GRADING, EROSION, & SEDIMENT CONTROL (GESC) PLAN MANUAL

CITY OF CAÑON CITY

PREPARED BY CITY OF CAÑON CITY,
ENGINEERING DEPARTMENT

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PART 1 - Introduction

The City of Cañon City (the City) is committed to protecting water resources and ensuring that future development continues in an environmentally sound manner through implementation of control measures selected, designed, installed, implemented and maintained in accordance with good engineering, hydrologic and pollution control practices. To achieve that goal, the City has adopted permitting program for grading, erosion, and sediment control on public and private construction projects within the incorporated limits of the City. This **Grading, Erosion and Sediment Control** (**GESC**) **Manual** describes the permitting program that has been adopted by the City to promote environmentally-sound construction practices.

When the landscape is altered to accommodate the development of residential or commercial uses, soil is disturbed. That disturbance creates the potential for mobilization of soils as sediment by means of erosion created by stormwater runoff from construction sites. During construction activity properly installed control measures minimize erosion and sedimentation. Erosion and sedimentation damage property and degrade water quality in streams and lakes as well as disturb riparian and aquatic habitat. Sediment, considered a priority pollutant by the Environmental Protection Agency, is also a transport mechanism for many other stormwater runoff related pollutants such as phosphorus and nitrogen.

1.1 Authorization of the Grading, Erosion, and Sediment Control Manual

The GESC Manual is authorized by the City Council of the City by resolution. The provisions of the GESC Manual shall apply to lands within incorporated areas of the City. See also Chapter 20.10 of the Cañon City Municipal Code.

A. Amendments and Revisions

These policies and criteria may be amended and revised as new technology is developed and experience is gained. The City Council, upon recommendations of the City Engineer, may consider such amendments and revisions. Minor revisions that do not affect policy may be made without the action of the Council.

B. Enforcement Responsibility

The City Council, acting through the City Engineer, shall enforce the provisions of the GESC Manual.

C. Review and Acceptance

The City will review all GESC Plan submittals for general compliance with these criteria contained herein. An acceptance by the City does not relieve the Permittee(s) or Design Engineer from responsibility of ensuring that calculations, plans, specifications, construction and as-built drawings are in compliance with the criteria contained herein. Additionally, acceptance by the City does not alleviate the Permittee(s) or Design Engineer from complying with all other applicable Federal, State, and Local laws and regulations.

D. Interpretation

In the interpretation and application of the provisions of this GESC Manual, the following shall govern:

1. These provisions shall be regarded as the minimum requirements for the protection of the public health, safety, comfort, convenience, prosperity, and welfare of the residents of the City.

2. The GESC Manual shall therefore be regarded as remedial and shall be liberally construed to further its underlying purposes.

3. Whenever a provision in these criteria and any other provision of the Cañon City Municipal Code and Charter or any provision in any law, ordinance, resolution, rule or regulation of any kind, contain any restrictions covering any of the same subject matter, whichever are more restrictive or impose higher standards shall govern. In the event that there is a discrepancy in the interpretation of the GESC Manual, the City Engineer shall have the final determination of the intent of the GESC Manual.

4. The GESC Manual shall not abrogate or annul any permits or accepted drainage reports and construction plans issued before the effective date of the GESC Manual or any easement or covenant.

E. Relationship to Other Standards

If the Federal or State government imposes stricter criteria, standards or requirements, these shall be incorporated into the City's requirements after due process and public hearing(s) needed to modify City regulations, standards, and ordinances.

The GESC Manual shall be considered minimum requirements and the City of Cañon City reserves the right to apply more stringent criteria. Additionally, the City reserves the right to change, modify, or alter these requirements at any time.

1.2 Legislative Mandate

A. The development, implementation, and enforcement of the City's GESC permit program is mandated by the Federal Government and the State of Colorado.

B. National Pollutant Discharge Elimination System (NPDES) regulations require that stormwater discharges from certain types of facilities be authorized under discharge permits (40 C.F.R., 122, et. seq.). The goal of the NPDES stormwater permit program is to reduce the amount of pollutants entering streams, lakes, and rivers as a result of stormwater runoff from residential, commercial, and industrial areas. The original 1990 regulation (Phase I) covered municipal separate storm sewer systems (MS4s) for municipalities with a population of over 100,000. The regulation was expanded in 1999 (Phase II) to include smaller municipalities, including the City.

C. In Colorado, stormwater discharge permits are issued by the Water Quality Control Division of the Colorado Department of Public Health and Environment, (CDPHE). The permits are part of the Colorado Discharge Permit System under Regulation No. 61, promulgated to assist the Division in implementing its stormwater permits program. As per the Division's regulation, the main requirement of the City under this general permit is to develop and implement six minimum control measures. One of these six measures is Construction Site Stormwater Runoff Control.

Regulation No. 61 states that the City **must**:

1. Develop, implement, and enforce a stormwater management program designed to reduce the discharge of pollutants from incorporated lands in the City (also referred to as the MS4) to the Maximum Extent Practicable (MEP), to protect water quality, and to satisfy the appropriate water quality requirements of the Colorado Water Quality Control Act (CWQCA) (Colorado Code of Regulations (CCR) 61.8(11)(a)(i)).

2. Develop, implement, and enforce a program to reduce pollutants in any stormwater runoff to the MS4 from construction activities that result in a land disturbance of greater than or equal to one acre.

3. Reduction of pollutants in stormwater discharges from construction activity disturbing less than one acre must be included in the program if that construction activity is part of a larger common plan of development or sale that would disturb one acre or more.

4. The program must be developed and implemented to assure adequate design, implementation, and maintenance of best management practices (BMPs) at construction sites within the MS4 (City) to reduce pollutant discharges and protect water quality.

5. At a minimum, the program must include the development and implementation of:

    a. An ordinance or other regulatory mechanism to require erosion and sediment controls, as well as sanctions to ensure compliance, to the extent allowable under State or local law; (see Cañon City Municipal Code Chapter 20.10)

    b. Requirements for construction site operators to implement appropriate erosion and sediment control BMPs;

    c. Requirements for construction site operators to control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality;

    d. Procedures for site plan review which incorporate consideration of potential water quality impacts;

    e. Procedures for receipt and consideration of information submitted by the public; and

    f. Procedures for site inspection and enforcement of control measures.

1.3 Projects Requiring a Grading, Erosion, and Sediment Control (GESC) Permit

The City requires that a GESC Permit be obtained prior to the start of land-disturbing or construction activities within the incorporated areas of the City.

A. Projects Which Require a GESC Permit include:

1. Any project which disturbs 1.0 acre or more.
2. New development and redevelopment on sites less than 1.0 acre if part of a larger common plan of development or sale that would disturb, or has disturbed since March 2, 2001, 1.0 acre or more unless the disturbed areas have been finally stabilized. A “common plan of development or sale” is a contiguous area (within ¼ mile) where multiple separate and distinct construction activities may be taking place at different times on different schedules, but remain related.
3. Any project that the City Engineer determines to have a potential impact to the health, safety and welfare of people and/or the environment.
4. All commercial development sites, regardless of disturbed acreage.
5. Any site which meets the site plan requirements as defined by the City’s Subdivision and Development Regulations Appendix A to Title 16.
6. Any site plan which requires a Colorado Department of Public Health and Environment (CDPHE) construction permit.

7. GESC Permits are still required for projects meeting the criteria identified herein even if a Federal or State agency or another jurisdiction has previously approved the project and issued a permit for the work. Projects which do not require a GESC Permit are still obligated to control erosion and sediment.

   NOTE: Control measures (BMPs) must be installed prior to any land disturbing activity.

B. Permitting for Individual Residential Projects

Through the GESC Permit Program, in addition to the City Building Department, the Engineering Department also retains regulatory authority over the construction of detached single-family residential projects. For building lots less than one (<1.0) acre which are a part of a larger development or project the Engineering Department's regulatory involvement begins at the onset of land-disturbing activities and continues until final stabilization of every individual residential lot is achieved through the Drainage, Erosion, and Sediment Control (DESC) program. Under that program, the Engineering Department retains regulatory authority through the fulfillment of the requirements of the DESC which the developer, owner or builder is required to complete or face enforcement action.

Often, a stand-alone detached single-family residential unit is not required to obtain a GESC Permit and is regulated only by the City's DESC program. However, on a case-by-case basis the Engineering and/or Building Department may require a GESC Permit if it is determined that the significance of the issues involved merit the engineering oversight that normally comes with a GESC Permit. The DESC Program is described in more detail in Part 8 of this Manual.

C. Exclusions:

The following are excluded from the requirement to obtain a GESC permit from the City, but may still need to obtain permits from Federal or State agencies:

1. Construction activities with an R-Factor Waiver from the Colorado Department of Public Health and Environment (CDPHE) Permits Unit.

2. Agricultural land management activities.

3. Facilities associated with oil and gas exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site for drilling and for the movement and placement of drilling equipment, whether or not such activities or operations may be considered to be construction activity.

4. Pavement management sites: Sites, or portions of sites, for the rehabilitation, maintenance, and reconstruction of roadway pavement, which includes roadway resurfacing, mill and overlay, white topping, black topping, curb and gutter replacement, concrete panel replacement, and pothole repair. The purpose of the site must be to provide additional years of service life and optimize service and safety. The site also must be limited to the repair and replacement of pavement in a manner that does not result in an increased impervious area and the infrastructure must not substantially change. Areas used primarily for parking or access to parking are not roadways.

5. Roadway redevelopment: Redevelopment of existing roadways when either the site adds less than 1.0 acre of paved area per mile of roadway to the existing roadway or the site does not add more than 8.25 feet of paved width at any location to the existing roadway.

6. Excluded existing roadway areas: The area of the existing roadway when the development site

does not increase the width by two times or more, on average, of the original roadway area. The area of the site that is part of the added new roadway area require a permit.

7. Aboveground and Underground Utilities: Activities for installation or maintenance of underground utilities or infrastructure that does not permanently alter the terrain, ground cover, or drainage patterns from those present prior to the construction activity. This exclusion includes, but is not limited to, activities to install, replace, or maintain utilities under roadways or other paved areas that return the surface to the same condition.

8. Large Lot Single Family Sites: A single-family residential lot, or agricultural zoned lands, greater than or equal to 2.5 acres in size per dwelling and having a total lot impervious area of less than 10 percent. A total lot imperviousness greater than 10 percent is allowed when a study specific to the watershed and/or MS4 shows that expected soil and vegetation conditions are suitable for infiltration/filtration of the Water Quality Capture Volume (WQCV) for a typical site, and the City accepts such study as applicable within its MS4 boundaries. The maximum total lot impervious covered under this exclusion shall be 20 percent.

9. Non-residential and Non-commercial infiltration conditions: This exclusion does not apply to residential or commercial sites for buildings. This exclusion applies to applicable development sites for which post-construction surface conditions do not result in concentrated stormwater flow during the 80^{th} percentile stormwater runoff event. In addition, post-development surface conditions must not be projected to result in a surface water discharge from the 80^{th} percentile stormwater runoff events. Specifically, the 80^{th} percentile event must be infiltrated and not discharged as concentrated flow. For this exclusion to apply, a study specific to the site, watershed and/or MS4 must be conducted. The study must show rainfall and soil conditions present within the permitted area; must include allowable slopes, surface conditions, and ratios of impervious area to pervious area; and the City must accept such study as applicable within its boundaries (City limits).

10. Sites with land disturbance to undeveloped land that will remain undeveloped: Sites with land disturbance to undeveloped land (land with no human-made structures such as buildings or pavement) that will remain undeveloped after the disturbance.

11. Stream stabilization sites: Including in-stream recreational or habitat projects, as otherwise permitted.

12. Trails: Bike and pedestrian trails. Bike lanes for roadways are not included in this exclusion, unless attached to a roadway that qualifies under another exclusion in this section.

D. Permittee Definition and Responsibility

GESC/DESC Permits are signed by the Permittee. Prior to issuance of a permit, the Permittee is referred to as "Applicant". The Permittee(s) shall be legally responsible for compliance with the terms of the Permit. If an Applicant is a corporation, a manager/officer of the corporation or other authorized person must sign the permit as the Permittee. Permittee(s) (Owners and Contractors) undertaking land-disturbing activities are responsible for meeting all of the requirements of the City's Permit Program described in detail within the GESC Manual. Failure to meet the requirements of the GESC or the DESC Permit may lead to enforcement action, as described in Part 5 of this Manual.

PART 2 - Getting Started

This section provides information for the Permittee(s) on the first two steps of the GESC permitting process. It clarifies why a Grading, Erosion, and Sediment Control Plan should be prepared under the supervision of a Professional Engineer, describes Grading, Erosion, and Sediment Control Plans, and identifies other related plans and permits to be addressed.

2.0 Confirm a Permit is Required

The first step in the process is to examine the information in Part 1 to confirm that a GESC Permit is required for the project. GESC Permits apply to most land disturbing activities in the City. The City Engineering Department can be contacted to clarify GESC Permit requirements and to help interpret if GESC Permit requirements apply to a project. Contact information is provided in Appendix A of this Manual.

Given the complexity, size, and the environmental "risk" factor of some projects, planning erosion and sediment controls could involve engineering and design issues such as embankment stability, spillway sizing, pipe strength calculations, peak discharge estimates and hydraulic computations for determination of flood elevations and velocities and for sizing conveyance facilities. Because of these issues, Colorado State Statutes require that GESC Plans be prepared, signed and stamped by, or under the responsible charge of, a Professional Engineer registered in the State of Colorado.[a]

The City recognizes that in some cases this requirement may create an unnecessary burden. Especially if the project's complexity, size and the potential environmental "risk" factor does not warrant the expertise and scrutiny of a Professional Engineer. In those cases, with approval of the City Engineering Department, the GESC Plans may be completed by someone under the supervision of a Professional Engineer or by a professional Certified in Erosion and Sediment Control.

For the purpose of this Manual the preparer will be referred to as the Design Engineer. The Design Engineer is responsible for preparing the GESC Plan in accordance with the requirements of this GESC Manual and is one of the key personnel who should attend the on-site Pre-Construction Meeting prior to the start of construction.

2.1 Pre-submittal Meeting

A. Clarify Permit Requirements with City Engineering Staff

Prior to preparing GESC Plans and other submittal documents for a proposed construction project, a pre-submittal meeting with City Engineering staff is strongly recommended. At that meeting the GESC Plan appropriate for a specific development site can be discussed and clarification made as to the GESC Permit Program requirements. Also, initial discussions can take place regarding the general configuration of erosion and sediment controls that may be appropriate for the site.

It is anticipated that at a minimum the Owner and/or the Design Engineer of the GESC Plan would attend the Pre-submittal Meeting and have the following information ready at the meeting:

1. Name, type, and location of development.

[a] Colorado State Engineering Law 12-25-101, General Provisions

2. Brief description of site topography and drainage features.

3. Size of development site and anticipated disturbed area, in acres.

4. Anticipated plans and permits to accompany GESC Plan.

5. Grading, Erosion, and Sediment Control Drawings. Depending on the degree of disturbance and amount of area to be disturbed, different types of GESC Drawings are required. Additional information on drawing requirements is provided in Part 3 of this Manual.

    a. Staged GESC Drawing

    Separate GESC Drawings are required for the Initial, Interim and Final stages of a project. This is to clarify, both to the Design Engineer and to field personal implementing the Plan, what erosion and sediment controls are appropriate at the outset of construction, during site development, and at the end of construction prior to final establishment of vegetation.

    If the applicant can demonstrate that the erosion and sediment controls for the Initial, Interim and Final phases of construction can be clearly shown on a single plan, only one drawing needs to be submitted.

    b. Phased GESC Drawing

    For sites where grading and/or construction operations are to be divided into phases, a separate set of GESC Drawings are required for each phase of the project. The requirements for Staged GESC Drawings are applicable for each Phase submitted.

    For phased projects, during construction each grading phase shall be approved by the City and stabilized prior to starting the subsequent phase.

    c. When appropriate, the GESC Plan shall be submitted concurrently with, or included within, the construction plans for the proposed construction project. The entire submittal package should include an acceptable form of plat or improvement plan, construction plans, drainage report, pavement design report, soils report and payment of applicable engineering review fees. The GESC Plans will be reviewed as a part of the whole package and not as a separate plan.

