	<i>Utilities Installation</i>	<i>Flat work Installation</i>	<i>Vertical Installation</i>	<i>Landscape</i>	<i>Demobilization</i>
Best Management Practices (BMPs)								
Structural "Installation"								
Silt Fence Barriers*								
Vehicle Tracking Pad*								
Inlet Filter Bags*	Any prior inlets that could use protecting							
Rock Bags*	Any prior inlets that could use protecting							
Rip Rap								
Collecting Asphalt / Concrete Saw Cutting Waste								
*All BMPs to be Removed once Construction is Complete.								
Vegetative								
Temporary Seeding Planting		Any time the site will sit dormant longer than 30 Days.						
Mulching/Sealant		Any time the site will sit dormant longer than 30 Days.						
Permanent Seeding Planting								
Sod Installation								
Rolled Products : Netting/Blankets/Mats		Any time the site will sit dormant longer than 30 Days.						

1.6. Non-Stormwater Discharge

Non-stormwater discharges will be eliminated or reduced to the fullest extent feasible. This plan does not cover construction dewatering. Pumping or draining groundwater that has infiltrated into an excavation requires a general permit for construction dewatering, regardless of the size of the project. Stormwater that mixes with groundwater in an excavation is also subject to the controls in the general permit for Construction Dewatering.

No materials shall be discharged in quantities that will have an adverse effect on the receiving waters. The measures listed below will be implemented to achieve these objectives.

- Proper and lawful disposal of all waste materials.

- Control any spills and leaks that may occur and clean up (mitigate).
- Use of designated areas for equipment repair and cleaning.
- Careful application of irrigation water.

All potential pollutants used during construction other than sediment, will be handled and disposed of in a manner that does not contaminate storm water.

All materials used during construction, which have the potential to impact storm water quality will be stored, managed, used and disposed of in a manner that minimizes the potential for releases to the environment, especially storm water.

2.0 STORMWATER MANAGEMENT CONTROLS

2.1. Controls Overview

During construction, several controls and measures shall be implemented under the direction of the General Contractor to prevent offsite discharge of contaminated storm water. Controls for this project include erosion, sedimentation, stabilization, and other BMPs. Specifications and engineering drawings for the selected BMPs can be found on the drawing included in the back pocket of this report.

The contractor shall comply with the attached plans and guidelines as a minimum. Field conditions and unforeseen circumstances will dictate modifications to or additions to this Stormwater Management Plan. Where storm water pollution potential exists, appropriate preventative measures (BMPs) must be utilized and documented, whether such measures are identified in this report or not.

2.2. Erosion and Sediment Controls

The objective of erosion control is to limit the amount of erosion occurring on disturbed areas until the site is stabilized. The objective of sediment control is to capture the soil that has been eroded before it leaves the construction site. Despite the use of both erosion and sediment control measures, it is recognized that some sediment could remain in runoff leaving the construction site. This should be minimized to the maximum extent practicable.

The BMPs scheduled for use during the construction of this site can be divided into Structural and Non-Structural Practices. Section 2.2.1 of this report discusses the proposed structural BMPs to be utilized. Section 2.2.2 discusses the non-structural practices.

2.2.1. Structural Practices (See drawings for locations)

Structural BMPs are structural site management practices that will minimize erosion and sediment transport. Such practices may include silt fences, drainage swales,

inlet protections, outlet protection, etc. The goal of structural BMPs on this project is to protect areas downstream of the site from turbid water, sediment, oils and other contaminants, which may mobilize during storm water flows. The structural BMPs that may be utilized on the subject site are depicted in the Drainage and Erosion Control Plan and are described in more detail as follows:

Silt Fence:

- A temporary vertical barrier of filter fabric attached to and supported by posts and entrenched into the ground.
- Utilized to intercept sediment from disturbed areas during construction operations.
- Used to filter shallow sheet flow.
- Typically used along the toe of fills, in transition areas between cut and fills, and adjacent to streams.
- Generally installed prior to or immediately following land-disturbance activity.
- Shall be inspected periodically and after each rain or snowfall event and repaired when necessary. Sediment shall be removed from behind the fence when it accumulates to one-half the exposed fabric height. Sediments removed must be properly disposed.
- Utilized as a temporary feature.

Inlet Protection:

- A barrier across or around a storm drain drop inlet, a curb inlet, or a culvert inlet.
- Utilized to intercept and filter sediment-laden runoff and prevent it from entering storm drainage systems.
- Not to be utilized in place of a sediment-trapping device. Used as a secondary control device.
- Do not use where ponded water might flow onto the roadway.
- Blocking of the inlet should not be watertight.
- Generally installed prior to land-disturbance activity on existing inlets and immediately after the construction of new inlets.
- Shall be inspected periodically and after each rain or snowfall event and repaired when necessary. Accumulated sediment shall be removed and properly disposed.
- Utilized as a temporary feature.

Outlet Protection:

- A structurally lined apron (generally with riprap, grouted rip rap, or concrete) placed at the outlet of pipes or paved channel sections.
- Used as an energy dissipation device to prevent scour and erosion at the outlet by reducing the velocity and energy of concentrated flow.

- Shall be installed immediately following the construction of the upstream conveyance element.
- Inspection shall be performed after high flows for scour and dislodged stones. Repairs shall be made immediately.
- Utilized as a permanent feature.

Grading Techniques:

- Soil surface roughening, terracing and rounding at tops of cuts, transitions and roadway ditches to facilitate plant establishment and minimize erosion.
- Utilized to temporarily stabilize disturbed areas and protect from wind and water erosion immediately after grading activities have ceased.
- Used as a temporary practice during construction.
- Inspection and maintenance must be provided periodically and after each rain or snowfall event that causes runoff to ensure roughened state is maintained.
- Rills developed should be filled and the area re-graded immediately.

Erosion control measures are the responsibility of the General Contractor to inspect and maintain. Any existing erosion control devices that are removed in order to complete the construction of the utilities shall be replaced immediately following the construction that required its removal unless directed otherwise by the construction plans.

2.2.2. Non-Structural Practices (See drawings for locations)

Non-Structural BMPs are both interim and permanent stabilization practices. Such practices may include temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, tree protection, preservation of mature vegetation, etc. The non-structural BMPs that may be utilized on the subject site are described in more detail as follows:

Temporary and Permanent Seeding:

- Soil preparation, seeding, mulch tackifier and/or mulching shall be required for all disturbed areas that are not hardscaped, paved or stabilized.
- Exposed soils, which are not part of the active grading and/or construction activity, shall be stabilized.
- Seeded areas shall be inspected frequently. If the seeded areas fail to establish, provide adequate ground coverage. If seeded areas are disturbed, the area should be re-seeded.
- Permanent landscaping and vegetative cover is depicted on the Landscaping plans.

Mulching:

- Application of plant residues to the soil surface. Typical mulching material includes certified weed free hay or straw, certified under the Colorado Department of Agriculture Weed Free Forage Certification Program as regulated by the Weed Free Forage Act, Title 35, Article 27.5, CRS and wood cellulose fiber.
- Utilized in combination with mulch tackifier for temporary erosion control (i.e., incomplete slopes, detour slopes, stockpiles).
- Utilized in combination with mulch tackifier for temporary erosion control on slopes when seeding is not allowed due to seasonal constraints.
- Used to cover permanent or temporary seed areas. Hydromulch shall not be done in the presence of free surface water.
- Inspect frequently and reapply mulching in areas where the mulching has been loosened or removed. Mulch tackifier must be applied with additional applications of mulching.

Mulch Tackifier:

- An organic soluble powder adhesive used as a water slurry to adhere native hay, straw, hydromulch, or seed to a surface and together.
- Used to cover disturbances as temporary cover for wind erosion.
- Mulch movement indicates poor application and procedure mixture.
- Proper application will bond mulch material together and to soil.
- Inspect by touching mulch surface to determine if adhesion has occurred.

Maintain Existing Vegetation:

- Existing vegetation should be preserved where possible to prevent the migration of sediment.
- Should be inspected regularly.
- Establish and maintain buffers.
- Areas beginning to show signs of erosion or soil transport may require additional emergency BMPs.

2.2.3. Other Controls (See drawings for location)

Vehicle Tracking Control / Construction Entrance:

- A temporary stabilized layer of aggregate underlined with geotextile or gravel located where traffic enters or exits the construction site.
- The structure shall be constructed prior to any construction activity and maintained daily.
- Stone shall be added and repairs performed as conditions require.

- When mud is present and not easily removed by a tracking pad, tire washing should be implemented as needed. Tire washing operations should occur near the construction exit on a stabilized stone pad. Implementation of a tire washing area should include provisions for collecting wash water and directing it to an onsite pond.

Tracking of Sediment onto Roads and Streets:

- Public and private roadways shall be kept clear of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Sediment will be shoveled and or swept from the street and disposed of in a manner that prevents contamination of storm water or surface water runoff.

2.3. SWMP Administrator

Implementation and management of the environmental aspects of this project under this SWMP Plan are the responsibilities of the General Contractor. The General Contractor shall ensure the all contractors providing services on the project have access to a copy of the SWMP Plan and appropriate training regarding storm water pollution prevention. The General Contractor, Building Contractor, Utility Installations Contractor, Grading Contractor and all other contractors and subcontractors shall be familiar with the SWMP Plan and their responsibilities on the plan.

2.4. Materials Management

2.4.1. Potential Pollution Sources

It is anticipated that this construction project will not utilize any abnormal or atypical hazardous materials. The construction site will operate much like other typical construction projects. The following materials or substances are expected to be present onsite during construction:

Concrete/Additives/Wastes	Cleaning solvents
Detergents	Petroleum based products
Paints/Solvents	Pesticides
Acids	Fertilizers
Solid and construction wastes	Sanitary wastes
Soil stabilization additives	

Activities on the site that may have an impact on stormwater include the following:

- Equipment and/or vehicle washing
- Fertilizers, chemicals, or other material storage

- Vehicle maintenance or fueling
- Waste incineration, treatment, storage or disposal
- Off-site vehicle tracking
- Loading/unloading areas
- Concrete truck washout

As construction progresses, specific areas shall be designated for vehicle maintenance and refueling, material and waste storage, construction equipment staging, and bathroom facilities. Management measures and procedures for these facilities are discussed later in the plan.

2.4.2. Pollution Prevention Measures

Pollution prevention measures shall be utilized to prevent construction materials with the potential of polluting stormwater, such as those listed above, from coming in contact with runoff. Measures include good housekeeping and proper disposal of construction and demolition debris, equipment fuel, lubricants, paints and solvents, asphalt, concrete, topsoil and other materials, as well as controls which prevent sediments from being tracked off-site by construction vehicles, and proper control of any non-stormwater flows on-site.

As previously stated, Best Management Practices (BMPs) are schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce pollution of public waters. BMPs also control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. With regard to construction, these may include structural controls and nonstructural practices that are designed to prevent pollutants from entering water or direct the flow of water away from potential sources of pollution.

For construction sites, there are three main types of BMPs, those that prevent erosion and sediment transport, others that prevent pollutants from construction materials from mixing with stormwater, and those that trap pollutants before they can be discharged. BMPs for most common construction materials and wastes with the greatest potential for adversely affecting stormwater quality are as follows:

BMPs for Disturbed and Stored Soils:

- Seeding and mulching should be completed for the site
- Soil preparation, seeding, mulch tackifier and/or mulching shall be required for all disturbed areas that are not surfaced.
- Exposed soils, which are not part of the active grading and/or construction activity, shall be stabilized.

- Seeded areas shall be inspected frequently. If the seeded areas fail to establish, provide adequate ground coverage. If seeded areas are disturbed, the area should be re-seeded.
- Permanent landscaping and vegetative cover is depicted on the Landscaping plans.

BMPs for Vehicle Tracking of Sediment:

- Use vehicle tracking pads at the entrances of construction
- Public and private roadways shall be kept clear of accumulated sediment. Bulk clearing of accumulated sediment shall not include flushing the area with water. Sediment will be shoveled and or swept from the street and disposed of in a manner that prevents contamination of storm water or surface water runoff.
- A temporary stabilized layer of aggregate underlined with geotextile or gravel located where traffic enters or exits the construction site.
- The structure shall be constructed prior to any construction activity and maintained daily.
- Stone shall be added and repairs performed as conditions require.
- When mud is present and not easily removed by a tracking pad, tire washing should be implemented as needed. Tire washing operations should occur near the construction exit on a stabilized stone pad. Implementation of a tire washing area should include provisions for collecting wash water and directing it to an onsite pond

BMPs for Management of Contaminated Soils:

- Have equipment to contain and clean up spills of hazardous materials in the vicinity of where these materials are to be stored or used.
- Contain and clean up spills immediately after they occur. Contact State or Local solid waste regulatory agency concerning information and procedures necessary to treat or dispose of contaminated soils.
- Keep materials in a dry covered area and elevated from the ground.