6. Other Plans and Permits

These related plans and permits do not necessarily reflect all requirements for development in the City, but rather describe plans and permits that could be considered when proceeding through the GESC Permit Process. When applicable, the following shall be submitted as addendums to the GESC Plans.

    a. Drainage Plan. The GESC Plan shall be consistent with the Drainage Plan for the development. At a minimum, the Drainage Plan shall be submitted, reviewed, and accepted by the City before a GESC Permit is issued. Permanent erosion control and stormwater quality measures shall be in the Drainage Plans.

    b. DESC Plan. A DESC Plan may be required by the City Engineering Department for construction of applicable detached single-family residential units.

c. City Excavation Permit. Contractors shall obtain excavation permits from the City prior to the beginning of any work operations within the City right-of-way.

d. Floodplain Development Permit. Projects that include work within the designated 100-year floodplain limits of drainageways within the City require a Floodplain Development Permit. The objective of this permit is to ensure that the proposed project activities are in compliance with approved floodplain management standards. This permit shall be obtained from the Engineering Department. Any acceptance obtained from City does not release an Applicant from the need to comply with the requirements of Sections 7 and 9 of the Endangered Species Act of 1973, 16 U.S.C. 1531 et seq., as amended, or with any other applicable Federal, State or local laws or regulations.

e. State Permitting Requirements. The State of Colorado requires permits, including Stormwater Management Plans (SWMPs), for construction projects exceeding one acre of disturbance. State construction permits are ***in addition*** to permitting requirements of the City. The Applicant or the Design Engineer should contact the State of Colorado, Water Quality Control Division (WQCD) for specific State permitting information for their specific projects. Contact information for the WQCD is provided in Appendix A of this Manual. A copy of the State SWMP must be provided to the City Engineering Department.

f. State Construction Dewatering Permits. The State issues a permit for Construction Dewatering Discharges to manage dewatering discharges from construction projects. The permit establishes water quality standards and control measures for dewatering discharges.

g. State Section 401 Certifications. Refer to CDPHE requirements for projects which may result in any fill or discharge into navigable waters of the United States, including State Waters (WQCC Regulation #82: 5 CCR 1002-82).

h. Possible Federal Permits. Applicants are responsible for complying with all applicable Federal permitting. This may include, but is not limited to the FEMA map revision process, the Department of the Army Corps of Engineers Section 404 Permit and US Fish and Wildlife Service, Endangered Species Action Section 10 and/or Section 7 Permits. Information on some of the Federal programs and permits that may be applicable include the following;

i. FEMA Map Revisions. Projects impacting the regulatory floodplain may need to obtain a Conditional Letter of Map Revision (CLOMR) and/or Letter of Map Revision (LOMR) from FEMA. In this case, proper documentation needs to be submitted to FEMA for review and approval. Contact Information for FEMA is provided in Appendix A of this Manual.

j. Section 404 Permitting. Excavation activity associated with a dredge and fill project in “Waters of the United States” (including streams, open water lakes, ponds, wetlands, etc.) may require a Section 404 Permit. The level of permitting is dependent on the extent of disturbance along the water body of interest. It should be reviewed with the U.S. Army Corps of Engineers as to whether a Nationwide Permit or an Individual Permit is required. Individual Permits will require more detailed information about the project and preparation of exhibits specific to the project site. Contact Information for the U.S. Army Corps of Engineers is provided in Appendix A of this Manual.

k. U.S. Fish and Wildlife Service Threatened and Endangered Species Clearance. The U.S. Fish and Wildlife Service has established guidelines for surveys to determine the presence or

absence of threatened and endangered species within a project's limits. Clearance of these species from a project site is dependent on spatial, regional requirements determined by the U.S. Fish and Wildlife Service. Contact Information for the U.S. Fish and Wildlife Service is provided in Appendix A of this Manual.

PART 3 - The Grading, Erosion, and Sediment Control (GESC) Plan

This section provides guidance for the Design Engineer who is preparing a GESC Plan (Step 3) focusing around the ***Primary Components*** of an effective Plan and includes design and sizing criteria for control measures, as well as drawing and reporting requirements.

3.0 Preparing the GESC

A. Principles of Erosion and Sedimentation

Reducing erosion and capturing sediment is necessary to reduce the loss of soil from a construction site and to minimize off-site impacts. In order to understand how control measures can be used to minimize or prevent construction site erosion it is helpful to understand the erosion and sedimentation processes.

Factors affecting the erosion potential of any site include soil type, geology, vegetative cover, topography, climate, and land use. Construction disturbs soil and vegetation and increases erosion because bare, loose soil is easily moved by wind and water. Water-caused erosion starts when precipitation hits the ground and grows progressively more erosive as water moves downhill as runoff.

Controlling erosion at its early stages is the most effective way to manage construction site erosion and sedimentation. An effective GESC Plan will address:

1. Controlling erosion potential by limiting the area and duration of disturbance.

2. Timely stabilization of disturbed areas.

3. Providing a drainage network throughout the site during all stages of construction to actively manage stormwater runoff.

4. Designing stable, non-eroding drainage conveyances.

Vegetation plays an extremely important role in controlling erosion. Roots bind particles together and the leaves or blades of grass reduce raindrop impact forces on the soil. Grass, leaves, plant litter and other ground cover trap precipitation, which allows infiltration and reduces runoff velocity. Vegetation reduces wind velocity at the ground surface, and provides a rougher surface, which will trap particles moving along the ground. Once vegetation is removed, erosion proceeds unchecked. Sheet, rill, and gully erosion develop quickly in the absence of vegetation.

Once soil particles are set in motion they eventually are deposited. This process is sedimentation. During a rainstorm, runoff normally builds up rapidly to a peak and then decreases. Sediment deposition occurs as runoff decreases. Deposition is then re-suspended when future runoff events occur and moves progressively downstream in a waterway system. Sedimentation can impair habitat and water quality in downstream receiving waters, cause property damage, and increase drainage maintenance costs.

B. Principles of Erosion and Sediment Control

The objective of *erosion control* is to limit the amount and rate of erosion occurring on disturbed areas. 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 control and sediment control measures, it is recognized that some amount of sediment will remain in runoff leaving the construction site.

An erosion and sediment control plan is comprised of three major Components:

1. The erosion control measures used to limit erosion of soil from disturbed areas

2. The sediment control measures used to limit transport of sediment off-site

3. The drainageway protection measures used on the construction site

Erosion controls are surface treatments that stabilize soil exposed by excavation or grading. Erosion control measures (Best Management Practices - BMPs) are variously referred to as source controls, vegetative controls or non-structural controls.

Sediment controls capture soil that has been eroded. Soil particles suspended in runoff can be filtered through a porous media or deposited by slowing the flow and allowing the natural process of sedimentation to occur. Sediment controls (or BMPs) are facilities built to perform this function, and are also referred to as structural controls.

Drainageway control measures (or BMPs) protect channels or storm sewers during site construction. This can be accomplished by limiting equipment travel across a stream, constructing a temporary channel crossing, or diverting a stream into a temporary channel while work is done on the permanent channel. Where storm sewers are used, sediment can be filtered prior to entry of runoff into the storm drainage system.

Non-sediment impacts to water quality can be managed by controls (BMPs) on equipment, material storage, or use of chemicals at construction sites. These additional practices are included for discussion because they occur commonly at construction sites.

C. GESC Plan Performance Objectives

Objectives for erosion and sediment control during construction include:

1. Conduct all land disturbing activities in a manner that effectively reduce accelerated soil erosion and sediment movement/deposition off-site.

2. Schedule construction activities to minimize the total amount of soil exposed at any given time to reduce the period of accelerated soil erosion.

3. Establish temporary or permanent cover on areas that have been disturbed as soon as possible after final grading is completed.

4. Design and construct all temporary or permanent facilities for the conveyance of water around, through, or from the disturbed area to limit the flow of water to non-erosive velocities.

5. Remove sediment caused by accelerated soil erosion from surface runoff water before it leaves the site.

6. Stabilize the areas of land disturbance with permanent vegetative cover or stormwater quality control measures.

D. Erosion and Sediment Control Measures Requirements Guidance

The selection, design, installation and maintenance of all control measures included in a GESC plan for projects within the City will, at a minimum, adhere to the following directives:

1. Control measures, both structural and non-structural, must be selected, designed, installed, implemented and maintained in accordance with good engineering, hydrologic and pollution control practices. Control measures must be implemented/installed prior to the start of any construction activity, must control **all** potential pollutants during each phase of construction, must be maintained in operational condition and must be continued through final stabilization.

   At a minimum, pollutant sources associated with the following activities (if part of the applicable construction activity) must be addressed through structural and/or non-structural control measures (in addition to erosion and sediment control):

   a. Land disturbance and storage of soils
   b. Vehicle tracking
   c. Loading and unloading operations
   d. Outdoor storage of construction site materials, building materials, fertilizers and chemicals
   e. Bulk storage of materials
   f. Vehicle and equipment maintenance and fueling
   g. Significant dust or particulate generating processes
   h. Routine maintenance activities involving fertilizers, pesticides, detergents, fuels, solvents and oils
   i. Concrete truck/equipment washing, including concrete truck chute and associated fixtures and equipment
   j. Dedicated asphalt and concrete batch plants
   k. Other areas or operations where spills can occur
   l. Other non-stormwater discharges including construction dewatering not covered under the CDPHE Construction Dewatering general permit and wash water that may contribute pollutants to State waters.

2. Site Plans – "Site Plans" shall include construction site plans, GESC plans, SWMPs, drainage reports and drainage plans. All plans must locate and identify all structural and non-structural control measures for the applicable construction activities. The plan(s) must contain installation and implementation specifications or a reference to a document containing such for all structural control measures. The plan(s) must also contain a narrative description of all non-structural control measures (e.g. waste disposal, good housekeeping) implemented.

3. All Erosion Control, Construction Best Management Practices (BMPs), and Post Construction BMPs materials, methods, and installation shall be in accordance with:

a. This Manual.

b. City's Standard Construction Specifications.

c. Urban Drainage and Flood Control District (UDFCD) Criteria Manual.

4. Use of Alternative or Innovative BMPs - Recognizing that there will be new advances in the development of erosion and sediment control measures that may prove effective, or even out-perform controls currently accepted, the City may allow, under strictly-controlled circumstances, the installation of erosion and sediment control measures other than the standard control measures.

E. Components of an Effective Grading, Erosion, and Sediment Control Plan

This section describes a systematic approach to control erosion and sediment on a construction site.

1. The Components
   a. Preserve and Stabilize Drainageways
   b. Avoid Sensitive Areas
   c. Balance Earthwork
   d. Limit Size Of Grading Phases
   e. Stabilize Exposed Soils
   f. Effective Perimeter Controls
   g. Sediment Capture
   h. Slope Protection
   i. Inlet and Outfall Protection
   j. Access and General Construction Controls
2. The Components are designed to:
   a. Reduce the amount of erosion
   b. Reduce the time period in which erosion can occur
   c. Confine sediment on-site
   d. Provide design guidance parameters to be specified on GESC Drawings

3. Component 1 - Preserve and Stabilize Drainageways

Over time, increased runoff from development will shift the natural balance of a stream with the trend toward degradation and bank erosion as the stream tries to flatten its grade. As a long-term consideration, existing drainageways should be stabilized with drop structures and other grade control features to reduce the channel slope and to control flow velocity. Bank or toe protection may also be necessary to reinforce weak, unstable channel banks.

Drainageway Protection

At times construction activities must occur adjacent to or within a drainageway. Whenever this occurs,

bottom sediments will be disturbed and transported downstream. The goal of this component is to minimize the movement of sediments resulting from construction activities that take place within any drainageway. Temporary facilities can be installed to divert flowing water around such sediment-generating construction activities within drainageways. A Temporary Stream Crossing may be required where drainageways are to be crossed with construction equipment.

Some construction activities within a waterway are short lived, just a few hours in duration, and are minor in nature. These are typically associated with maintenance of utilities and stream crossings and minor repairs to outfalls and eroded banks. In these cases, construction of temporary diversion facilities may cause more soil disturbance than the maintenance activity itself. If it can be reasonably determined that any channel work is maintenance related, is of very short duration, and will result in only a small disturbance of bottom sediment, it is reasonable to exempt these from the requirement to construct temporary diversion facilities.

After installation of facilities or removal of the temporary stream crossing, all disturbed areas within streams and drainage channels shall be protected with seeding and mulching. Erosion control blanket shall be used for all slopes steeper than 3:1 and in areas subject to flow velocities greater than 5 feet per second.

4. Component 2 - Avoid Sensitive Areas

In addition to drainageways, other sensitive resources may exist on a site, including:

a. Protected Habitat for Threatened & Endangered Species
b. Wetlands
c. Riparian Corridors
d. Steep Slopes
e. Other Areas of Unique or Pristine Vegetation, or Landform

A resource inventory should be conducted for the site delineating any sensitive areas such as those listed above.

Design Criteria

The location, extent, and type of resource, including stream floodplains shall be shown on the Initial GESC Drawing. A Design Engineer can preserve critical resource areas by exempting them from clearing and grading operations. The technique of mapping out areas of the site to be left undisturbed, termed “fingerprinting”, can reduce grading costs and contribute to the ultimate value of the development. Maintaining pre-existing vegetation or using equivalent control measures for areas within 50 horizontal feet of receiving waters can also help preserve critical areas and water quality. The GESC Drawings will clearly show limits of construction.

5. Component 3 – Balance Earthwork

To reduce impacts on City roadways, development projects should balance earthwork quantities on site.

Design Criteria

Proposed contours shall be shown to provide for new roadways, building sites, and drainage features

on the Interim and Final GESC Drawings. The Design Engineer should develop a grading plan, check earthwork quantities, and raise or lower portions of the site as necessary to achieve a balance between cut and fill material. This process will generally require several iterations, each time refining critical site slopes and design grades.

In the event that it is impractical to balance earthwork quantities, a variance shall be requested during the review of the GESC Drawings.

A variance shall address the following, at a minimum:

a. Reason for variance;

b. Amount of material to be imported or exported;

c. Location of disposal site if export or source site if import; and

d. Detailed haul route plan and traffic control plan for haul route.

If the variance is accepted, GESC Drawings shall be prepared for the import or export site in accordance with this Manual.

6. Component 4 - Limit Size of Grading Phases

For sites where the total disturbed area exceeds recommendations, grading operations should be phased. If over-excavation, stockpiling, or replacement of soils is necessary for mitigating expansive soils or similar issues, each phase may disturb a reasonable amount of acreage as approved by the City. During construction, each grading phase shall be accepted by the City prior to starting work on the next phase. Stabilization should be completed within five days of the City's acceptance of the phase.

Phased grading operations shall be configured to match the phasing of the Development Agreement (DA) for detached single-family residential projects. This includes ensuring that the GESC Drawing phases are consistent with Improvement Plans. The Design Engineer must also consider how to balance earthwork in each phase to end up with the final overall grading phases desired.

<u>Design Criteria:</u>

a. Clearly identify the sequence of each construction phase and completed project on drawings. Phasing sequence for the GESC Plan shall match the phasing progression which serves as a guide by which individual portions of the subdivision will be initially accepted and released from conveyance and building permit restrictions. Phasing of the subdivision improvements and lots shall be such that the lots to be accepted are accessible from a street that has already been accepted by the City.

b. Carefully locate temporary stockpiles and staging areas to prevent soil disturbance.

c. Accommodate water/sewer and other utility construction within each phase.

d. Incorporate road segments, temporary turn-arounds, and emergency access within each phase.

e. Segregate temporary construction access in each phase from access for permanent residents.

f. Show both the temporary and permanent stormwater management facilities in each phase.

g. Develop Initial, Interim and Final GESC Drawings for each phase.

h. Ensure that the GESC Plan for later upstream phases addresses potential impacts to already completed downstream phases of the construction site.

7. Component 5 – Stabilize Exposed Soils

1. Erosion Control - The planning for the installation of permanent or temporary soil erosion controls needs to begin in advance of all major soil disturbance activities on the construction site. All areas disturbed by construction should be stabilized as soon as possible to reduce the duration of soil exposure. Temporary stabilization must be implemented for earth disturbing activities on any portion of the site where ground disturbing activity has permanently ceased, or temporarily ceased for more than 14 calendar days. The 14-day schedule may be exceeded if the specific area is required to remain disturbed or the physical characteristics of the terrain and climate prevent stabilization. The GESC plan must document these constraints, provide an alternate stabilization schedule and identify the applicable locations.

   Soil surface stabilization protects soil from the erosive forces of raindrop impact, flowing water, and wind. Erosion control practices can include surface roughening, mulching, establishment of vegetative cover, soil treatments, and the early application of gravel base on areas to be paved. Stabilization measures to be used should be appropriate for the time of year, site conditions and estimated duration of use.

2. Seedbed Preparation - Areas to be revegetated should have soil conditions capable of supporting vegetation. Overlot grading will oftentimes bring to the surface subsoils that have low nutrient value, little organic matter content, few soil microorganisms, rooting restrictions, and conditions less conducive to infiltration of precipitation. Under certain conditions, soil amendments and treatments may be necessary to provide an adequate growth medium to sustain vegetation.

   Whenever possible, topsoil should be salvaged for re-spreading on areas to be revegetated. The depth of soil stripping is determined by the depth of available topsoil. Areas near drainageways may have a considerable depth of topsoil, whereas lesser amounts may be available on the crowns of hills and flat slopes. Topsoil should be viewed as an important resource to be utilized for vegetation establishment, primarily due to its water-holding capacity. Native topsoil located on a construction site may also have good soil structure, organic matter content, biological activity, and nutrient supply that supports vegetation.

3. Temporary Revegetation - Temporary revegetation is required on all disturbed areas and soil stockpiles having a period of exposure prior to final stabilization of one year or longer. All temporary seeding shall be protected with mulch. To provide temporary vegetative cover on disturbed areas which will not be paved, built upon, or fully landscaped within 12 months but will be completed within 24 months, plant an annual grass appropriate for the time of planting and mulch the planted areas.