BMPs for Loading and Unloading Operations:

- Select a loading and unloading area for the site

BMPs for Outdoor Storage Activities:

- Select an outdoor storage area for the site
- When possible store equipment and material in covered areas

BMPs for Equipment Maintenance and Fueling:

- Fueling operations shall occur in a designated area.
- Have equipment to contain and clean up petroleum spills in fuel storage areas or on board maintenance and fueling vehicles.

- Where possible, store petroleum products and fuel vehicles in covered areas and construct dikes to contain spills.
- Contain and clean up spills immediately.
- Use preventive maintenance for onsite equipment such as checking for and fixing gas and oil leaks in construction vehicles on a regular basis.
- Follow proper procedure for the handling and application of asphaltic substances.
- Oversee all filling operations.
- Fueling equipment and area shall be fenced and valving locked to prevent vandalism.

BMPs for Significant Particulate Generating:

- Use silt fence and inlet protection to protect the areas downstream of the site
- Maintain and clean out any sediment that builds up around the inlet protection and silt fence

BMPs for On-Site Waste Management:

- Select a designated waste collection area onsite.
- Provide an adequate number of containers with lids or covers that can be placed over the containers prior to rainfall.
- When possible, locate containers in a covered area.
- Arrange for waste collection before containers overflow.
- If a container does spill, provide cleanup immediately.
- Plan for additional containers and more frequent pickups during the demolition phase of construction.
- Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas.
- Check with local solid waste management agency for specific guidance.
- Trash, debris and spoils shall be properly contained at the END of EACH day.

BMPs for residual Concrete disposal:

- Emptying or wash out of excess concrete may be allowed on site. Excess concrete and wash water should be disposed of in a manner that prevents contact between these materials and stormwater discharges from the site.
- Residual concrete shall be discharged in specifically designated dike areas, which have been prepared to prevent contact between the concrete and/or washout and stormwater discharged from the site and/or ground water.
- The hardened residue from the dike areas shall be disposed of in the same manner as other non-hazardous construction waste materials or may be broke up and utilized as deemed appropriate by the contractor.
- The use of the washout area shall be temporary (less than one year).

- Washing of trucks and masonry equipment is to be performed only at a designated concrete washout. No burying of wastes.

BMPs for Sanitary/Septic Wastes:

- Sanitary or septic wastes that are generated onsite should be treated or disposed of in accordance with State or local requirements.
- If self-contained, temporary facilities are utilized, the domestic waste haulers should be contracted to regularly remove the sanitary and septic wastes and to maintain the facilities in good working order.
- Any facilities to be connected to a sanitary sewer system should be properly hooked to the sanitary sewer system to prevent illicit discharges.
- Untreated, raw sewage should never be discharged or buried onsite.
- Contact local government and State regulatory agencies to ensure the compliance with State or local requirements.
- If sewage is being discharged to the sanitary sewer, the local treatment works authority should be contacted.

BMPs for pesticides:

- Store pesticides in a dry covered area and elevate above the ground.
- Provide curbs or dikes to contain possible spills.
- Have measures on site to contain and clean up spills.
- Strictly follow recommended application rates and recommended application methods.
- Only a Certified Applicator shall use pesticides.

BMPs for Fertilizers/Detergents:

- Limit the application of fertilizers to the minimum area and minimum recommended amounts.
- Reduce exposure of nutrients to storm water runoff by working the fertilizer deep into the soil.
- Apply fertilizer more frequently, but at lower application rates.
- Hydro seeding, where lime and fertilizers are applied to the ground surface in one application should be limited, where possible.
- Limit the use of detergents onsite: wash water containing detergents should not be discharged to the storm system.
- Implement good erosion and sediment control to help reduce the amount of fertilizers that can leave the site as well as sediments.
- Fertilizers and detergents shall be stored in dry and covered area and elevated above the ground.
- Berming shall be provided around the storage area to avoid contact with stormwater runoff.

BMPs for Hazardous Wastes Disposal:

- Check with local waste management authorities to determine what the requirements are for disposing of hazardous materials.
- Use the entire product before disposing of the container.
- Do not remove the original product label from the container. It contains important information.
- Do not mix products together unless specifically recommended by the manufacturer.
- The correct disposal of these products varies with the product utilized. Follow the manufacturers recommended method, which is often found on the label.

2.5. Spill Management

Construction site supervisors should create and adopt a spill control plan that includes measures and procedures to stop the source of the spill, contain the spill, clean up, and disposal of contaminated materials. Key personnel shall be identified and trained to be responsible for spill prevention and control. The following measures would be appropriate for a spill prevention and response plan:

- Store and handle materials to prevent spills.
 - Tightly seal containers.
 - Make sure all containers are clearly labeled.
 - Stack containers neatly and securely
 - Where possible, store containers on pallets in a covered area.
- Reduce stormwater contact if there is a spill.
 - Have cleanup procedures clearly posted.
 - Have cleanup materials readily available.
 - Contain any liquid.
 - Stop the source of the spill.
 - Cover spill with absorbent material.
- Dispose of contaminated materials according to manufacturer's instructions or according to State or local requirements.
- Identify personnel responsible for responding to a spill of toxic or hazardous materials.
 - Provide personnel spill response training.
 - Post names of spill response personnel.
- Keep the spill area well ventilated.

Additionally, records of spills, leaks, or overflows that result in the discharge of pollutants must be documented and maintained. Information such as the time and date, weather conditions, response procedure taken, response personnel involved, reasons for the spill, etc., shall be recorded for all occurrences in the SWMP Plan and on the map.

Spill Categories are as follows:

Minor Spills

- Any event that involves 5 gallons or more and or involves the following:
- Less than the reportable quantity
- Stays within the permitted area
- Does not threaten any stormwater conveyances

Significant Spills

- Reportable Quantity (SARA title III List of Lists, available from EPA for reportable quantity)
- Any amount leaving the permitted area
- And/or threatens any water conveyances.

Hazardous Spills

- Any substance requiring a MSDS response.
- Procedure shall include but limited to:
 - Secure the area
 - Provide first aid
 - Notify emergency response personnel

Some spills may need to be reported to the Division of Water Quality and the County of El Paso immediately. Specifically significant spills that are, a release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water), any spill that exceeds the reportable quantity, and any amount that leaves the permitted area must be reported. The Division's toll-free 24-hour environmental emergency spill reporting line is 1-877-518-5608. Written documentation to both the CDPHE (Division) and the County of El Paso of significant spills should be provided within 5 days.

3.0 Dry Land Vegetation

3.1. Soil and Surface Conditions

The Academy Village Filing No. 3 site consists of Course Sandy Loams, which the USDA-NSCS classifies as Type B soils. See Appendix B for the NRCS soil map.

3.2. Seed Mixes

A standard County of El Paso seed mix should be used for the site. If a standard mix is not used than a request to the County must be submitted of the preferred seed mix with the application rates.

3.3. Mulches

Typical mulching material includes certified weed free hay or straw, certified under the Colorado Department of Agriculture Weed Free Forage Certification Program as regulated by the Weed Free Forage Act, Title 35, Article 27.5, CRS and wood cellulose fiber. Mulch should be utilized in combination with mulch tackifier for temporary erosion control (i.e., incomplete slopes, detour slopes, stockpiles) when seeding is not allowed due to seasonal constraints. Mulch is also used to cover permanent or temporary seed areas. The mulch should be inspected frequently and reapplied in areas where the mulch has been loosened or removed. Mulch tackifier must be applied with additional applications of mulching.

4.0 Detailed Sequence of Construction Activities

Sequence of Land Disturbing Activity Chart

	<i>Mobilization</i>	<i>Demolition</i>	<i>Grading</i>	<i>Utilities Installation</i>	<i>Flat work Installation</i>	<i>Vertical Installation</i>	<i>Landscape</i>	<i>Demobilization</i>
Best Management Practices (BMPs)								
Structural "Installation"								
Silt Fence Barriers*								
Vehicle Tracking Pad*								
Inlet Filter Bags*	Any prior inlets that could use protecting							
Rock Bags*	Any prior inlets that could use protecting							
Rip Rap								
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*All BMPs to be Removed once Construction is Complete.								
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Permanent Seeding Planting								
Sod Installation								
Rolled Products : Netting/Blankets/Mats		Any time the site will sit dormant longer than 30 Days.						

5.0 Inspection and Maintenance

5.1. Inspection and Maintenance Overview

A site inspection of all erosion control facilities shall be conducted at least once every two weeks and immediately following any significant precipitation or snowmelt event that could cause surface erosion and every 30 days for inactive construction projects. The inspection must determine if there is evidence of, or the potential for, pollutants entering the drainage system, and BMPs should be reviewed to determine if they still meet the design and operational criteria in the SWMP Plan and that they continue to adequately control pollutants at the site. The construction site perimeter, disturbed areas, discharge points and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the storm drainage system. Erosion and sediment control measures identified in this SWPM Plan and on the construction plans shall be observed to ensure that they are operating correctly. Any other structural BMPs that may require maintenance, such as secondary containment around fuel tanks or the conditions of spill response kits shall also be inspected. Stormwater items to be inspected include the following:

- Condition & failures of structural & non-structural BMPs
- Perimeter and outfall structure
- Evidence of spills, upsets & discharges
- Maintaining accurate SWMP Plan documentation
- Material Handling and storage
- Good Housekeeping
- Site Stabilization
- Meet authorities during inspections
- Update permit disturbed acreage
- Equipment and vehicle storage area
- Maintenance records of equipment, systems & operations

The project site and the adjacent streets impacted by the construction shall be kept neat, clean and free of debris. The control measures and facilities need to be maintained in good working order. Any items that are not functioning properly or are inadequate should be promptly repaired or upgraded. The site shall be inspected by responsible personnel who are familiar with the site. Inspection and monitoring will follow the procedures outlined below:

Minimum Monitoring (Inspection) Requirements:

- Inspections of the construction site shall be conducted by the contractor (or agent) every two weeks and after significant storm events.
- The qualified site superintendent familiar with this SWMP Plan /BMP shall perform the inspections.
- The contractor shall certify the site is in compliance with the SWMP Plan /BMP and the permit by:
 - Ensuring that areas contributing significant storm water discharges related to the construction activities have been identified.
 - Evaluating preventive measures required by the SWMP Plan /BMP to insure they are adequate and has been properly implemented.
 - Points of discharge from the site will be inspected to check for signs of pollutant discharge.
 - Certifying the grade elevations and capacity of permanent sedimentation facilities.
 - Determining if additional control measures will need to be implemented.
 - Updating this SWMP Plan if new measures are implemented or existing controls are deleted.

Based on the results of the inspection, the description of potential pollutant sources, and the pollution prevention and control measures that are identified within this plan shall be revised and modified as appropriate and as soon as practicable after such inspection. Typically corrective action shall commence immediately when a deficiency is observed.

In addition to the inspections performed at least every 7 days, several daily inspections will be required. Each day when any type of construction activity has taken place onsite, qualified personnel provided by the General Contractor shall:

- Inspect all onsite areas where petroleum products are stored, used or handled for spills and leaks from vehicles and equipment.
- Inspect all onsite locations where vehicle enter or exit the site for evidence of offsite sediment tracking.

5.2. Final stabilization and long term stormwater management

Permanent stabilization will be achieved by establishing a vegetative cover on all disturbed areas. The vegetative cover will be as specified on the Landscape Plan. Final stabilization shall be considered complete when all paving and landscaping are completed and the vegetative cover has been established with a density of at least 70 percent of pre-disturbance levels (including shrubs and trees).

In general spring and fall encouraged whenever possible. Temporary and permanent seeding shall be completed within 14 days after grading has ceased and left to idle for more than 30 days. Care should be taken to complete seeding activities prior to November 1st for disturbed land intending to remain inactive for the winter months.