4. Permanent Revegetation - To provide vegetative cover on disturbed areas not paved or built upon for a period of 2 years or longer a perennial grass or grass mix should be planted. Each site will have different characteristics, and a landscape professional should be contacted to

determine the most suitable species or seed mix for a specific site. Revegetation is considered complete when the site has the required uniform coverage of at least 70 percent of pre-disturbance cover of the species planted.

e. Roads - Road cuts, road fills, and parking lot areas should be covered with the appropriate aggregate base course on the surfaces to be paved in lieu of mulching. Early application of road base is suitable where a layer of coarse aggregate is specified for final road or parking lot construction. ***This practice may not be desirable in all instances, and is not needed when final pavement construction will take place within 30 days of grading to final contours***. All non-paved portions of road cut, fill, and parking lot areas should be seeded and mulched as soon as possible after final grading has occurred, but in no case later than 14 days after grading has been completed.

f. Soil stockpiles and slopes - Soils stockpiled for more than 60 days should be seeded with a temporary or permanent grass cover within 14 days after completion of stockpile construction. Mulching is recommended to ensure vegetation establishment. If stockpiles are located within close proximity to a drainageway (i.e., 100 feet), additional sediment control measures, such as a temporary diversion dike or silt fence, should be provided. Adequate "footprints" for topsoil stockpiles shall be shown assuming stockpile slopes are no steeper than 3 to 1.

8. Component 6 - Effective Perimeter Controls

a. Upslope Perimeters – Runoff from the area off-site and upslope may enter the site in a defined drainageway and/or by sheet flow. Runoff entering the site should be captured in a diversion ditch and directed to a stream or drainage channel. A temporary slope drain can be used to convey runoff down a channel bank or slope to the bottom of a drainageway. When diversion ditches intersect a slope or channel bank, a temporary slope drain, consisting of pipe, plastic, or riprap, should be installed to convey diverted water from the diversion ditch down the slope or channel bank.

b. Downslope Perimeters – Sediment controls shall be located on the downslope perimeters of construction sites, perimeters along drainageways, and downslope perimeters adjacent to other areas to be left undisturbed. Sediment controls shall be located as close to the source of erosion as possible of any disturbed area. Sediment control measures may include, but are not limited to, reinforced rock berms, sediment control logs (wattle), straw bale barriers, silt fence, check dams and grass buffers.

9. Component 7 – Capture Sediment

Sediment entrapment facilities are necessary to reduce sediment discharges to downstream properties and receiving waters. Sediment entrapment facilities may include straw bale barriers, silt fences, and sediment basins. The type of sediment entrapment facility to be used depends on the tributary area, basin slope and slope length of the upstream area. Straw bale barriers or silt fences may be used for small sites. When the tributary area is greater than that allowed for straw bale barriers or silt fences, runoff shall be collected in diversion dikes and routed through temporary sediment basins.

Runoff from disturbed larger drainage areas should be treated in a sediment trap or a sediment basin. Areas draining more than 1 acre must be routed through a sediment basin. Sediment basins shall be designed to a minimum 1,800 cubic feet of volume per tributary acre and shall be cleaned out prior to becoming half full.

Permanent detention and water quality facilities shall have temporary sediment basins incorporated within them. Outlet facilities for extended detention basins that provide a drain time of 40-hours may be used as the sediment basin outlet as long as at least half of the sediment basin volume is provided below the lowest orifice of the permanent outlet works.

A stable drainage path shall be designed and shown downstream of the outlet of a sediment basin. Temporary drainage shall consist of a diversion ditch or, if appropriate, a riprap apron or other stable feature. Permanent detention facilities shall be constructed as early in the project as possible. If permanent detention facilities are planned, the Design Engineer shall locate sediment basins within these locations even if the permanent facilities are not built until later in the development.

10. Component 8 – Slope Protection

Steep slopes may be either existing, or proposed cut and/or fill slopes created during the grading process. For the purposes of definition, a slope is considered steep if it is steeper than 4:1 and higher than five feet vertically. Proposed slopes should be no steeper than 3:1 because they are difficult to vegetate and maintain. Slopes greater than 3:1 are to be protected during construction with erosion control blanket. To break up the flow of incidental runoff and reduce the development of rill and gully erosion, grading of new steep slopes should incorporate terracing. During grading, relatively flat sections, or terraces, are created and separated at intervals by steep slope segments. The steep slope segments are prone to erosion, however, and must be stabilized in some manner.

Retaining walls, gabions, cribbing, deadman anchors, rock-filled slope mattresses, sediment control logs, and other types of soil retention systems are also approved for use. These should be specified in the plan and installed according to manufacturer's instructions.

11. Component 9 – Inlet and Outfall Protection

Storm sewer inlets should be protected to reduce inflow of sediment. Likewise, storm sewer outfalls and culvert outlets should be protected against scour and erosion. All storm sewer inlets which are made operable during construction must be protected to prevent sediment-laden runoff from entering the conveyance system without first being filtered or otherwise treated to remove sediment. A number of alternate inlet protection designs are available for use. An important consideration in construction of curb-opening inlets is that their maximum height should be less than the top of the curb opening. This is to allow overflows to occur during large rainfall events even though sediment-laden runoff will enter the storm drainage system. If the inlet protection height is greater than the curb elevation, particularly if the filter is clogged from previous sediment deposits, runoff will not be allowed to enter the inlet and will bypass the inlet. If downstream inlets are constructed similarly, runoff amounts that are bypassed accumulate rapidly. Significant erosion will occur at the downstream location where curb flows eventually level the gutter and travel across unprotected soil on a hillslope.

Outlet Protection - To protect adjacent downstream properties from erosion due to concentrated flows, a stable outlet or channel is necessary. If there is no stable outlet, one may have to be constructed. In lieu of constructing a temporary or permanent outlet to the storm drainageway system, temporary total retention of the runoff from a 24-hour, 100-year storm may be provided. Written approval by the City must be obtained for total retention of stormwater.

The outlets of slope drains, culverts, sediment traps, and sediment basins must be protected from erosion and scour. Outlet protection should be provided where the velocity of flow will exceed the

maximum permissible velocity of the material where discharge occurs. This may require the use of a riprap apron at the outlet location.

12. Component 10 - Access & General Construction Controls

Limits of construction should be indicated on GESC Drawings. The Design Engineer should delineate limits of construction that minimize disturbed area.

Vehicle tracking control must be provided at all entrance and exit points at the site. Locations should be selected that consider safety and disturbance of sensitive areas; steep grades greater than eight percent should be avoided. A stabilized staging area should be provided near the main access point and be connected to the vehicle tracking control. A designated concrete/equipment washout area should also be included in the staging area.

Control measures must be implemented/installed for all other potential pollutants sources, as applicable. Other pollutant sources include, but are not limited to:

a. Loading and unloading operations

b. Outdoor storage of construction site materials, including chemicals and fertilizers

c. Bulk storage of materials

d. Vehicle and equipment maintenance and fueling

e. Significant dust or particulate generating processes

f. Dedicated concrete and asphalt batch plants

g. Areas or operations where spills can occur

PART 4 - Grading, Erosion, and Sediment Control Permit Process

This section describes the process of applying for a Permit **(**Step 4).

4.0 Applying for a GESC Permit

A. GESC Plan Drawing Requirements

These GESC Drawing requirements for a GESC Permit shall be adhered to when preparing a Standard GESC Drawing. Appendix C summarizes the drawing requirements in a checklist format. The Drawing and Narrative checklist must be filled out, signed, stamped by the Design Engineer and/or PE, and submitted with the GESC Drawing to ensure that each of the requirements is addressed.

All GESC Drawings shall be prepared on 11" x 17" or 24" x 36" sheets at a scale of 1" = 20', up to 1" = 200', as appropriate, to clearly show sufficient detail for review. GESC Drawing sets submitted for final acceptance need to be signed and stamped by the Design Engineer and/or a PE.

1. GESC Drawing Cover Sheet

   Since the GESC drawings are normally part of a comprehensive set of construction drawings for development, one cover sheet may suffice for the entire set of drawings. It should include the following information related to the GESC portion of the plan set.

   a. Project name.

   b. Project address (if applicable).

   c. Owner address.

   d. Design firm's name and address.

   e. Plan sheet index.

   f. Design Engineer's Signature Block.

   g. The following note: THE ***GRADING, EROSION AND SEDIMENT CONTROL PLAN*** INCLUDED HEREIN HAS BEEN PLACED IN THE CITY OF CAÑON CITY FILE FOR THIS PROJECT AND APPEARS TO FULFILL APPLICABLE CITY GRADING, EROSION AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITTEE(S) DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED GESC PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS GESC PLAN SHALL BE THE OBLIGATION OF THE PERMITTEE(S) UNTIL SUCH TIME AS THE GESC PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED.

   h. GESC Drawing Design Engineer's signature block with name, and Professional Engineer registration number, and shall include the following note: THE ***GRADING, EROSION AND SEDIMENT CONTROL PLAN*** INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE *GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL* OF THE CITY OF CAÑON CITY.

i. City acceptance block.

j. General Location Map at a Scale of 1" = 1000' to 8000' indicating:

   i. General vicinity of the site location

   ii. Major roadway names

   iii. North arrow and scale

k. GESC Drawing Index – For projects that require multiple plan-view sheets to adequately show the project area, a single plan-view shall be provided at a scale appropriate to show the entire site on the cover sheet. Areas of coverage of the multiple blow-up sheets are to be indicated as rectangles on the index.

l. Additional requirements may be required for the other portions of the construction drawings; contact the Engineering Department for a complete list of cover sheet requirements.

2. Initial GESC Drawing

This plan sheet provides grading, erosion and sediment controls for the initial clearing, grubbing and grading of a project. At a minimum, it should contain:

a. Property lines.

b. Existing and proposed easements.

c. Existing topography at one- or two-foot contour intervals, extending a minimum of 100 feet beyond the property line.

d. Location of any existing structures or hydrologic features within the mapping limits.

e. USGS Benchmark used for project.

f. Limits of construction encompassing all areas of work, access points, storage and staging areas, borrow areas, stockpiles, and utility tie-in locations in on-site and off-site locations. Stream corridors and other resource areas to be preserved and all other areas outside the limits of construction shall be lightly shaded to clearly show area not to be disturbed.

g. Flow arrows that depict stormwater flow directions on-site and runoff direction.

h. Location of stockpiles, including topsoil, imported aggregates, and excess material.

i. Location of storage and staging areas for equipment, fuel, lubricant, chemicals (and other materials) and waste storage.

j. Location of borrow or disposal areas.

k. Location of temporary roads.

l. Location, map symbol, and letter callouts of all initial erosion and sediment control measures.

m. Installation and implementation specifications of all structural control measures or a reference to the document which contains the installation and implementation specifications.

n. City approval block.

o. Other information as may be reasonably required by the City.

3. Interim GESC Drawing

This plan sheet shows control measures used to control grading, erosion and sediment during the initial overlot grading, site construction, and site revegetation process. At a minimum, it should contain the following information:

The Interim GESC Drawing shall show all the information included on the Initial GESC Drawing as well as the following:

a. The existing topography contours shall be screened.

b. The existing control measures shall be screened. Dimension information for initial stage BMPs shall not be shown.

c. Proposed topography at one- or two-foot contour intervals, showing elevations, dimensions, locations, and slope of all proposed grading.

d. Outlines of cut and fill areas.

e. Location of all interim erosion and sediment controls, designed in conjunction with the proposed site topography, but also considering the controls designed in the Initial GESC Drawing.

f. Location of all buildings, drainage features and facilities, paved areas, retaining walls, cribbing, water quality facilities, or other permanent features to be constructed in connection with, or as a part of, the proposed work, per approved plat.

g. The following notes, as applicable:

i. SHADED CONTROL MEASURES WERE INSTALLED IN INITIAL STAGE AND SHALL BE LEFT IN PLACE IN INTERIM STAGE.

ii. ALL INTERIM CONTROL MEASURES, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS.

iii. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, WATER QUALITY FACILITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION

h. Summary of cut and fill volumes showing how earthwork balances on site.

i. City approval block.

4. Final GESC Drawing

This plan sheet shows controls for final completion of the site. At a minimum, this plan sheet shall contain the indicated information:

The Final GESC Drawing shall include all information shown on the Initial and Interim Plans, as noted below:

a. Existing topography in areas of proposed contours need not be shown.

b. Existing Initial and Interim control measures shall be shown (screened). Dimension information shall not be shown.

c. Directional flow arrows on all drainage features.

d. Any Initial or Interim control measures that are to be removed and any resulting disturbed area to be stabilized.

e. Location of all Final erosion and sediment control measures, permanent landscaping, and measures necessary to minimize the movement of sediment off site until permanent vegetation can be established

f. Show area of buildings, pavement, sod, and permanent landscaping (define types) per approved plat, SIP, RSP, or other improvement plan.

g. Show seeding and mulching (SM) everywhere except buildings, pavement areas and permanent landscaping areas.

h. Show other Structural control measures considered by the Designer Engineer to be appropriate.

i. Show the following control measures to be removed at the end of construction:
    i. Dewatering (DW)
    ii. Temporary stream crossings (SC)
    iii. Stabilized staging area (SSA)
    iv. Street inlet protection (IP)
    v. Vehicle tracking control (VTC)
    vi. Construction fence (CF)

j. Show the following control measures to be removed at the end of permanent stabilization:
    i. Temporary inlet protection (IP)
    ii. Perimeter control (PC)

k. Include the following notes, as applicable:
    i. SEE COVER SHEET OF CITY OF CAÑON CITY STANDARD NOTES AND DETAILS FOR LEGEND OF BMP NAMES AND SYMBOLS

ii. SHADED BMPS WERE INSTALLED IN INITIAL OR INTERIM GESC DRAWING AND, UNLESS OTHERWISE INDICATED, SHALL BE LEFT IN PLACE UNTIL PERMANENT STABILIZATION IS APPROVED BY THE CITY

iii. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND OUTLET PROTECTION

l. City acceptance block.

m. Other information as may be reasonably required by the City.

Drawing Requirements for Staged and Phased GESC Drawings - GESC Drawing requirements for Phased GESC Drawings are the same as for Staged Plans, except that each phase of construction shall be shown separately.

B. GESC Plan Narrative Requirements

The narrative report shall contain the following information:

1. Name, address, and telephone number of the applicants – The name, address, and telephone number of the Professional Design Engineer preparing (or supervising the preparation of) the GESC Plan shall also be included, if different from the Applicants.

2. Project description – A brief description of the nature and purpose of the land-disturbing activity, the total area of the site, the area of disturbance involved, and project location including township, range, section and quarter section, or the latitude and longitude, of the approximate center of the project.

3. Existing site conditions – A description of the existing topography, soils, vegetation, and drainage; a description of any wetlands on the site, and a description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.

4. Erosion and sediment control measures – A description of the methods presented in the GESC Criteria Manual that will be used to control erosion and sediment on the site.

5. Pollution Control Measures – A description of all structural and non-structural control measures that will be installed/implemented, including maintenance requirements and schedules, to prevent or reduce all potential pollutants from leaving the site.

6. Timing/Phasing schedule – A schedule indicating the anticipated starting and completion time periods of the site grading and/or construction sequence, including the installation and removal of erosion and sediment control measures. Indicate the anticipated starting and completion time periods of individual project phases.

7. Permanent stabilization – A brief description, including applicable specifications, of how the site will be stabilized after construction is completed.

8. Stormwater management considerations – Explain how stormwater runoff from and through the site will be handled during construction.

9. The following note – "This *Grading, Erosion and Sediment Control Plan* has been placed in the City file for this project and appears to fulfill the applicable *Grading, Erosion and Sediment Control*

Criteria. I understand that additional grading, erosion and sediment control measures may be required of the Permittees, due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall run with the land and be the obligation of the Permittees until such time as the plan is properly completed, modified or voided."

10. Signature Page for Permittees acknowledging the review and acceptance of responsibility. The signature page must be stamped and signed by the Professional Engineer and include a statement acknowledging responsibility for the preparation of the GESC Plan.

11. Construction details, including maintenance requirements and schedules, of all permanent post-construction stormwater control measures.

C. Variances

The City may consider waiving or modifying criteria that are deemed inappropriate or too restrictive for site conditions. Variances may be granted at the time of plan submission or request for plan revision prior to the work being completed in the field. Variances requested after the work has been completed shall not be considered. At no time will waivers or variances be granted which could allow pollutants to leave the construction site.

1. Variance Submittal Requirements

Any request for a variance shall be in a separate letter addressed to the City Engineer. The letter shall define:

a. The criteria from which the applicant seeks a variance.

b. The justification for not complying with the criteria.

c. Alternate criteria or standard measures to be used in lieu of these criteria. The criteria and practices specified within this section of the *GESC Manual* relate to the application of specific erosion and sediment control practices. Other practices or modifications to specified practices may be used if approved by the City prior to installation. Such practices must be thoroughly described and detailed

2. Staff vs. Administrative Variances

Some variances may be minor in nature; these staff variances may be granted by the Engineering Division's Stormwater Program Staff. A minimum amount of supporting documentation will be required for such variances. More complicated variances will require a more extensive review. These administrative variances shall be reviewed by the City Engineer.