Roughening and scarifying disturbed areas is allowed as a temporary stabilization with the following conditions:

- During winter activity
- Intended to seeded in the spring fall seasons
- Intended to be active within 2-3 months of inactivity (with Stormwater approval)

Management of storm water after completion of construction will be accomplished by utilizing the practices listed below:

- Upon completion of construction, the site shall be inspected to ensure that all equipment, waste materials, and debris have been removed.
- The site will be inspected to make certain that all graded surfaces have been landscaped or seeded with an appropriate ground cover.
- Upon acceptance of final stabilization measures, all temporary BMP's shall be removed and proper function of inlets, drainage ways, or other storm water conveyance elements shall be restored.
- The storm sewer systems and the detention pond will be returned to full capacity and the outlet structures will be checked to assure they are unclogged and in working order.

The General Contractor shall be responsible for maintaining the storm water controls in good working order including removal measures until the Inactivation Notice is filed with the State. The state requires the Inactivation Notice be filed within 3 months of the proposed end of construction. Alternatively, permit responsibilities may be transferred or reassigned by submitting a Notice of Transfer and Acceptance of Terms or a Reassignment of Coverage if control of a portion of the site changes parties.

6.0 CONCLUSION

This Stormwater Management Plan has been prepared in accordance with the criteria and methods described in the "State of Colorado General Permit Application and Stormwater Management Plan Guidance for Stormwater Discharges Associated with Construction Activity." The drainage system has been designed to comply with the regulatory requirements of the El Paso County Drainage Criteria Manual Volume II. All temporary and permanent erosion and sediment control BMPs shall be

inspected, maintained and repaired by the General Contractor as needed to ensure continued performance of their intended function.

The General Contractor shall remove all temporary erosion and sediment control BMPs after stabilization is achieved or after temporary BMPs are no longer needed. Trapped sediment will be removed by the General Contractor or stabilized onsite. Disturbed soil areas resulting from removal of BMPs or the General Contractor will need to be permanently stabilized with vegetation as soon as possible.

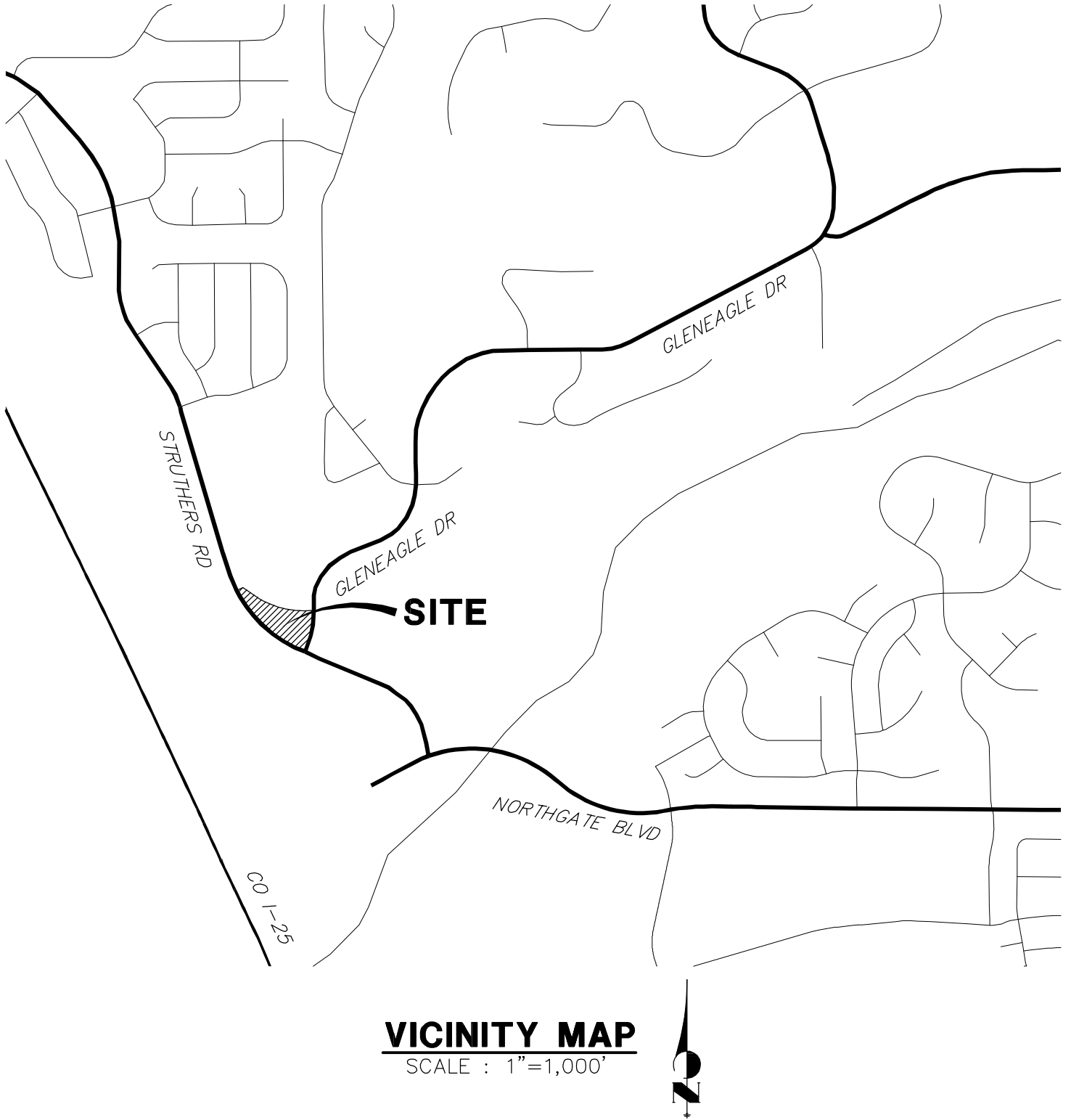
7.0 REFERENCES

1. Urban Storm Drainage Criteria Manual (Volumes 1, 2, and 3), Urban Drainage and Flood Control District, (Rev. April 2008)
2. Storm Drainage Criteria Manual Volume II, El Paso County, Colorado, Updated May, 2014.
3. "Hydrologic Group Rating for Larimer County Area, Colorado", USDA-Natural Resources Conservation Service, National Cooperative Soil Survey. Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>.

November
2002

El Paso?

APPENDIX A

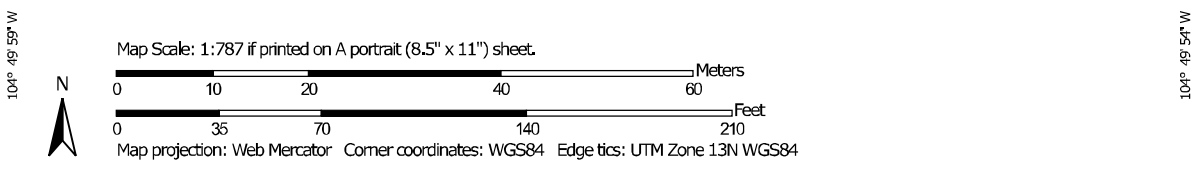


APPENDIX B

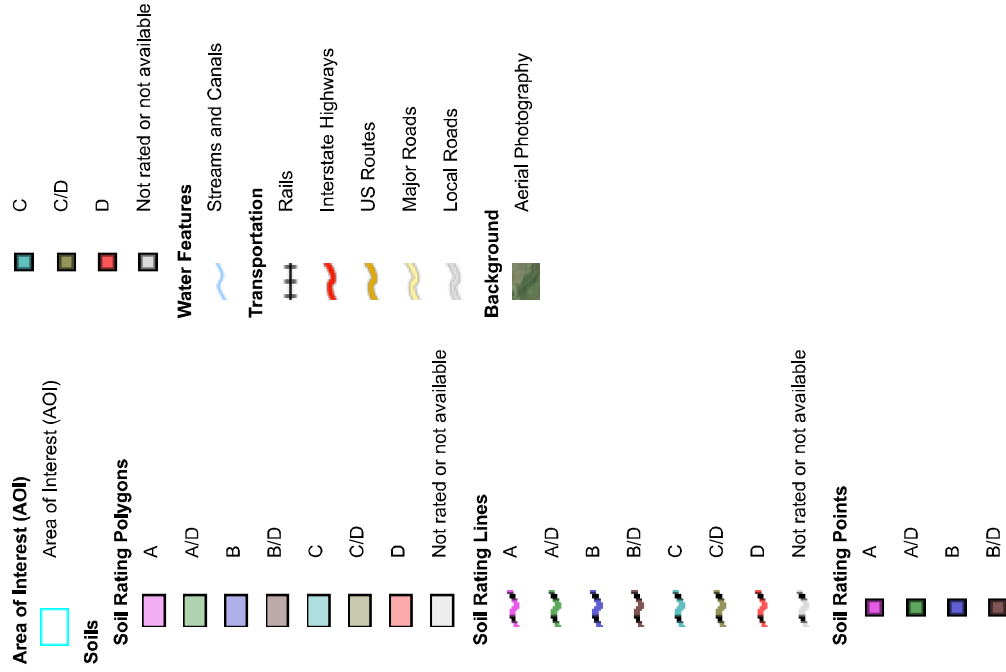
Hydrologic Soil Group—El Paso County Area, Colorado



Soil Map may not be valid at this scale.



MAP LEGEND



MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: El Paso County Area, Colorado
 Survey Area Data: Version 14, Sep 23, 2016

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

Date(s) aerial images were photographed: Apr 15, 2011—Sep 22, 2011

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

Hydrologic Soil Group— Summary by Map Unit — El Paso County Area, Colorado (CO625)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
71	Pring coarse sandy loam, 3 to 8 percent slopes	B	1.1	100.0%
Totals for Area of Interest			1.1	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

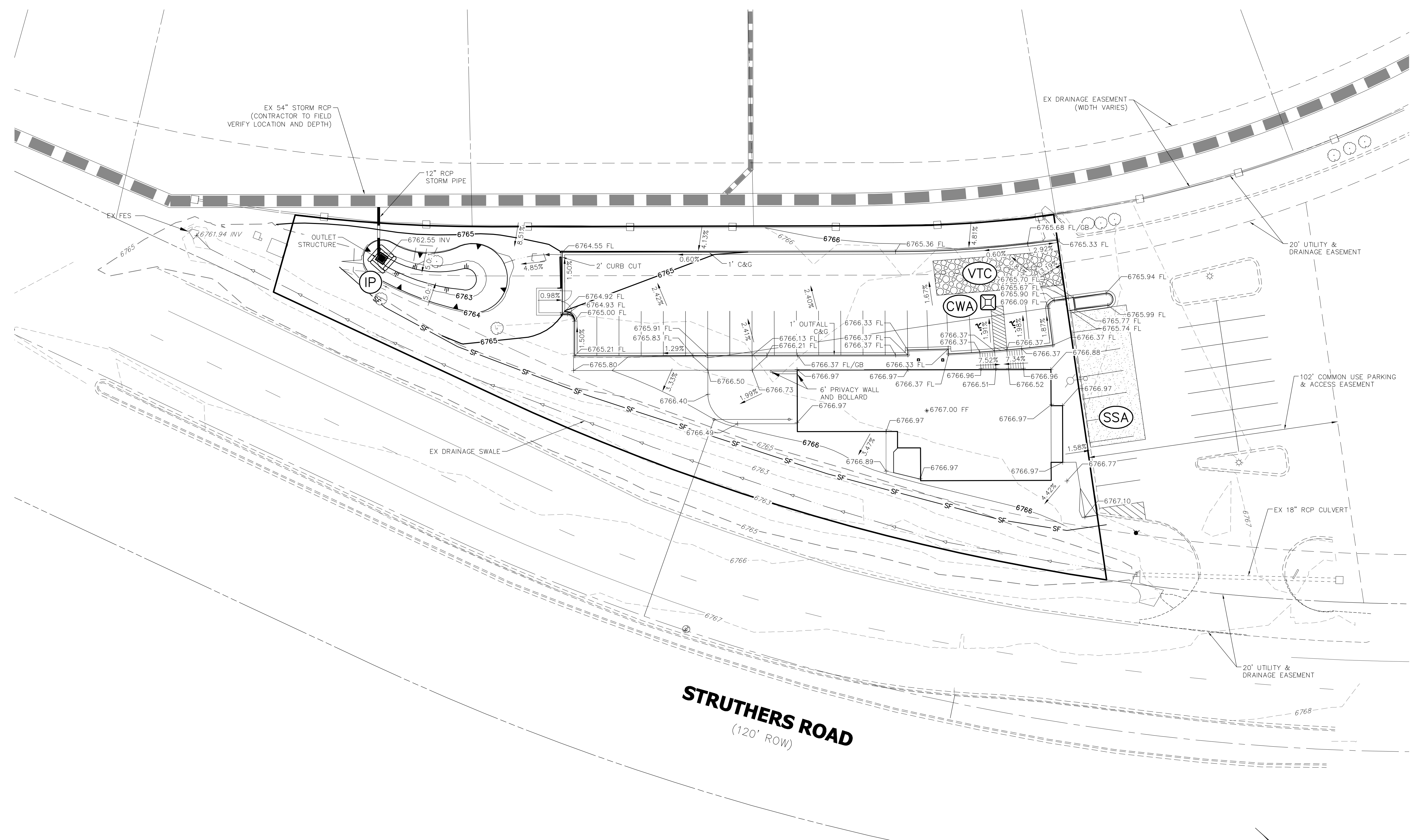
Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX C