D. Plan Submittal Process

After the GESC Plan has been prepared, the drawings along with related plans and permits shall be submitted to the Engineering Department.

1. Completeness - After the GESC Plan is submitted to the Engineering Department, the City shall, within approximately one week from the submittal date, review the GESC Plan for completeness based on the submittal requirements. Any submittal that does not reflect a basic level of completeness shall be returned to the Design Engineer. This process shall be repeated until a complete GESC plan set is submitted to the Engineering Department. The acceptance review period on a GESC Plan shall not start until a complete GESC plan set, completed application and fees are submitted.

2. The GESC Permit Application can be found in Appendix D of this Manual. The information required on the GESC Permit Application shall be filled out and the Form shall be signed by personnel who are legally authorized to sign on behalf of the company, corporation, entity, or organization. The application shall also be signed by the GESC Manager (see Part 5 of this Manual) responsible for the implementation of the GESC.

3. Permit Fees are to be paid to the City and may be paid by check or in cash. Initial fees for a GESC Permit consist of a base fee plus a per-acre charge and shall be paid with the submittal of the Permit Application. Fees are collected to help offset costs of administering the GESC Program. Permit fees also include the cost of inspections performed by City personnel, which will be calculated and paid at permit close-out.

4. Review - The GESC Plan will be reviewed with an eye toward the effectiveness of the overall Plan. The appropriateness, timing, and placement of the proposed erosion and sediment controls will be reviewed. After review, written comments will be provided to the applicant. Typically, written review comments will be provided by the Engineering Department within 25 business days of receiving GESC Plans. Written comments on re-submittals are also provided within 25 business days of receiving the revised plans and the summary of how previous comments were addressed.

5. Revisions - GESC Plan review comments are to be addressed by the applicant and the revised GESC Plan resubmitted to the City for a follow-up review. The applicant shall submit a letter or memorandum with the revised GESC Plan summarizing how each review comment was addressed. If review comments are not addressed, the GESC Plan will not be accepted, and written comments will again be provided to the applicant. This cycle will be repeated as many times as necessary for the applicant to fully address the City's review comments to the satisfaction of Engineering Department staff.

6. Final Acceptance - The GESC Plan will be considered accepted when the submitted copies of the GESC Drawings are signed by the City Engineer. Applicants will be notified by the City when the GESC Drawings have been signed and are ready to be picked up. Typically, signed GESC Drawings will be ready approximately seven (7) days after the GESC Drawings are submitted. A copy of the GESC Manual shall be obtained from the City at the same time the signed Drawings are picked up. The GESC Manual provides important information for the GESC Manager pertaining to the construction phase of the GESC Permit Process and is discussed further in Part 5 of this Manual. The City will retain signed GESC Drawings. The number of drawings retained by the City is project-specific. GESC Plans are considered valid for two years following the signature date. After this time, GESC Plans will need to be resubmitted to the City for re-review and re-acceptance.

7. Duration - A GESC Permit is valid for a period of one year from the date the permit is signed by the City Engineer. A GESC Permit shall be renewed prior to its expiration. It is the Permittee(s) responsibility to contact the City and start the renewal process at least fourteen (14) days prior to the original GESC Permit's expiration date. Permittee(s) shall have a valid GESC Permit until either:

   a. All phases of a project are transferred to the DESC Program for detached single-family residential projects or;

   b. Final Close-out Acceptance (after revegetation is established)

8. Transfer - If a project or portion of a project is sold to a new Owner, or if the Contractor that is identified on the GESC Permit is replaced by a different Contractor, the GESC Permit shall be

transferred to the new Owner and/or Contractor using a specific transfer procedure. The transfer shall require a new GESC Permit Application Form, payment of a transfer fee, and another Preconstruction Meeting on site. In case of change in Owner or Contractor, failure to transfer the GESC Permit will result in issuance of a Stop Work Order.

9. Additional requirements, if any, for the required City Grading, Erosion, and Sediment Control Plan will be discussed at the Pre-Construction Meeting.

PART 5 - Grading, Erosion, and Sediment Control Plan Implementation

This section is oriented toward the project's field personnel. It provides information on the inspection process as well as violations and enforcement.

5.0 Execute the GESC Plan

A. Role and Responsibilities of the GESC Manager

The GESC Manager is the contact person with the City for all matters pertaining to the GESC Plan and Permit. The GESC Manager may be an employee of the Owner or Contractor, but shall have the authority to act on behalf of the Permittee(s) to ensure that the site remains in compliance with the GESC Permit; however, the Permittee(s) shall remain the legally responsible party. The GESC Manager shall respond promptly to requests made by City Engineering staff and have any deficiencies in the work corrected.

1. Qualifications - The GESC Manager will have completed CDOT Erosion Control Supervisor coursework, or have an acceptable equivalent of education and/or experience.

2. Alternate - An Alternate GESC Manager who is able to serve in the same capacity as the GESC Manager, and has equivalent training may also be designated. The Alternate shall be the contact person if the GESC Manager is not available. The GESC Manager shall inform the Alternate GESC Manager of any absences, fill the Alternate in on the status of the GESC Plan implementation, and ensure that the Alternate GESC Manager assumes the GESC Manager's responsibilities during any absence.

3. Availability - The GESC Manager shall be present at the project site a majority of the time) shall provide the City with a 24-hour emergency contact number. In the event the GESC Manager (or Alternate GESC Manager) is not on site, and cannot be reached during any level of violation, the city reserves the right to issue a Stop Work Order.

4. Changing the GESC Manager **-** Notification in writing shall be provided to the City's Engineering Department if the GESC Manager or Alternate (if one is designated) leaves the company or the Permittee(s) intend to change personnel. A field meeting with the City Inspector and new GESC Manager or Alternate shall be scheduled within 7 days of the change to discuss site conditions and responsibilities of the GESC Manager.

5. Review of the GESC Manual & GESC Plan - The GESC Manager and Alternate manager shall thoroughly review the GESC Manual, GESC Plan, Standard Notes and Details, and related plans and permits for the project. It is the GESC Manager's responsibility to clearly understand all of the requirements of the GESC Permit Process. In addition, it is the GESC Manager's responsibility to ensure that all other field personnel are also aware of the GESC requirements.

6. Documents Shall Remain On Site and be kept current - It is the GESC Managers responsibility to insure that a copy of the GESC Manual, GESC Drawings, Standard Notes and Details, the GESC Permit, and Stormwater Facilities Inspection Reports shall remain on the site at all times. It also the GESC Managers responsibility to insure that all drawings and plans are kept up-to-date with current site conditions.

B. Installation of Initial, Interim & Final Control Measures (BMPs)

Implementing the GESC Plan through proper installation and maintenance of the selected control measures (BMPs) in the field is a critical part of the GESC Process. It is to the Permittee's advantage to be diligent in controlling erosion, sediment and other pollutants from the outset. This will save both time and money by reducing the need for regrading, repair, clean-up, and reinstallation.

Lack of diligence in controlling erosion and sediment will increase the cost of the overall construction project due to:

1. Frequent removal of sediment from basins and from behind silt fences and other sediment control measures.
2. Clean-up of sediment deposition from off-site areas.
3. Repair of downstream property damage resulting from sediment deposition.
4. Regrading and refilling rill and gully erosion.
5. Replacing lost topsoil.
6. Undertaking second and third seeding and mulching operations.
7. Work stoppage due to non-compliance and payment of additional fees associated with re-inspections.

Other than receiving the signed GESC Drawings and review of the GESC Manual, no formal notification needs to be given to the City prior to installation of the Initial control measures. However, all of the requirements of the GESC Manual and GESC Plan, including the Standard Notes and Details, shall be complied with. If during installation, minor modifications to Initial control measures shown on the GESC Drawings would provide for a more effective plan, the GESC Manager shall contact the Design Engineer and City Engineering Staff to inform them of the proposed modifications prior to modifying the BMPs.

Other than the installation of the Initial control measures shown on the GESC Plan, ***Construction Shall Not Start***, including stripping operations, haul road grading, or other land disturbing activities, until the Initial control measures have been inspected and approved.

It is the responsibility of the GESC Manager to ensure that Interim and Final control measures are installed as soon as grading or construction of new facilities allows. Some control measures have specific time requirements for installation as identified on the GESC Plan Standard Notes and Details; these time requirements shall be adhered to (for example, temporary and area inlet protection shall be installed within 48 hours of the pouring of an inlet). For control measures where a specific time frame is not given, the controls shall be installed as soon as construction of the infrastructure is substantially complete or when grading activities have produced grades close to the final grade. In any case, it is up to the discretion of the GESC Manager to make the final determination of Interim and Final control measures installation time frames.

C. Preconstruction Meeting

The Permittee(s) shall contact the City Engineering Department to schedule the on-site Preconstruction Meeting. A minimum of three business days' notice shall be provided to schedule the meeting. In addition to the City Inspector, the following representatives should be in attendance:

1. Owner or Owner's Representative (Contractor may NOT represent the owner)
2. General Contractor

3. GESC Manager and Alternate GESC Manager (may also be the Owner or General Contractor Representative)
4. Grading Sub-Contractor, if different than the General Contractor.
5. Design Engineer

The following Meeting Objectives will be addressed during the Preconstruction Meeting.

1. Review of GESC Manual. The City Inspector will verify the Permittee(s)' understanding of the GESC Manual.

2. Field Review of GESC Drawings. The GESC Drawings for all phases will be reviewed to clarify understanding of the GESC Plan and to discuss any potential modifications to the plan.

3. Inspection of Initial Control Measures. A visual inspection of all of the Initial control measures that have been installed will occur. The City Inspector will determine if any corrections are required.

4. Acceptance of Initial Control Measures. If the Initial control measures are accepted by the City Inspector (as is or with minor corrections), the City Inspector will:
   a. Inform the Permittee(s)
   b. Sign the GESC Permit Application

5. Corrections to the Control Measures. If the City Inspector determines that significant modifications or corrections to the control measures are necessary, the City Inspector will:
   a. Inform the Permittee(s) that such corrections shall be made
   b. Inform the Permittee(s) that a follow-up inspection shall be required with the City, and that acceptance of the corrected control measures by the City Inspector shall take place prior to the signing of the GESC Permit or prior to any additional inspections.

Modifications to the GESC Plan will, in most cases, require acceptance of the Design Engineer who originally signed and stamped the GESC Drawings. Re-inspection requires a minimum of a one-day notice.

D. The GESC Permit

Once the approved GESC Permit is in the Permittee(s) possession, construction may begin.

1. A GESC Permit is valid for one year from the date the GESC Permit is approved. A GESC Permit shall be renewed prior to its expiration. The Permittee(s) shall contact the City and start the renewal process at least 14 days prior to the original GESC Permit's expiration date.

2. Permittee(s) shall have a valid GESC Permit until the project is transferred to the Engineering Department's DESC Program for detached single-family residential projects, or until Final Close-out Acceptance (after revegetation is established) for other projects.

3. If a project or portion of a project is sold to a new Owner, or if the Contractor that is identified on the GESC Permit is replaced by a different Contractor, the GESC Permit shall be transferred to the new Owner and/or Contractor using a specific transfer procedure. The transfer shall require a new GESC Permit Application, payment of a transfer fee, and an additional Preconstruction Meeting on site.

4. The Owner's signature on the GESC Permit application form constitutes written authorization for the City and its agents to enter the project site and conduct regular inspections to ensure compliance with City regulations.

5. Phased Projects

   A phased project starts in the same manner as any other GESC permitted project, with the installation of the Initial control measures as shown on the Initial GESC Drawing. The difference is that only the Initial control measures for Phase I need to be installed and inspected in order to obtain the GESC Permit.

   Once the Permittee(s) have obtained the GESC permit, topsoil stripping / stockpiling and grading may begin on Phase I only. When the Permittee(s) are nearing the end of grading on Phase I, the Interim control measures for Phase I shall be installed per the Interim GESC Drawing; in addition, the Initial control measures shall be installed on Phase II as shown on the Initial GESC Drawing.

E. GESC Inspection Process

1. Mandatory Inspections by GESC Manager

   During construction, erosion and sediment controls will be inspected at least once every 14 days by the GESC Manager. Inspection will consider the overall effectiveness of the controls for reducing erosion and trapping sediment on the site and will check for proper installation and maintenance of the controls. A record of each inspection will be kept on-site and must be available when City Inspectors are on-site. The GESC Manager is responsible to ensure that the site remains in compliance with all GESC requirements.

   Additionally, the following conditions prompt mandatory inspections by City personnel:

   a. Preconstruction Meeting/Inspection of Initial control measures.

   b. Topsoil Inspection (after topsoil is stripped and stockpiled).

   c. Any time during construction when a new GESC Manager or Alternate GESC Manager is chosen.

   d. Prior to issuance of an Excavation Permit for construction of curb, gutter, and/or sidewalk, or paving roads or utility installation.

   e. During construction/installation and at completion of permanent water quality control measures to ensure proper installation in accordance with the approved site plan.

   f. Initial Close-out Inspection prior to CO or TCO is issued for commercial, industrial, and multifamily projects, at end of construction if no CO or TCO is requested, and prior to transition to the DESC Program for detached single family residential projects.

   g. Final Close-out Inspection after vegetation has been accepted and sediment controls have been removed.

2. Mandatory Inspections by City Personnel

   City personnel will perform inspections per the schedule(s) detailed below:

   a. Routine inspections of control measures, pollutant sources and discharge points will be conducted every forty-five (45) days. As long as the site stays in compliance, routine

inspections may be extended up to 90 days with Indicator Inspections occurring between routine inspections (see below).

b. Indicator inspections (drive-by or screening inspections) may be used to extend the period between routine inspections as long as no indicators of non-compliance exist. Indicator inspections will be conducted every fourteen (14) days after at least one routine inspection has been conducted and will assess failure to implement control measures and/or inadequate control measures and discharge points.

c. Compliance inspections will be conducted within fourteen (14) days after an illicit discharge has been documented or a routine or indicator inspection identifies failure to implement a control measure or inadequate control measures, unless the identified non-compliance was corrected with the City Inspector present during the initial inspection. Compliance inspections will identify that the non-compliance has been corrected. The following types of inspections may be substituted for a compliance inspection as long as the inspection documents the status of the previously identified non-compliance:

   i. Routine Inspection

   ii. Indicator Inspection

   iii. Operator Compliance Inspection: The operator of the site conducts the inspection and submits a report to the City documenting that the non-compliance has been corrected. The report must include photographs of the corrected non-compliance.

3. Site Inspection Exclusions:

   City personnel will conduct inspections on the following sites, ***only if there are observations or reports of discharges of sediment from disturbed sites:***

   a. Individual Homes in a Residential Subdivision – Finished Home: When the individual lot has been sold to a private homeowner, the lot is less than one acre, all construction activity associated with grading the lot and building the home is complete and a certificate of occupancy (CO) or its equivalent has been issued to the homeowner.

   b. Individual Homes in a Residential Subdivision – Unfinished Home: The lot is less than one acre of disturbed area.

   c. Winter Conditions: Construction activities are temporarily halted due to snow cover over the entire site for an extended period of time and melting conditions posing a risk of surface erosion do not exist.

4. Reduced Site Inspections by City Personnel

   The following situations may allow for reduced site inspection frequency by City Personnel:

   a. Inactive Sites: Sites where surface ground disturbance activities are completed and are pending growth for final stabilization or sites where no construction activity has occurred since the last inspection. City personnel will conduct an inspection at least every 90 days to assess control measures and discharge points.

   b. Sites operated by a participant in the CDPHE's designated Stormwater Management System Administrator's Program. City personnel will conduct inspections every 90 days to assess control measures, pollutant sources and discharge points for compliance.

   c. Staff vacancy: During periods of staff vacancy or temporary leave, City personnel will conduct an inspection every 90 days to assess control measures, pollutant sources and discharge points for compliance.

5. Mandatory Inspections for Phased Projects:

   A **mandatory inspection** shall be conducted by the GESC Manager, in accordance with this section, to inspect the Initial and Interim control measures on Phase I as well as the Initial control measures for Phase II. If the GESC Manager finds the control measures to be installed and maintained in accordance with the approved GESC Plan and GESC Manual, Phase II construction activities may begin. All disturbed areas on Phase I shall be stabilized in accordance with the accepted GESC Plan within 5 calendar days from the City's sign-off for commencement of the next phase. Failure to complete the required seeding and mulching within the allotted time shall result in issuance of a Stop Work Order by the City for the entire project. This process shall be repeated for each additional phase until all earthwork is complete.

F. Violations and Enforcement

Refer to Cañon City Municipal Code: Title 20.10 "*Stormwater Illicit Discharges and Permit Requirements";* Section 20.10.150 *"Corrective Action By City and Charge of Costs"* and Section 20.10.160*"Enforcement and Penalties"*

Failure to comply with any term, condition, limit, deadline or other provision of the GESC Permit or failure to obtain a GESC Permit, constitutes a violation of Cañon City Municipal Code and may constitute a violation of the Federal Clean Water Act and the Colorado Water Quality Control Act, C.R.S. § 25-8-101, *et seq*.("Act").