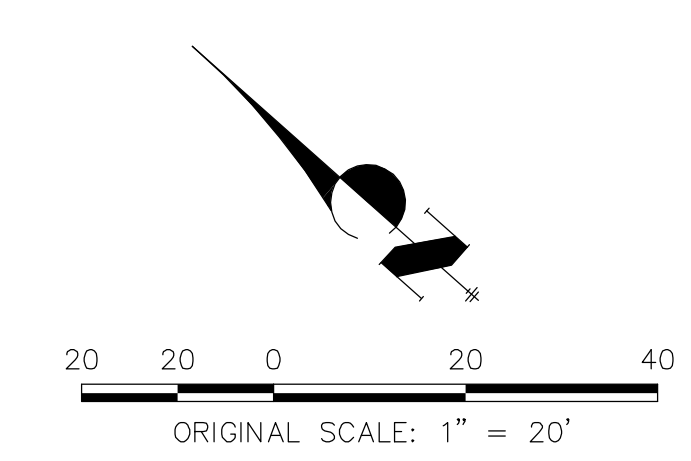


GESC PLAN LEGEND

PERMANENT SEEDING	(PS)		NON-IRRIGATED DROUGHT-TOLERANT NATIVE GRASSES
SILT FENCE	(SF)		
VEHICLE TRACKING CONTROL	(VTC)		
STABILIZED STAGING AREA	(SSA)		
CONCRETE WASHOUT AREA	(CWA)		
INLET PROTECTION	(IP)		
FLOW DIRECTION			

LEGEND

EXISTING CONTOURS		6100	PROPOSED RIDGELINE	
PROPOSED INDEX CONTOURS		6100		
PROPOSED INTERMEDIATE CONTOURS				
PROPOSED STORM SEWER				
PROPOSED INLET				
FINISHED GRADE ELEVATION		XX.XX		
LOW POINT ELEVATION		XX.XX LP		
HIGH POINT ELEVATION		XX.XX HP		
RIGHT OF WAY ELEVATION		XX.XX ROW		
GRADE BREAK ELEVATION		XX.XX GB		
FLOW LINE ELEVATION		XX.XX FL		