Any person, corporation, partnership, firm or other entity of whatever description violating any provision of the Cañon City Municipal Code, can be punished by civil penalties of up to two hundred fifty dollars ($250.00) per violation per day, from the day the violation is identified or reported until it is eliminated. Criminal penalties, upon conviction of such, may include a fine. A separate offense may be charged and a separate fine may be imposed upon conviction for each calendar day when any such violations occurs or continues to occur.

This Section may be enforced by injunction, including both the enjoining of actions or inactions in violation of this Section (i.e., starting construction activities without an approved permit, storing earth or construction materials on streets or sidewalks or failure to mitigate erosion and sedimentation problems, or in violation of the terms of a permit as required herein), and a mandatory injunction to require the removal of stored earth or construction materials or to mitigate erosion and sedimentation problems in violation of the terms of such a permit. In any such injunctive action, the City shall be entitled to an award of its costs of suit and any costs incurred in removal of stored materials or mitigating erosion and sedimentation problems where construction activities have been undertaken in violation of the provisions of this Section.

The City shall be entitled to recover its attorney's fees incurred in bringing any action to compel compliance with the provisions of these regulations or to compel compliance with any plan approved hereunder.

When stormwater non-compliance is identified by the City, enforcement actions are taken promptly. An action the City takes against the entity(ies) in non-compliance is based on the nature and severity of the situation and in accordance with the Cañon City Municipal Code. The City uses professional judgement and enforcement discretion to determine the appropriate level of compliance assistance and enforcement actions in a given situation.

Stormwater non-compliances are considered to be either minor or major violations. Minor violations are generally instances of non-compliance that do not directly result in a discharge or may be considered an incidental discharge and are addressed by the responsible party immediately upon notification. Major

violations are generally those acts or omissions that lead to a discharge of pollutants to stormwater. They often include chronic violators and/or intentional acts or discharges that are not removed or resolved in a timely manner. Serious discharges may require an immediate escalation to a higher level of enforcement. The level of enforcement response depends on several factors:

1. Severity of the violation: the duration, quality and quantity of pollutants, and the effect on public safety and the environment.

2. The violator's knowledge of the regulations being violated (either negligent or intentional)

3. A history of violations and/or enforcement actions, and/or

4. The potential deterrent value of the enforcement action.

The City typically enforces on non-compliance in a graduated manner, beginning with verbal warnings, letters or emails and education to obtain voluntary compliance then escalating to increasingly severe enforcement actions if compliance is not achieved. Each of the items listed below may be used in any order and can be used concurrently.

1. Verbal Notification of Violation

   City inspectors may issue verbal notices of non-compliance for minor issues on a site such as, but not limited to, control measures not installed properly or maintained in operational condition; incorrect control measures and/or no control measures for a pollutant source ***as long as the non-compliance has not resulted in a discharge of pollutants from the site.*** Violations must be corrected immediately, or at the latest within ten (10) calendar days. If the violation(s) cannot be reasonably corrected in ten (10) calendar days the owner/operator may apply for written authorization to extend the period for correction from the City Engineer. The site will be re-inspected within fourteen (14) days of the verbal notice of non-compliance to ensure corrective actions have been completed. If the violation(s) is not corrected within ten (10) calendar days, a written Notice of Non-Compliance may be issued to the Permittee.

2. Notice of Non-Compliance

   A written Notice of Non-Compliance may be issued by City inspectors when previous issues for which a verbal notice of non-compliance have not been corrected within the given time frame or may be issued immediately for more egregious non-compliance such as, but not limited to, failure to implement or maintain control measures which result in a minor discharge of pollutants from the site (e.g. minor sediment tracking off-site). Violations must be corrected immediately, or at the latest within ten (10) calendar days. If the violation(s) cannot be reasonably corrected in ten (10) calendar days the owner/operator may apply for written authorization to extend the period for correction from the City Engineer. If the violation is not corrected within ten (10) calendar days, a Notice of Violation and Enforcement Action or a Stop Work Order for all construction activities may be issued and prosecution may be commenced for the violation(s). If issued, the Stop Work Order shall remain in effect until all items have been corrected and approved by City Engineering Staff.

3. Notice of Violation and Enforcement Action

   A Notice of Violation and Enforcement Action (with fines) may be issued by City inspectors when previous issues for which a verbal notice of non-compliance or a written Notice of Non-Compliance has been issued have not been corrected within the given time frame. A Notice of Violation and Enforcement Action (with fines) may also be issued immediately for more egregious non-compliance such as, but not limited to, starting construction activity without an approved permit or

non-compliance which results in a discharge of pollutants off-site.

4. Stop Work Order

   The City Engineer, or his/her designated representative, is authorized to order work to be stopped on any project that disturbs the land and which is not in compliance with the requirements of the GESC Permit, including starting land disturbing activities without an approved permit. **When a Stop Work Order is issued, the GESC Permit for that project is suspended.** In addition, the State of Colorado Department of Public Health and Environment may be notified. If a project is issued a Stop Work Order, all work on site shall be stopped. Safety-related items (e.g., backfilling of holes and trenches) as well as corrective actions may be completed; however, the Permittee(s) shall inform the City Inspector of such activities.

   The Permittee(s) shall do the following to reinstate a GESC Permit and resume work on the site:

   a. Correct the deficient practices that precipitated the Stop Work Order.

   b. Schedule a site inspection by the Engineering Department.

   c. Pay any associated fines and/or apply for a GESC Permit and pay the Permit fee if the Stop Work Order was issued for commencing land disturbing activities without an approved GESC Permit.

   To offset the cost of additional inspections on non-compliant sites, re-inspection fees will be assessed and be paid prior to receiving subsequent inspections and approval of work. Re-inspection fees may be charged for all projects that are found to be deficient.

   In addition to any other legal or equitable remedies that the City may have for GESC Permit violations, the City may at its discretion cease issuances of all building permit approvals, including Certificates of Occupancy (Cos), and other permissions until such violation is corrected and the Permittee(s) takes additional steps to ensure compliance with the GESC Permit.

G. Abatement

In the event a Permittee shall determine or discover that a GESC Plan is not being adhered to, said Permittee shall take immediate steps to abate said violation and shall notify the City GESC Administrator of the deviation from the plan and the efforts undertaken to bring the work into compliance with said plan. The Permittee shall be granted a period of ten (10) calendar days from the date of discovery of said deviation to bring the work into compliance with the plan. In the event City Engineering Staff discovers a deviation from the plan, the Permittee or authorized representative shall be notified in writing of said deviation and shall be required to bring the work into compliance with the plan within no more than ten (10) calendar days from the date of notification. The written notice shall specify the areas of deviation from the plan. Failure to correct the deviation from the plan within the time period provided shall entitle the City to begin enforcement.

If the City abates a violation, then within ten (10) days after the abatement of the violation, the owner of the site will be notified of the cost of abatement, including administrative costs, by personal delivery or by mail to the last known address of the owner as shown on the GESC plan. The notice shall be effective upon the date of mailing or personal delivery, with the charges due upon the date set forth in the notice. A written protest objecting to the amount of the assessment may be filed within ten (10) days of the effective date of the notice (See Cañon City Municipal Code 20.10.160).

H. Compliance With Other Laws, Regulations, Ordinances and Standards

The requirements of these regulations are minimum requirements. They do not replace, repeal, abrogate, supersede or affect any other more stringent requirements, rules, regulations, covenants, standards or restrictions. Where these regulations impose requirements that are more protective of human health or the environment than those set forth elsewhere, the provisions of these regulations shall prevail. Approvals and permits granted under these regulations are not waivers of the requirements of any other laws, nor do they indicate compliance with any other laws. Compliance is still required with all applicable federal, state and local laws and regulations.

I. City Not Liable

Nothing contained in these regulations are intended to be nor shall be construed to create or form the basis for any liability on the part of the City, it's officers, employees or agents for any injury or damage resulting from the failure of responsible parties to comply with the provisions of these regulations, or by reason or in consequence of any inspection, notice, order, certificate, permission or approval authorized or issued or done in connection with the implementation or enforcement of these regulations, or by reason of any action or inaction on the part of the City related in any manner to the enforcement of these regulations by its officers, employees or agents.

The City Engineer or any City employee charged with the enforcement of these regulations, acting in good faith and without malice on behalf of the City, shall not be personally liable for any damage that may accrue to persons or property as a result of any act required by the City, or by reason of any act or omission in the discharge of these duties. The City shall defend any suit brought against the City Engineer or other City employee because of an act or omission performed in the enforcement of these regulations.

PART 6 - Project Acceptance and Close-Out

6.0 Project Acceptance and Close-Out

A. Site Preparation

In preparation for the Initial GESC Acceptance Inspection prior to the Permittee(s) leaving the site, the GESC Manager shall undertake the following:

1. Clean all streets, sidewalks and flowlines of sediment with a street sweeper. Do not wash unless storm drainage inlets are properly protected.
2. Clean all inlets, trickle channels, and all other drainage features.
3. Remove temporary erosion and sediment controls (if directed by approved GESC Plan or City Inspector) and install/maintain erosion and sediment control measures per the City approved Final GESC Plan.
4. Ensure all disturbed areas are stabilized, per City criteria.

B. Initial Inspection and Acceptance

Once all items are completed, the GESC Manager should contact the City Engineering Department to schedule an Initial GESC Acceptance Inspection. This inspection should be scheduled at the same general time as the Development Agreement Final Acceptance walkthrough with an City Engineering Inspector. To allow time for resolution of issues, the Initial Acceptance Inspections should consider scheduling a minimum of two weeks prior to a scheduled request for a Building Permit, Temporary Certificate of Occupancy (TCO) or Certificate of Occupancy (CO).

1. Detached Single-Family Residential Projects - Initial acceptance sign-offs are required from the City Engineering Inspector prior to any release of Engineering holds on Building Permits for detached single-family residential projects. After initial acceptance by the City Engineering Inspector, the Permittee(s) shall follow the Drainage, Erosion and Sediment control (DESC) requirements. The DESC Program Administrator shall then take over all erosion and sediment control inspections.

   If the filing is divided into separate grading phases, Initial Close-out Acceptance (part of the GESC Permit Process) and Engineering Inspections are required for each phase until the entire filing is accepted.

2. Commercial, Industrial, and Multi-Family Residential Projects - For commercial, industrial and multi-family sites, the Development Review Engineer and the City Inspector must sign-off prior to release of a CO or TCO.

3. Coordination with Development Improvement Acceptance

   Phasing of the Subdivision Improvements and lots shall be such that the streets and lots are accessible by a street that has already received preliminary acceptance by the City, or will receive preliminary acceptance as part of the accepted phase. The phased GESC Plan includes erosion and sediment control measures for each phase in order to protect the phase that will obtain Initial Close-out Acceptance by the City.

   All site improvements or subdivision improvement requirements shall be complete for each phase

for which initial close-out acceptance is applied for, including all drainage improvements necessary to serve that phase. Detention and water quality facilities that serve one or more phases shall be installed when the first phase that drains to the facility is constructed. Once all the streets, curb and gutter, and storm sewer drainage improvements have been completed in a phase and all the grading, erosion and sediment controls have be installed or repaired per the Final GESC Plan, inspections shall be made by the City Engineering Inspector. If the City Engineering Inspector finds all items to be compliant with City requirements, a release of Engineering hold shall be granted and a request to the Building Division may be made to obtain building permits or CO. If there are deficient items, the Permittee(s) shall make the necessary corrections and reschedule an inspection.

C. Final Close-out Inspection

The Permittee(s) shall make any corrections to the site as requested by the City Engineering Inspector. If the corrections are substantial, the City Inspector may require a follow-up inspection to be scheduled prior to issuing close-out acceptance.

Removal of On-site control measures - After obtaining written acceptance of the vegetation coverage, the remaining on-site control measures shall be removed and properly disposed. The site shall be cleaned up and any areas disturbed as a result of the control measure removal shall be seeded and mulched. The Final Close-out Inspection shall then be scheduled with the City.

The City Inspector will check the removal of control measures and either accept the work or stipulate the corrections that have to be made. If corrections are substantial, the City Inspector may require that a follow-up inspection be scheduled. When all work has been accepted by the City Inspector, the GESC Close-Out Certification (Appendix D1) will be completed and signed.

D. Fees

All inspection fees and enforcement penalties are paid.

PART 7 Post-Construction Permanent Water Quality Control Measures Requirements

Per the Cañon City Municipal Code 20.10.140, land development that meets the following requirements must address stormwater runoff quality through the use of permanent control measures which shall be maintained in perpetuity.

The permanent structural control measures located on private property shall be owned and operated by the owners of the property on which the control measure(s) is located, unless the City in writing agrees that a person other than the owner shall own or operate the control measure(s). Additionally, the Cañon City Municipal Code requires, as a condition of approval of the permanent control measure(s), that the owner shall agree to maintain the control measure(s) to its design capacity unless or until the City relieves the property owner of that responsibility in writing. The obligation to maintain the control measure(s) shall be memorialized on the subdivision plat, annexation plat, development agreement or other instrument in a form acceptable to the City and shall be recorded in the office of the County Clerk and Recorder.

A. Applicability

1. Applicable Development Sites: Sites that result in land disturbance of greater than or equal to one acre, including sites less than one acre that are part of a larger common plan of development or sale, unless excluded below.

2. New Development: land disturbing activities; structural development, including construction or installation of a building or structure, creation of impervious surfaces; and land subdivision for applicable development sites not meeting the definition of "Redevelopment" below.

3. Redevelopment: a site that is already substantially developed with 35% or more of existing imperviousness; with the creation or addition of impervious area (including removal and/or replacement), to include the expansion of a building footprint or addition or replacement of a structure; structural development including construction, replacement of impervious area that is not part of a routine maintenance activity; and land disturbing activities.

4. Any site which meets the site plan requirements as defined by the City's Subdivision and Development Regulations Appendix A to Title 16.

B. Excluded Sites. The following may be excluded from the requirements of an applicable development site.

1. "Pavement Management Sites": Sites, or portions of sites, for the rehabilitation, maintenance, and reconstruction of roadway pavement, which includes roadway resurfacing, mill and overlay, white topping, black topping, curb and gutter replacement, concrete panel replacement, and pothole repair. The purpose of the site must be to provide additional years of service life and optimize service and safety. The site also must be limited to the repair and replacement of pavement in a manner that does not result in an increased impervious area and the infrastructure must not substantially change. The types of sites covered under this exclusion include day-to-day maintenance activities, rehabilitation, and reconstruction of pavement. "Roadways" include roads and bridges that are improved, designed or ordinarily used for vehicular travel and contiguous areas improved, designed or ordinarily used for pedestrian or bicycle traffic, drainage for the roadway, and/or parking along the roadway. Areas primarily used for parking or access to parking are not roadways.

2. Excluded Roadway Redevelopment: Redevelopment sites for existing roadways, when one of the following criteria is met:

   a. The site adds less than 1 acre of paved area per mile of roadway to an existing roadway, or

   b. The site does not add more than 8.25 feet of paved width at any location to the existing roadway.

3. Excluded Existing Roadway Areas: For redevelopment sites for existing roadways, only the area of the existing roadway is excluded from the requirements of an applicable development site when the site does not increase the width by two times or more, on average, of the original roadway area. The entire site is not excluded from being considered an applicable development site for this exclusion. The area of the site that is part of the added new roadway area is still an applicable development site.

4. Aboveground and Underground Utilities: Activities for installation or maintenance of underground utilities or infrastructure that does not permanently alter the terrain, ground cover, or drainage patterns from those present prior to the construction activity. This exclusion includes, but is not limited to, activities to install, replace, or maintain utilities under roadways or other paved areas that return the surface to the same condition.

5. Large Lot Single Family Sites: A single-family residential lot, or agricultural zoned lands, greater than or equal to 2.5 acres in size per dwelling and having a total lot impervious area of less than 10 percent. A total lot imperviousness greater than 10 percent is allowed when a study specific to the watershed and/or MS4 shows that expected soil and vegetation conditions are suitable for infiltration/filtration of the WQCV for a typical site, and the permittee accepts such study as applicable within its MS4 boundaries. The maximum total lot impervious covered under this exclusion shall be 20 percent.

6. Non-Residential and Non-Commercial Infiltration Conditions: This exclusion does not apply to residential or commercial sites for buildings. This exclusion applies to applicable development sites for which post-development surface conditions do not result in concentrated stormwater flow during the 80th percentile stormwater runoff event. In addition, post-development surface conditions must not be projected to result in a surface water discharge from the 80th percentile stormwater runoff events. Specifically, the 80th percentile event must be infiltrated and not discharged as concentrated flow. For this exclusion to apply, a study specific to the site, watershed and/or MS4 must be conducted. The study must show rainfall and soil conditions present within the permitted area; must include allowable slopes, surface conditions, and ratios of impervious area to pervious area.

7. Sites with Land Disturbance to Undeveloped Land that will Remain Undeveloped: Sites with land disturbance to undeveloped land (land with no human-made structures such as buildings or pavement) that will remain undeveloped after the site is completed.

8. Stream Stabilization Sites: Including in-stream recreational or habitat projects, as otherwise permitted.

9. Bike and pedestrian trails. Bike lanes for roadways are not included in this exclusion, unless attached to a roadway that qualifies under another exclusion in this section.

10. Oil and Gas Exploration: Facilities associated with oil and gas exploration, production, processing, or treatment operations, or transmission facilities, including activities necessary to prepare a site

for drilling and for the movement and placement of drilling equipment, whether or not such field activities or operations may be considered to be an applicable construction activity.

C. Base Design Standards. Permanent Structural BMPs must meet one of the base design standards listed below. The City Engineer will determine which design standard is applicable to the development site as per the guidance provided in UDFCD's Criteria Manual Volume 3, Chapter 2.

1. WQCV Standard: The control measure(s) is designed to provide treatment and/or infiltration of the WQCV and:

   a. 100% of the applicable development site is captured, except up to 20 percent of the applicable development site area may be excluded (not to exceed 1 acre) if it has been determined that it is not practicable to capture runoff from portions of the site that will not drain towards control measures. In addition, it must also be determined that the implementation of a separate control measure for that portion of the site is not practicable (e.g., driveway access that drains directly to street).

   b. Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the control measure implemented. Consideration of drain time shall include maintaining vegetation necessary for operation of the control measure (e.g., wetland vegetation).

   c. The control measure must meet the detention requirements of the City's Subdivision and Development Regulations Appendix A to Title 16.

2. Pollutant Removal Standard: The control measure(s) is designed to treat at a minimum the 80th percentile storm event. The control measure(s) shall be designed to treat stormwater runoff in a manner expected to reduce the event mean concentration of total suspended solids (TSS) to a median value of 30 mg/L or less.

   a. 100% of the applicable development site is captured, except up to 20 percent of the applicable development site area may be excluded (not to exceed 1 acre) if it has been determined that it is not practicable to capture runoff from portions of the site that will not drain towards control measures. In addition, it must also be determined that the implementation of a separate control measure for that portion of the site is not practicable (e.g., driveway access that drains directly to street).

3. Runoff Reduction Standard: The control measure(s) is designed to infiltrate into the ground where site geology permits, evaporate, or evapotranspire a quantity of water equal to 60% of what the calculated WQCV would be if all impervious area for the applicable development site discharged without infiltration. This base design standard can be met through practices such as green infrastructure. "Green infrastructure" generally refers to control measures that use vegetation, soils, and natural processes or mimic natural processes to manage stormwater. Green infrastructure can be used in place of or in addition to low impact development principles.

4. Applicable Development Site Draining to a Regional WQCV Control Measure: The regional WQCV control measure must be designed to accept the drainage from the applicable development site. Stormwater from the site must not discharge to a water of the state before being discharged to the regional WQCV control measure.

5. Constrained Redevelopment Sites Standard:

    a. Applicability: The constrained redevelopment sites standard applies to redevelopment sites meeting the following criteria:

        i. The applicable redevelopment site is for a site that has greater than 75% impervious area, and

        ii. The Engineer has determined that it is not practicable to meet any of the design standards listed above. The Engineer's determination shall include an evaluation of the applicable redevelopment sites ability to install a control measure without reducing surface area covered with the structures.

    b. Constrained Redevelopment Sites Design Standard: The control measure(s) is designed to meet **one** of the following:

        i. Provide treatment of the WQCV for the area captured. The captured area shall be 50% or more of the impervious area of the applicable redevelopment site. Evaluation of the minimum drain time shall be based on the pollutant removal mechanism and functionality of the control measure implemented;

        ii. The control measure(s) is designed to provide for treatment of the 80th percentile storm event. The control measure(s) shall be designed to treat stormwater runoff in a manner expected to reduce the event mean concentration of total suspended solids (TSS) to a median value of 30 mg/L or less. A minimum of 50% of the applicable development area including 50% or more of the impervious area of the applicable development area shall drain to the control measure(s). This standard does not require that 100% of the applicable redevelopment site area be directed to control measure(s) as long as the overall removal goal is met or exceeded (e.g., providing increased removal for a smaller area); or

        iii. Infiltrate, evaporate, or evapotranspirate, through practices such as green infrastructure, a quantity of water equal to 30% of what the calculated WQCV would be if all impervious area for the applicable redevelopment site discharged without infiltration.

D. Inspections

City personnel will conduct inspections during the relevant phases of construction (e.g. installation of components of the permanent control measure) to ensure proper installation in accordance with the approved site plan. It is the GESC Manager's responsibility to contact City inspectors to provide notification of the stages of construction of the permanent water quality control measure and to schedule inspections by City personnel.

Upon completion of a project, and before a certificate of occupancy shall be granted, the City will perform an inspection to verify the control measure(s) is constructed and is operating in accordance with the approved site plan. A final inspection by the City is required before the release of any performance securities can occur.

E. Project Acceptance Required Submittals

All projects must submit "as-built" plans as per City criteria for any permanent control measure(s) after final construction is completed. The plans must be certified by a Colorado licensed professional engineer. The City shall also be provided a written certification stating that the completed project is in compliance with the approved final drainage plan. The plans must include the following:

1. Location of permanent structural control measures, including all associated inlets, outlets, drainage pipes, etc.
2. Design details for all structural control measures implemented.
3. A narrative reference for all non-structural control measures implemented for the site. Non-structural control measures include those that prevent or reduce pollutants from being introduced to water or that prevent or reduce the generation of runoff or illicit discharges.
4. Documentation of operation and maintenance procedures which include inspection frequencies and maintenance activities to ensure the long-term maintenance and operation of the control measure(s).
5. Documentation of easements or other legal means of access for the operation, maintenance and inspection of the control measure(s).
6. Two copies shall be submitted on 24" x 36" sheets (minimum scale of drawing, 1 inch = 50 feet) to the City Engineer.

PART 8 - Single-Family Residential Drainage, Erosion and Sediment Control (DESC) Requirements

This section establishes minimum drainage, erosion and sediment control requirements for building lots less than one (<1.0) acre but are a part of a larger common plan of development or sale which has not yet reached final stabilization. The minimum requirements are intended to:

1. Protect, to the greatest extent practicable, life, property and the environment from loss, injury and damage by stormwater runoff, erosion, sediment transport, ponding, flooding, landslides, accelerated soil creep, settlement and subsidence, excessive dust, and other potential hazards, caused by grading, construction activities and denuded soils; and

2. Protect surface waters, public right-of-way (ROW), private property, drainage systems, wetlands and watercourses from sediment loads; and

3. Protect the public interest in drainage control including lot drainage, drainage basins, drainage infrastructure and watercourses

A. DESC Requirements

These regulations apply to drainage, erosion and sediment control for building lots less than one (<1.0) acre but are a part of a larger common plan of development or sale which has not yet reached final stabilization, including all single-family residential development projects not covered by Grading Erosion and Sediment Control (GESC) Permit, unless the entire development has reached final stabilization;

A DESC Permit is issued in conjunction with the Building Permit on applicable sites. Under an active DESC Permit, the Permittee is responsible for and is subject to any liability for drainage, erosion, and sediment control for the permitted site. The DESC Permit shall not be issued until a DESC Plan is submitted and approved by the City Engineer. The DESC Plan may be a plot plan modified to meet the requirements of this Section. The DESC Plan will be reviewed for compliance with this Section and, when applicable, the approved drainage patterns set forth in the "area grading plan".

After construction, the DESC Permit shall be deactivated. To deactivate the permit, a fully executed DESC Certification Letter must be submitted. For all construction eligible to receive a Certificate or Occupancy (CO), the DESC Permit shall be deactivated prior to release of the CO. For construction not eligible to receive a CO (e.g., barns, arenas, garages, etc.) the DESC Permit must be deactivated prior to a Final Inspection. In cases where final grade cannot be established due to weather conditions and a DESC Certification Letter cannot be fully executed, a CO may be issued or, when a CO is not applicable, a final inspection may be completed.

To aid in pollution prevention and preserve existing drainages, a DESC permit may be obtained for any site. For a nominal fee, a completed DESC application and site plan will be reviewed by the Engineering Department and returned with comments to assist in the prevention of discharges of pollutants, and subsequent violations, from the site and to assist in preserving existing drainages.

EVEN IF A PERMIT IS NOT REQUIRED, EROSION AND SEDIMENT CONTROL MEASURES ARE STILL REQUIRED ON THE SITE. ALL PROJECTS ARE STILL SUBJECT TO THE CITY OF CAÑON CITY'S ILLICIT DISCHARGE REGULATIONS.

1. Minimum Drainage Requirements for Finished Grade

   A minimum slope of 10% and a maximum of 33% in the first 10' out from the foundation walls and window wells should be established for pervious surfaces except when limited by property lines or when natural vegetation is to be preserved and documentation of adequate drainage is provided. All other pervious areas shall have a minimum of 2.0% slope (a 2.5% slope is recommended for grassy areas) away from the foundation. All pervious and impervious areas shall slope continuously to the lowest point where stormwater discharges from the lot (e.g., sidewalk, gutter, inlet, adjacent property, or easement). At this point, the discharge water shall be dispersed into a sheet flow and directed in a manner as to not cause harm to downslope properties. Where minimum slopes cannot be attained, another means to adequately convey the water from the lot should be professionally designed and submitted for City approval (see the City's Uniform Building Code for specific requirements).

2. Minimum Erosion and Sediment Control Requirements

   Under an active DESC Permit, the Permittee shall be responsible for all drainage, erosion, and sediment control related to the permitted site. To deactivate the DESC Permit, either permanent erosion control or adequate temporary erosion and sediment control shall be installed. At the time of DESC Permit de-activation, the temporary erosion and sediment control shall be verified by the Permittee to be properly installed and designed to remain effective for a period of 180 days or until the homeowner installs permanent erosion control, whichever comes first. After the DESC Permit is de-activated, erosion and sediment control is the sole responsibility of the homeowner (or builder, if the home remains unsold).

   a. Lot specific structural and/or nonstructural control measures shall be selected, submitted, approved and implemented to reduce erosion and sediment transport on construction sites. Refer to the "DESC Standard Forms and Drawings" in Appendix F of this Manual.

   b. After installing and implementing control measures, notify City Engineering staff.

   c. If drainage, erosion or sediment problems become apparent during construction, such as when off-site sedimentation occurs, the control measures shall be re-evaluated and re-implemented in an effective manner.

   d. For control measures to perform well it is recommended they be inspected and maintained at least every 14 days and after any precipitation, snowmelt, or runoff event that causes surface erosion, sediment transport, or vehicular tracking.

   e. Streets shall be cleaned when earth materials are tracked, spilled or washed onto streets, or as directed by City Engineering Staff.

   f. When cleaning streets, they shall not be washed until they have been scraped and swept and inlet protection has been properly installed to avoid washing sediment and construction debris down inlets or off-site.

   g. Earth materials and landscape materials, such as sod, rock and mulch, shall not be stockpiled, placed or stored on streets, sidewalks or stormwater flow lines.

   h. Construction supplies (e.g., trusses and lumber), roll-off containers, dumpsters, portable toilets, trailers, etc. shall not be stored on streets or sidewalks. These items shall be stored on the construction site staging area.

i. In cases where final grade cannot be established due to weather constraints, a Certificate of Occupancy (CO) may be issued or, when a CO is not applicable, a final inspection may be completed. In either case the DESC Permit shall remain active, and the terms therein enforceable, until the DESC Certification Letter is received. The Permittee (not the homeowner unless the homeowner is the permittee) shall be responsible for drainage, erosion, and sediment control until the DESC Certification Letter is fully executed and the DESC Permit is de-activated. The DESC Permit may remain active for a period of up to, but not more than, 180 days after the CO issuance date.

j. The City Engineer may grant an extension, of not more than 30 days, upon a written request by the Permittee, prior to the expiration of the DESC Permit. Failure by the Permittee to request an extension prior to the expiration date of the DESC Permit shall constitute a violation of the provisions and each day after the expiration date shall be punishable as a separate offense.

3. Erosion and Sediment Control Requirements for Tract Housing

In addition to the minimum erosion and sediment control requirements set forth in herein, the following erosion and sediment control requirements shall be required for both the builder and the developer related to tract housing developments

a. Throughout build-out, the developer is responsible for implementing and maintaining control measures to control erosion and sediment problems on all idle lots not yet purchased by the builder.

b. When a group of lots (a cell) is purchased from the developer, the builder shall be responsible for maintaining all control measures implemented by the developer and taking any necessary corrective actions to control erosion and sediment problems throughout build-out.

c. The first builder to commence construction shall maintain inlet protection control measures at all sump inlets designed and constructed to receive runoff from the permitted lot. Inlet control measures shall not restrict the designed cross-sectional flow (i.e. the control measure must have adequate overflow). Inlet control measures shall not be placed at any on-grade inlets in a manner that causes water to bypass the inlet. Refer to the DESC Standard Forms and Drawings.

d. In cases of multiple builders, where the first builder has completed construction within the cell, the subsequent builder(s) shall maintain inlet protection control measures. The subsequent builder(s) shall be determined by the City Engineer using criteria including, but not limited to, building permit issuance date, site investigation and the proximity of construction to the inlet(s).

B. DESC Plan Submittals

The DESC Plan shall be prepared and submitted for City approval. Two copies for each parcel shall be submitted with the Building Permit Application. The following items shall be clearly illustrated on the DESC Plan:

1. Illustrate all property lines, easements, and setbacks.

2. Illustrate planned improvements and permanent structures such as sidewalks, patios, swimming pools, driveways, porches, retaining walls, lined swales, etc.

3. Provide a north arrow, the street address, subdivision, filing, and lot and block.

4. The plan size for lot sizes of 1 acre or less shall be 8 ½" by 14" (legal).

5. A scale of 1-inch equals 20 feet shall be used unless the lot won't fit on legal paper; then a scale of 1-inch equals 30 feet may be used. Illustrate the scale used on all pages submitted.

6. Spot elevations shall be illustrated on the DESC Plan in sufficient quantities to accurately illustrate the site drainage patterns.

7. Illustrate high points and drainage arrows with percent slope at 25-foot intervals along drainage swales.

8. Illustrate all slopes to the nearest 1/10th percent in critical areas. Illustrate all elevations to the nearest 1/10th foot.

9. Illustrate top of foundation at each elevation change and driveway elevations at the garage entrance and at the point of discharge.

10. Illustrate where stormwater runoff enters the lot and discharges to adjacent ROWs, properties and easements.

11. Illustrate all structural control measures to be used and their locations. Include a narrative description of non-structural control measures to be used. Refer to the DESC Standard Forms and Drawings.

C. Violations and Enforcement Related to the DESC Program: See Part 5, Section F.

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APPENDIX A
CONTACT INFORMATION

City of Cañon City
Engineering Department
P.O. Box 1460
Cañon City, CO 81215-1460
Phone (719) 269-9011
Fax (719) 269-9017
http://www.canoncity.org/departments/departments/streets_stormwater_and_engineering/index.php

City of Cañon City
Stormwater Program
Phone (719) 276-5265
http://www.canoncity.org/departments/departments/streets_stormwater_and_engineering/stormwater_division.php

Colorado Department of Public Health and Environment Water Quality Division
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530
Phone 303-692-2000
https://www.colorado.gov/pacific/cdphe/clean-water-permitting-sectors

Department of the Army Corps of Engineers, Omaha District/Denver Regulatory Office
9307 South Wadsworth Blvd
Littleton, Colorado 80128-6901
Phone (303) 979-4120
Fax (303) 979-0602
https://www.nwo.usace.army.mil/Missions/Regulatory-Program/Colorado/

Colorado Department of Public Health and Environment
Toll-Free 24-Hour Environmental Emergency Spill Reporting Line
1-877-518-5608
National Response Center (24-hour National Spill Response)
1-800-424-8802

United States Department of the Interior Fish and Wildlife Service
134 Union Blvd.
Lakewood, Colorado 80228
Phone (303) 236-4216
Fax (303) 236-8163
https://www.fws.gov/fisheries/fwco/colorado.html

Federal Emergency Management Agency Region VIII
Building 710, Box 25267
Denver, Colorado 80225-0267
Phone 303-235-4800
https://www.fema.gov/region-viii-co-mt-nd-sd-ut-wy

Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 303-312-6312/800-227-8917
https://www.epa.gov/aboutepa/forms/contact-epas-region-8-office

City of Cañon City, 2019

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APPENDIX B
ACRONYMS AND GLOSSARY

ACRONYMS:
BMP Best Management Practice
CDPHE Colorado Department of Public Health and Environment
CDPS Colorado Discharge Permit System
CF Construction Fence
CFS Cubic Feet Per Second
CO Certificate of Occupancy
DESC Drainage, Erosion, and Sedimentation Control
DW Dewatering
ECB Erosion Control Blanket
FEMA Federal Emergency Management Agency
GESC Grading, Erosion and Sediment Control
IP Inlet Protection
MEP Maximum Extent Practicable
MS4 Municipal Separate Storm Sewer System
NPDES National Pollutant Discharge Elimination System
RCD Reinforced Check Dam
RRB Reinforced Rock Berm
SB Sediment Basin
SCL Sediment Control Log
SF Silt Fence
SM Seeding and Mulching
SR Surface Roughening
SSA Stabilized Staging Area
ST Sediment Trap
TCO Temporary Certificate of Occupancy
TER Terracing
TSC Temporary Stream Crossing
UDFCD Urban Drainage and Flood Control District
VTC Vehicle Tracking Control

GLOSSARY:

Administrative Variance refers to variances that are considered by City Engineering Division to be complicated and which may require a more extensive review. These administrative variances shall be reviewed by the City Engineer.