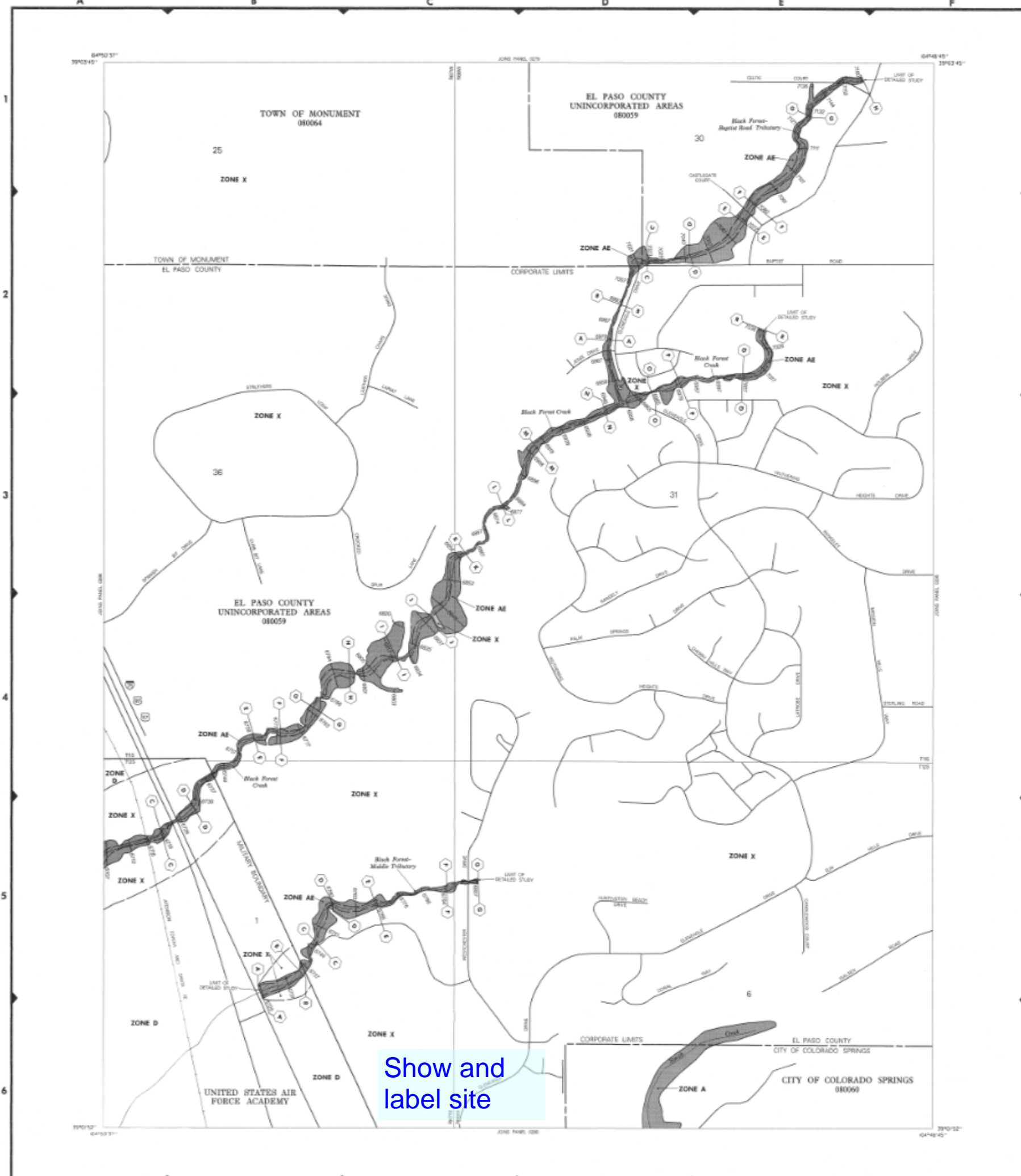


CIVIL ENGINEER'S STATEMENT
 PREPARED UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF
 JR ENGINEERING

MARK HEINE _____ DATE _____

<p>UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE. THESE DRAWINGS ARE DESIGNATED BY WRITTEN AUTHORIZATION.</p> <p>PREPARED FOR RON COVINGTON HOMES 13725 STRUTHERS ROAD, SUITE 200 COLORADO SPRINGS, CO 80920 RON COVINGTON 719-491-1220 RCOVINGTON@COVINGTONHOME.COM</p>	<p>J.R. ENGINEERING A Westman Company</p> <p>Central 303-740-9383 • Colorado Springs 719-583-2593 Fort Collins 970-491-9888 • www.jrengineering.com</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">BY</th> <th style="text-align: left;">DATE</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	BY	DATE							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left;">No.</th> <th style="text-align: left;">REVISION</th> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> </tr> </table>	No.	REVISION							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>H-SCALE</td> <td>1"=40'</td> </tr> <tr> <td>V-SCALE</td> <td>1"=X'</td> </tr> <tr> <td>DATE</td> <td>8/25/17</td> </tr> <tr> <td>DESIGNED BY</td> <td>AUH</td> </tr> <tr> <td>DRAWN BY</td> <td>AUH</td> </tr> <tr> <td>CHECKED BY</td> <td> </td> </tr> </table>	H-SCALE	1"=40'	V-SCALE	1"=X'	DATE	8/25/17	DESIGNED BY	AUH	DRAWN BY	AUH	CHECKED BY		<p>ACADEMY VILLAGE FILING NO. 3</p> <p style="text-align: center;">GRADING & EROSION CONTROL PLAN</p> <p>SHEET 2 OF 3</p> <p>JOB NO. 25123.00</p>
BY	DATE																																
No.	REVISION																																
H-SCALE	1"=40'																																
V-SCALE	1"=X'																																
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DESIGNED BY	AUH																																
DRAWN BY	AUH																																
CHECKED BY																																	

APPENDIX D



LEGEND

SPECIAL FLOOD HAZARD AREAS (LIMITED BY DETAILED STUDY)

- ZONE A** No base flood elevation determined
- ZONE AE** Base flood elevation determined
- ZONE AH** Flood depths of 1 to 3 feet usually area of grazing land. Base flood elevation determined
- ZONE AO** Flood depths of 1 to 3 feet usually area of grazing land. Average depth determined. For area of water for trading, elevated area determined
- ZONE AN** To be protected from 100-year flood by Federal flood protection under construction. No base flood elevation determined
- ZONE V** Coastal flood with velocity hazard areas within no base flood elevation determined
- ZONE VE** Coastal flood with velocity hazard areas within base flood elevation determined

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X** Area of 100-year flood area of 100-year flood with average depth of less than 1 foot or with depth which has a 1 percent return period and is protected by levee from 100-year flood

OTHER AREAS

- ZONE D** Area determined to be outside 100-year floodway
- ZONE B** Area in which flood hazards are undetermined

UNDEVELOPED COASTAL BARRIERS

- Identified 100% Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas
- Identified 75% Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas
- Identified 50% Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas

BOUNDARIES

- Flood Boundary
- Floodway Boundary
- Zone D Boundary
- Boundary (Citywide Special Flood Hazard Areas, and Countywide Special Flood Hazard Areas) of Special Flood Hazard Areas
- Boundary (Special Flood Hazard Areas) of Special Flood Hazard Areas
- Base Flood Elevation Line
- Division in Part, See Map Index for Division Details
- Zone Section Line
- Base Flood Elevation in Feet
- Water Course (Stream, Lake, etc.) See Map Index for Division Details
- Division Reference Mark
- River Mile
- Horizontal Coordinates Based on North American Datum of 1983 (NAD 83) Projection

NOTES

This map is for use in administering the National Flood Insurance Program. It does not constitute a warranty of any kind, particularly with respect to flood damage caused by small scale or all-terrain vehicles outside Special Flood Hazard Areas.

Coastline flood elevations apply with a tolerance of 0.5 feet, and include the effects of waves, unless there are specific data otherwise shown. Areas shown as Zone D are determined to be outside the 100-year floodway for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zone A, AE, AH, AO, AN, V, and VE.

Design areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodway areas are subject to change and are not intended to be permanent. The floodway areas are subject to change and are not intended to be permanent. The floodway areas are subject to change and are not intended to be permanent.

Floodway areas are shown in the Flood Insurance Study Report. This map may incorporate appropriate boundaries of Coastal Barrier Resources System areas and the National Flood Insurance Program established under the Coastal Barrier Resources Act of 1982 (P.L. 97-35).

Corporate limits shown are current as of the date of this map. The user should consult appropriate authorities of State or Federal agencies to determine if corporate limits have changed subsequent to the issuance of this map.

For community map section listing prior to community mapping, see Section 5.0 of the Flood Insurance Study Report.

For additional map details and base map source see necessary printed map index.

MAP REPOSITORY
Refer to Repository Listing on Map Index

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

EFFECTIVE DATES OF REVISIONS TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when additional rates apply to structures in areas shown as unincorporated or special flood hazard areas.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at 800-455-4622.

APPROXIMATE SCALE IN FEET

0 100 200 300

NATIONAL FLOOD INSURANCE PROGRAM

FIRM FLOOD INSURANCE RATE MAP

EL PASO COUNTY, COLORADO AND INCORPORATED AREAS

PANEL 287 OF 1300
(SEE MAP INDEX FOR PANELS NOT PRINTED)

COUNTY	SHEET	PANEL	SHEET
COLORADO	00000	000	1
UNINCORPORATED AREAS	00000	000	1
UNINCORPORATED AREAS	00000	000	1

MAP NUMBER
08041C0287 F

EFFECTIVE DATE:
MARCH 17, 1997

Federal Emergency Management Agency