Applicable Construction Activity means construction activities with land disturbance (surface disturbing and associated activities) of one or more acres, or disturbing less than one acre if that construction activity is part of a large common plan of development or sale that would disturb, or has disturbed one or more acres, unless the disturbed areas have been finally stabilized. Applicable construction activities include the land disturbing activity and all activities and materials associated with the construction site and located at, or contiguous to, the land disturbing activities.

Applicant(s) refers to the Owner and/or Contractor whom complete and sign the Permit Application.

Alternate Grading, Erosion and Sediment Control (GESC) Manager refers to an on-site representative who serves, in the absence of the GESC Manger, as the Permittee(s) contact person with the City and who is responsible for ongoing compliance with the GESC Permit.

Best Management Practice (BMP) means schedules of activities, prohibitions of practices, general good housekeeping pollution prevention and educational practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants directly or indirectly to stormwater, receiving waters, or stormwater conveyance systems. BMPs also include treatment practices, operating procedures, and practices to control site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw materials storage.

Check Dam (CD) is a small rock dam, designed to withstand overtopping, that is placed in a small stream or drainageway. The purpose of the check dam is to trap water-borne sediment in the backwater zone upstream of the check and to reduce flow velocities in a channel.

Clean Water Act means the federal Water Pollution Control Act (33 U.S.C. Section 1251 et seq.), and any subsequent amendments thereto.

Colorado Discharge Permit System (CDPS) Stormwater Discharge Permit or CDPS permit means a permit issued pursuant to the Colorado Water Quality Control Act (C.R.S. § 25-8-101 et seq., as amended).

Common Plan of Development or Sale means a contiguous (within 0.25 miles) area where multiple separate and distinct construction activities may be taking place at different times on different schedules, but remain related.

Compost Blanket consists of a layer of Class I Compost spread over prepared, seeded topsoil to protect exposed soil against raindrop and wind erosion and to provide an organic soil amendment to promote the establishment of vegetation.

Concrete Washout Area is a shallow excavation with a small perimeter berm to isolate concrete truck/equipment washout operations.

Construction refers to the implementation of a proposed plan of improvements by a Contractor that may include excavating, site grading, utility work, paving, building, and other activities that may contribute to the disturbance of land and elevated levels of erosion and sediment.

Construction Activity means ground surface disturbing and associated activities (land disturbance), which include, but are not limited to, clearing, grading, excavation, demolition, installation of new or improved haul roads and access roads, staging areas, stockpiling of fill materials, and borrow areas. Construction does not include routine maintenance to maintain the original line and grade, hydraulic capacity, or the original purpose of the facility. Activities to conduct repairs that are not part of regular maintenance or for replacement are construction activities and are not routine maintenance. Repaving activities where underlying and/or surrounding soil is cleared, graded, or excavated as part of the repaving operation are considered construction activities unless they are an excluded site, Construction activity is from initial ground breaking to final stabilization regardless of ownership of the construction activities.

Control Measure means the same as Best Management Practice.

Construction Fence consists of orange plastic fencing, or other approved material, attached to support posts and used to control access to the construction site and delineate limits of construction.

Degradation refers to erosion of bed material from the bottom of a stream leading to a lowering of the channel invert.

DESC Permit refers to a Drainage, Erosion, and Sediment Control (DESC) Permit for detached single-family home construction. The DESC Permit follows the grading and infrastructure work undertaken under a GESC Permit.

Design Engineer refers to the qualified person responsible for the development of the GESC Plan as required by law.

Development refers to the process of creating new residential, commercial, office, or other land uses through the process of construction.

Dewatering consists of a gravel filter provided on the suction end of a pump to reduce the pumping of sediment and a rip rap pad at the discharge end of the pump to provide erosion protection. Dewatering includes settling the discharge water in a small basin or sediment pond before releasing to receiving waters.

Disturbed Area means that area of the land's surface disturbed by any work or activity upon the property by means including but not limited to grading, excavating, stockpiling soil, fill or other materials, clearing, vegetation removal, removal or deposit of any rock, soil or other materials, or other activities which expose soil. Disturbed area does not include the tillage of land that is zoned for agricultural use.

Diversion Ditch is a small earth channel used to divert and convey runoff to a sediment basin, check dam, or drainageway. Depending on slope, the diversion swale may need to be lined with erosion control matting, plastic (for temporary installations only), or riprap.

Drainageway is any natural or artificial watercourse, including but not limited to streams, rivers, creeks, ditches, channels. Canals, waterways, gullies, ravines, or washes in which water flows in a definite direction or course, either continuously or intermittently, including any area adjacent to it that is subject to inundation by reason of overflow or floodwater and meets any of the following conditions:

1. Provides for conveyance of stormwater runoff from an upstream property or development.
2. Defined as "waters of the United States" by the Army Corps of Engineers.
3. Supports riparian area or sensitive habitat.
4. Tributary area equal to or greater than 20 acres.
5. Alternation or filling will change the manner in which runoff is discharged onto a downstream property and potentially results in a negative impact to that downstream property.

Erosion is the process by which the land surface is worn away by the action of wind, water, ice and gravity.

Erosion Control Blanket (ECB) is a fibrous blanket of straw, jute, excelsior or coconut material trenched in and staked down over prepared, seeded soil. The matting reduces both wind and water erosion.

Export means transporting material from a construction site to another location.

Final Stabilization means the condition reached when all ground surface disturbing activities at the site have been completed, and for all areas of ground surface disturbing activities a 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.

Grading, Erosion and Sediment Control (GESC) Drawings refers to the illustrative portion of the GESC Plan which show the location and extent of all grading, erosion and sediment control measures as well as other associated information required by the GESC Manual.

Grading, Erosion and Sediment Control (GESC) Manager refers to an on-site representative who serves as the Permittee(s) contact person with the City and who is responsible for ongoing compliance with the GESC Permit.

Grading, Erosion, and Sediment Control (GESC) Permit refers to the permit obtained the City Engineering Department prior to commencement of land disturbing activities as defined in the City Grading, Erosion and Sediment Control Manual.

Grading, Erosion and Sediment Control (GESC) Permit Process refers to the process applicants proceed through to obtain and proceeding with land disturbing activities within the incorporated limits of the City.

Grading, Erosion and Sediment Control (GESC) Permit Program refers to the program developed and administered by the City Engineering Department to regulate land disturbing activities within the incorporated limits of City.

Grading, Erosion and Sediment Control (GESC) Plan refers to the complete package on required information submitted to City Engineering Department for review and acceptance which include GESC Drawings, GESC Report, GESC Drawing and Report Checklist, and Option of Probable Cost Example Worksheet.

Grading, Erosion and Sediment Control (GESC) Report refers to the report submitted with the GESC Plan that details all aspects of the GESC plan such as Soils, Areas and Volumes, etc.

Illicit Discharge means any direct or indirect release of pollutants to the storm drainage system, except as excluded in Section 20.10.050(F) of the Cañon City Municipal Code.

Inlet Protection (IP) consists of a reinforced rock berm placed in front of (but not blocking) a curb-opening inlet or around an area inlet to reduce sediment in runoff entering the inlet.

Land Disturbing Activity means any activity that results in a change in the existing land surface (both vegetative and non-vegetative). Land disturbing activities include, but are not limited to clearing, grading, excavation, demolition, installation of new or improved haul roads and access roads, staging areas, stockpiling of fill materials, and borrow areas. Compaction that is associated with stabilization of structures and road construction shall also be considered a land disturbing activity.

Limits of Construction refers to the area shown on the GESC Plan that delineates areas in which construction activities can take place including staging, storage, and stockpiling.

National Pollutant Discharge Elimination System (NPDES) Stormwater Discharge Permit or NPDES Permit means a permit issued pursuant to Section 402 of the Clean Water Act.

Operator in this manual means the person or entity who has day-to-day supervision and control of activities occurring at the construction site. Operator can include the owner, developer, the general contractor or the agent of one of these parties.

Owner means the person who owns the facility, development, part of a facility or land at which construction activities are or will be occurring.

Permittee(s) refers to the Owner and/or Contractor whom obtain a GESC Permit.

Pollutant means any sewage, sewage biosolids, dirt, slurry, garbage, chemical waste, biological material, biological nutrient, solid waste, incinerator residue, ash, munitions, radioactive material, heat, rock, sand, cellar dirt, wrecked or discarded equipment and any municipal, industrial and agricultural wastes.

Post-construction Permanent Water Quality Control Measures means control measures that are comprised of facilities and structures that remove pollutants from water or retain, reuse, or provide for infiltration or evaporation of water.

Professional Engineer refers to an individual currently registered with the Colorado State Board of Registration as a Professional Engineer, practicing engineering in accordance with State law (Title 12, Article 25, Part 1).

Receiving Water means any water of the State of Colorado that receives a stormwater discharge from a MS4, including all watercourses, even if they are usually dry, and irrigation ditches that receive municipal stormwater. It also includes storm drainage systems owned by other entities.

Reinforced Check Dam (RCD) consists of rock placed within wire reinforced gabions to provide additional resistance to the forces of water. It serves the same purpose as a check dam, and, due to its greater strength, may be used on larger drainageways than a check dam.

Reinforced Rock Berm (RRB) consists of a linear mass of gravel enclosed in wire mesh to form a porous filter, able to withstand overtopping. The berm is heavy and stable and promotes sediment deposition on its upstream side as well as reducing flow velocities.

Sediment Basin (SB) refers to an impoundment that captures sediment-laden runoff and releases it slowly, providing prolonged settling times to capture coarse and fine-grained soil particles.

Sediment Control Log (SCL) refers to a cylindrical bundle of excelsior, straw, or coconut designed to form a semi-porous filter, able to withstand overtopping, and promote sediment deposition on the upstream side and reducing flow velocities.

Sediment Trap (ST) consists of a riprap berm with a small upstream basin that acts to trap coarse sediment particles.

Sedimentation means the deposition of soil particles dislodged by erosion.

Seeding and Mulching (SM) consists of drill seeding disturbed areas with permanent grasses and mechanical crimping of straw mulch to provide immediate protection against raindrop and wind erosion and, as the grass cover becomes established, to provide long-term stabilization of exposed soils.

Silt Fence (SF) is a temporary sediment barrier constructed of woven fabric stretched across supporting posts. The bottom edge of the fabric is placed in an anchor trench that is backfilled with compacted soil.

Site Plan means construction stormwater site plans, sediment and erosion control plans, stormwater pollution prevention plans, drainage reports, drainage plans, stormwater management plans, drainage and erosion control plans, and the site plan requirements as defined by the City's Subdivision and Development Regulations Appendix A to Title 16..

Spill means any intentional or unintentional release of solid or liquid material which may cause pollution of the MS4 or waters of the state.

Stabilized Staging Area (SSA) refers to stripping topsoil and spreading a layer of granular material in the area to be used for a trailer, parking, storage, unloading, and loading. A stabilized staging area reduces the likelihood that the vehicles most frequently entering a site are going to come in contact with mud.

Stage of Construction refers to the Initial, Interim, or the Final Stage of construction; control measures are to be shown on the GESC Plan as being installed at one of these three stages.

Standard Control Measures (BMPs) refers to any one of a number of control measures that have been approved for use in the City and for which standard notes and details have been prepared.

Staff Variance refers to a variance that is considered by the City Engineering Division to be minor in nature; these staff variances may be considered by the City Engineer.

Stop Work Order refers to a written notice provided by City Inspector that revokes a GESC Permit as a result of a priority violation; Contractors receiving a Stop Work Order shall cease construction operations until the problem is addressed and a signed Stop Work Order Release Form is obtained.

Stormwater means any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation..

Surface Roughening consists of creating a series of grooves or furrows on the contour in all disturbed, graded areas to trap rainfall and reduce the formation of rill and gully erosion.

Temporary Slope Drain refers to a small culvert or plastic lined channel to convey runoff down a slope or channel bank to reduce the occurrence of rill and gully erosion.

Temporary Stream Crossing refers to a rock layer placed temporarily in a stream to allow construction equipment to cross. A stream crossing may be include culverts or provide a low-water crossing, or ford. In either case, excavation of the existing channel banks is to be avoided and, in general, disturbance is to be kept to a minimum.

Terracing consists of creating one or more flat benches in high, steep cut or fill slopes to interrupt runoff and reduce the formation of rill and gully erosion.

Vehicle Tracking Control consists of a pad of 3” to 6” rock at all entrance/exit points for a site that is intended to help strip mud from tires prior to vehicles leaving the construction site.

Vehicle Tracking Control with Wheel Wash consists of a gravel and riprap pad at the main entrance/exit point for the site with an adjacent washwater/sediment trap. If the City of Cañon City requires a Permittee(s) to implement this control measure, each wheel of all vehicles coming in contact with dirt or mud shall be cleaned using a high-pressure washer prior to the vehicle leaving the site.

Watercourse means a channel, natural depression, slough, artificial channel, gulch, arroyo, stream, creek, pond, reservoir or lake, including major drainageways, in which stormwater runoff and floodwater flows, either regularly or infrequently.

APPENDIX C
GESC PLAN DEVELOPMENT CHECKLIST

DRAINAGEWAYS

A. Drainageways Should Not be Filled, Regraded, or Realigned

____ yes ____ no 1. Determine design discharges for drainageways

____ yes ____ no 2. Delineate floodplain limits for all drainageways

____ yes ____ no 3. Show limits of fill adjacent to drainageways and channel area to be preserved

B. Ample Freeboard Above the 100-year Floodplain Provided

____ yes ____ no 1. Provide ample freeboard above the 100-year floodplain to lot grades and lowest floor elevations (including basements in fill)

C. Existing Drainageways Stabilized

____ yes ____ no 1. Design grade control structures in all drainage channels as necessary

____ yes ____ no 2. Design bank stabilization improvements as necessary

D. Disturbance to Existing Drainageways Minimized and Quickly Restored

____ yes ____ no 1. Identify features whose construction within drainageways is unavoidable, such as the following:

- ____ yes ____ no a) grade control structures
- ____ yes ____ no b) bank stabilization
- ____ yes ____ no c) road crossings (bridges or culverts)
- ____ yes ____ no d) storm sewer outfalls
- ____ yes ____ no e) utility crossings
- ____ yes ____ no f) temporary stream crossings for construction access

____ yes ____ no 2. Determine limits of construction around the features identified in Item D.1. above that are just large enough to allow construction to minimize disturbance

____ yes ____ no 3. Show **Check Dam (CD)** or **Reinforced Check Dam (RCD)** immediately downstream of each disturbed area in the stream. Check sizing criteria

____ yes ____ no 4. Show **Temporary Stream Crossings (TSC)**, as necessary

____ yes ____ no 5. Show **Erosion Control Blanket (ECB)** in all disturbed areas of streams

E. Any Additional Drainageways Shall be Designed and Stabilized

____ yes ____ no 1. Identify any additional small drainageways that are necessary to manage stormwater runoff on the site

____ yes ____ no 2. Determine design discharges and size the drainageways

____ yes ____ no 3. Design stabilization improvements as necessary for drainageways, including any drop structures or lining. For 2-year flows less than 10 cfs, criteria for **Diversion Ditches (DD)** may be used

F. Stream-Related Permitting Shall be Completed

____ yes ____ no 1. Determine if the following permits (and any others) are necessary. If so, complete the required documentation and submit applications

- ____ yes ____ no a. US Army Corps of Engineers Section 404 Permit
- ____ yes ____ no b. US Fish and Wildlife Service Threatened and Endangered Species approvals

SENSITIVE AREAS

____ yes ____ no 1. Conduct a resource inventory on the site and identify on the GESC Plan the type and extent of features such as the following:

____ yes ____ no a. Protected habitat for endangered species

____ yes ____ no b. Wetlands

____ yes ____ no c. Nesting bird habitat

____ yes ____ no d. Riparian buffer zones

____ yes ____ no e. Forested areas

____ yes ____ no f. Mature cottonwood stands

____ yes ____ no g. Bedrock outcroppings

____ yes ____ no h. Steep slopes

____ yes ____ no i. Potential stormwater infiltration areas

____ yes ____ no j. Historic, cultural, or archeological resources

____ yes ____ no k. Areas of unique or pristine vegetation, or habitat

BALANCE EARTHWORK ONSITE

____ yes ____ no 1. Endeavor to balance earthwork quantities on site through the following tasks.

____ yes ____ no a. Develop initial grading plan.

____ yes ____ no b. Check earthwork quantities for balance (consider shrink/swell).

____ yes ____ no c. Raise or lower portions of the site as necessary to try to balance earthwork.

____ yes ____ no d. Repeat steps b and c until balance is achieved.

____ yes ____ no 2. If it is impossible to balance earthwork quantities on site, prepare letter requesting variance per the information in Part 4.B. of the GESC Manual.

PHASING GRADING TO REDUCE SOIL EXPOSURE

____ yes ____ no 1. For large projects, determine separate grading phases.

____ yes ____ no 2. Balance earthwork for each phase following the guidance above.

STABILIZE SOILS IN A TIMELY MANNER

____ yes ____ no 1. Show **Surface Roughening (SR)** for all areas of grading, to be performed immediately after portions of grading are complete.

____ yes ____ no 2. Indicate **Seeding and Mulching (SM)** in all areas to be seeded.

____ yes ____ no 3. Indicate **Erosion Control Blanket (ECB)** or **Compost Blanket (CB)** on slopes steeper than 3:1 and in all areas where an extra measure of stabilization is appropriate.

IMPLEMENT PERIMETER CONTROLS.

A. Upslope Perimeters.

____ yes ____ no 1. Use **Diversion Ditch (DD)** to capture runoff entering the site via sheet flow. Follow design guidance in Section 3.17 of the GESC Manual.

____ yes ____ no 2. For steep reaches, such as where the ditch conveys runoff down a channel bank to the bottom of a stream, the diversion ditch is to be lined based on the criteria shown in the GESC Manual.

____ yes ____ no 3. For an alternative to a lined ditch in steep sections, consider a **Temporary Slope Drain**

B. Downslope Perimeters.

____ yes ____ no 1. If the upslope disturbed drainage area exceeds 1.0 acre, use a **Diversion Ditch (DD)** or permanent drainageway to convey runoff to a **Sediment Basin (SB)**.

____ yes ____ no 2. If the upslope disturbed drainage area is less than 1.0 acre, use a **Diversion Ditch (DD), Reinforced Rock Berm (RRB), Sediment Control Log (SCL),** or **Silt Fence (SF)**. In general, the latter three BMPs are to be used on the contour.

____ yes ____ no 3. Use a **Check Dam (CD)** or **Reinforced Check Dam (RCD)** across a stream or drainage channel at the downslope perimeter of the site.

TREAT RUNOFF IN A SEDIMENT BASIN.

____ yes ____ no 1. Runoff from all disturbed areas greater than 1.0 acre shall be treated in a **Sediment Basin (SB)**. Use the standard design for drainage areas less than 15 acres. For areas less than 1.0 acre, a **Sediment Trap (ST)** may be used.

____ yes ____ no 2. If a non-standard design is used, construction drawings detailing the storage volume, embankment, spillway, and outlet are required.

____ yes ____ no 3. Wherever possible, sediment basins are to be located within any permanent water quality or quantity detention facilities. Permanent water quality or quantity detention facilities shall have a sediment basin incorporated within them.

PROTECT STEEP SLOPES.

A. Proposed Slopes Shall be no Steeper than 3 to 1.

____ yes ____ no 1. Ensure that no slopes are proposed that are steeper than 3H to 1V, except small areas of riprap outlet protection near outfalls and culverts.

____ yes ____ no 2. Show **Erosion Control Blanket (ECB)** on slopes steeper than 4:1.

B. Runoff Shall be Diverted Away from Steep Slopes.

____ yes ____ no 1. Use **Diversion Ditch (DD)** at the top of steep slopes to capture runoff before it flows down the slope.

C. Terracing Shall be Incorporated into the Grading of Steep Slopes.

____ yes ____ no 1. Use **terracing (TER)** in steep slopes to break up the flow of incidental water and reduce the development of rill and gully erosion runoff before it flows down the slope.

PROTECT INLETS, STORM SEWER OUTFALLS, AND CULVERTS.

____ yes ____ no 1. Show **Inlet Protection (IP)** at all street and area inlets.

____ yes ____ no 2. Show **Reinforced Rock Berm for Culvert Protection (RRP)** at all culvert inlets.

____ yes ____ no 3. Design outlet protection for all storm sewer outfalls and culvert outlets.

____ yes ____ no 4. Show **Erosion Control Blanket (ECB)** in stream areas disturbed by the construction of the outfall or culvert.

PROVIDE ACCESS AND GENERAL CONSTRUCTION CONTROLS.

____ yes ____ no 1. Identify limits of construction activity.

____ yes ____ no 2. Provide one or more **Vehicle Tracking Controls (VTC)** at all entrance/exit points from a public street to a site.

____ yes ____ no 3. Provide a **Stabilized Staging Area (SSA)** near the main access point.

____ yes ____ no 4. Provide a **Concrete/Equipment Washout Area (CWA)** near all concrete work areas.

____ yes ____ no 5. Provide temporary access roads and stockpile areas.

____ yes ____ no 6. Provide appropriate control measures for all potential pollutant sources.

____ yes ____ no 7. Select areas for the vehicle tracking control, stabilized staging area, access roads, and stockpile areas that avoid disturbance to trees, desirable vegetation, steep areas, and low, wet areas.

APPENDIX D
GESC DRAWING AND NARRATIVE CHECKLIST

A copy of this GESC Drawing and Narrative Checklist must be completely filled out, signed by the designer, and submitted with the GESC Plan.

PROJECT NAME: _____

A. Narrative Requirements:
The narrative report must include the following information at a minimum.

1. Applicant Information.
   a. the names, mailing addresses, telephone numbers, and E-mail addresses of :
      i. The Applicant.
      ii. Professional Design Engineer preparing (or supervising the preparation of) the GESC Plan.
      iii. If different from the Applicants, shall include the Owner and/or Developer of the project.
2. Signature Page.
   a. Permittees acknowledgment of the review and acceptance of responsibility, with signatures and dates.
   b. A statement by the Professional Engineer acknowledging responsibility for the preparation of the GESC Plan.
   c. The following note shall be included on the signature page along with the Professional Engineer's stamp.
      i. "*This Grading, Erosion and Sediment Control Plan has been placed in the City of Cañon City file for this project and appears to fulfill the applicable Grading, Erosion and Sediment Control Criteria. I understand that additional grading, erosion and sediment control measures may be required of the Permittees, due to unforeseen erosion problems or if the submitted plan does not function as intended. The requirements of this plan shall run with the land and be the obligation of the Permittees until such time as the plan is properly completed, modified or voided."*
3. Project Description.
   a. Project location including township, range, section and quarter section, or the latitude and longitude, of the approximate center of the project.
   b. A brief description of the nature and purpose of the land-disturbing activity and ultimate disposition of the property.
   c. Areas and volumes:
      i. Total area of the site (acres).
      ii. Total area of disturbance (acres).
      iii. Estimate of the quantity (in cubic yards) of excavation and fill involved, import/export estimates if site not balanced.
   d. An estimate of the runoff coefficient of the site before and after construction activities are completed.
   e. Name and location of/distance from immediate and ultimate receiving waters of discharge points or, if the discharge is to a municipal separate storm sewer, the name and location of the system, the location of the storm sewer discharge, and the ultimate receiving water(s).

4. Existing Site Conditions.
    a. Brief description historic use of the site.
    b. Description of the existing topography. Identify any previously constructed features, wetlands, and other physical features of the site.
    c. A brief description of the soils on the site including information on soil type and names, mapping unit, erodability, permeability, hydrologic soil group, depth, texture, and soil structure (This information may be obtained from the soil report for the site, from adjacent sites if acceptable to the County, or the applicable Soil Survey prepared by the Natural Resources Conservation Service (NRCS)).
    d. Description of the existing vegetation at the site, including percent coverage.
    e. Description of any wetlands on the site.
    f. Description of neighboring areas such as streams, lakes, residential areas, roads, etc., which might be affected by the land disturbance.
    g. Location and description of any anticipated non-stormwater components of the discharge, such as springs and landscape irrigation return flow.
5. Timing/Phasing Schedule.
    a. A schedule indicating the anticipated starting and completion time periods of the site grading and/or construction sequence, including the installation and removal of erosion and sediment control measure and anticipated final stabilization.
    b. Indicate the anticipated starting and completion time periods of individual project phases.
6. Pollution Control Measures.
    a. Explanation of how stormwater runoff from, run on to, and site stormwater will be handled during construction,
    b. Description of all structural and non-structural control measures that will be installed/implemented to prevent or reduce all potential pollutants from leaving the site.
    c. Installation and/or construction details for implemented BMP's. If these details are to be included as detail sheets of the GESC drawing, indicate the location in the drawing set where details can be found.
    d. Identify staging areas, materials handling and material storage, and spill prevention *(and response)* measures appropriate to the site.
7. Maintenance and Inspection Procedures:
    a. Maintenance and inspection procedures and schedules to ensure BMP's are adequately placed and in effective operating condition.
    b. Inspection report and procedure to be used by project GESC manager.
    c. Post-construction maintenance and inspection schedules for permanent BMP's.
8. Permanent Stabilization.
    a. Brief description, including applicable specifications, of how the site will be stabilized after construction is completed. Should include:
        i. Identification of types of permanent stabilization including percentages of site disturbance affected.
        ii. Timeline and special provisions for achieving final stabilization (i.e. irrigation, dry land, native, etc.).

B. GESC DRAWING- COVER SHEET:

1. General Information.
   a. Project name.
   b. Project location/address.
   c. Owner's name, address, phone number.
   d. Design firm's name, address, and phone number.
2. Plan Sheet Index.
   a. For projects that require multiple plan-view sheets to adequately show the project area (based on the specified scale ranges) a single plan-view sheet shall be provided at a scale appropriate to show the entire site on one sheet. Areas of coverage of the multiple blow-up sheets are to be indicated as rectangles on the index sheet.
3. General Location Map.
   a. Scale of 1-inch to 1000- feet to 8000-feet indicating:
      i. General vicinity of the site location.
      ii. Major roadway names.
      iii. North arrow and scale.
4. GESC Plan Designer's Signature Block.
   a. Name, date, and Engineer's stamp.
   b. Signature block shall include the following notes
      i. "THE ***GRADING, EROSION AND SEDIMENT CONTROL PLAN*** *INCLUDED HEREIN HAS BEEN PREPARED UNDER MY DIRECT SUPERVISION IN ACCORDANCE WITH THE REQUIREMENTS OF THE GRADING, EROSION, AND SEDIMENT CONTROL (GESC) CRITERIA MANUAL OF THE CITY OF CAÑON CITY."*
      ii. "*THE* ***GRADING, EROSION AND SEDIMENT CONTROL PLAN*** *INCLUDED HEREIN HAS BEEN PLACED IN THE CITY OF CAÑON CITY FILE FOR THIS PROJECT AND APPEARS TO FULFILL APPLICABLE CITY GRADING, EROSION AND SEDIMENT CONTROL CRITERIA, AS AMENDED. ADDITIONAL GRADING, EROSION AND SEDIMENT CONTROL MEASURES MAY BE REQUIRED OF THE PERMITTEE(S) DUE TO UNFORESEEN EROSION PROBLEMS OR IF THE SUBMITTED GESC PLAN DOES NOT FUNCTION AS INTENDED. THE REQUIREMENTS OF THIS GESC PLAN SHALL BE THE OBLIGATION OF THE PERMITTEE(S) UNTIL SUCH TIME AS THE GESC PLAN IS PROPERLY COMPLETED, MODIFIED OR VOIDED"*
5. City Acceptance Block.

C. GESC DRAWING- INITIAL GESC PLAN: This plan sheet shall provide grading, erosion and sediment controls for the initial clearing, grubbing and grading of a project. At a minimum, it shall contain:

1. Property Lines.
2. Existing and proposed easements.
3. Existing topography at one- or two-foot contour intervals, extending a minimum of 100 feet beyond the property line.
4. Location of any existing structures or hydrologic features within the mapping limits
5. USGS Benchmark used for project.
6. Limits of construction encompassing all areas of work, access points, storage and staging areas, borrow areas, stockpiles, and utility tie-in locations in on-site and off-site locations. Stream corridors and other resource areas to be preserved and all other areas outside the limits of construction shall be lightly shaded to clearly show area not to be disturbed.
7. Flow arrows that depict stormwater flow directions on-site and runoff direction
8. Location of stockpiles, including topsoil, imported aggregates, and excess material
9. Location of storage and staging areas for equipment, fuel, lubricant, chemical (and other materials) and waste storage.
10. Location of borrow or disposal areas.
11. Location of temporary roads.
12. Location, map symbol, and letter callouts of all initial erosion and sediment control measures.
13. Installation and implementation specifications of all structural control measures or a reference to the document which contains the installation and implementation specifications.
14. City Acceptance Block.
15. Other information as may be reasonably required by the City of Cañon City.

D. GESC DRAWING- INTERIM GESC PLAN: This plan sheet shows control measures used to control grading, erosion and sediment during the initial overlot grading, site construction and site revegetation process. At a minimum, it shall contain the following information: The Interim GESC Plan shall show all the information included on the Initial GESC Plan, as noted below:

1. Initial Erosion Control Plan BMPs to be screened/faded and dimensions removed.
2. Property lines (bold and clearly identifiable).
3. Existing & proposed ROW and easements.
4. Existing topography (faded).
5. Proposed topography (2-foot contour intervals – heavy solid lines).
6. Structures and natural features, including locations of springs, streams, wetlands and other surface waters.
7. Limits of construction, including:
    a. All areas of work.
    b. Access points.
    c. Storage and staging areas.
    d. Borrow and stockpile areas (on and offsite).
    e. Areas of cut and fill.
    f. Utility tie-in locations on- and off-site.
    g. Stream corridors and other resource areas to be preserved and all areas outside the limits of construction shall be lightly shaded to show they are not to be disturbed.
8. Locations of stockpiles: Topsoil; imported aggregates; excess material
9. Locations of storage and staging areas for:
    a. Equipment, fuel, lubricant, chemicals and supplies.
    b. Waste storage: including, but not limited to areas for liquid, concrete, masonry, and asphalt.
10. Locations of temporary/haul roads.
11. Locations, map symbols, and letter callouts of all Interim BMPs.
12. Sizes, dimensions and types of all Interim BMPs.
13. Location of proposed structures.
14. Flow directional arrows.
15. Streets and street names labeled.
16. Locations of all drainage and water quality features and facilities, paved areas, retaining walls, cribbing and other permanent features.
17. Standard notes:
    a. SHADED CONTROL MEASURES WERE INSTALLED IN INITIAL STAGE AND SHALL BE LEFT IN PLACE IN INTERIM STAGE.
    b. ALL INTERIM CONTROL MEASURES, INCLUDING SEEDING AND MULCHING OF DISTURBED AREAS, MUST BE COMPLETED PRIOR TO ISSUANCE OF ANY CURB AND GUTTER PERMITS.
    c. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
18. Location of permanent BMP's.
19. City acceptance block.
20. Other information as required by the City.

E. GESC DRAWINGS- Final GESC Plan. This plan sheet shows controls for final completion of the site. At a minimum, this plan sheet shall contain the indicated information. The Final GESC Plan shall include all information shown on the Initial and Interim Plans, as noted below:

1. Initial and Interim BMPs to be screened/faded and dimensions removed.
2. Label any Initial and Interim BMPs to be removed and areas stabilized.
3. Property lines (bold and clearly identifiable).
4. Existing & proposed ROW and easements.
5. Proposed topography (2-foot contour intervals – heavy solid lines).
6. Structures and natural features.
7. Limits of construction to be stabilized, including:
   a. All areas of work.
   b. Access points, temporary/haul roads.
   c. Storage and staging areas.
   d. Borrow and stockpile areas (on and offsite).
   e. Utility tie-in locations on- and off-site.
   f. Stream corridors and other resource areas to be preserved.
8. Locations, map symbols, and letter callouts of all Final BMPs, including landscaping and other measures.
9. Sizes, dimensions and types of all Final and Permanent BMPs.
10. Location of proposed structures.
11. Locations of all drainage and water quality features and facilities, paved areas, retaining walls, cribbing, planting and other permanent features. Must include site drainage patterns depicting movement of stormwater.
12. Show landscaping or reference landscaping plan (assure there are not conflicts between the landscape plan and GESC plan).
13. Standard notes:
    a. SHADED CONTROL MEASURES WERE INSTALLED IN INITIAL OR INTERIM GESC PLAN AND, UNLESS OTHERWISE INDICATED, SHALL BE LEFT IN PLACE UNTIL REVEGETATION ESTABLISHMENT.
    b. SEE CONSTRUCTION PLANS FOR DETAILS OF PERMANENT DRAINAGE FACILITIES SUCH AS DETENTION FACILITIES, CULVERTS, STORM DRAINS, AND INLET AND OUTLET PROTECTION.
14. City acceptance block.
15. Other information as may be reasonably required by the City.

Prepared By: (printed name and signature)	
Company Name:	
Date:	

City Reviewer	
City Review Date	
Review Status	

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Appendix E
GESC Permit App

Permit #	
Date Paid:	/ /
Check	Cash
Check #	
Amount $	

City of Cañon City Engineering Department
128 Main St., P.O. Box 1460 - Cañon City, CO 81215-1460
Phone: (719) 269-9011 Fax: (719) 269-9017

GRADING EROSION & SEDIMENT CONTROL (GESC) PERMIT APPLICATION

1. Permit Applicant (Must be the Responsible Party):

Company Name: _____

Address: _____, City, _____, State: _, Zip: _____

Phone (___) _____, Email: _____

Applicant (circle one): **Owner** **Developer** **Contractor**

Applicant Name: _____, Phone: (___) _____, Email: _____

GESC Manager: _____, Phone: (___) _____, Email: _____

2. Location Information:

Street Address (or Cross Streets): _____

Name of Project or Development: _____

Latitude: _____ Longitude: _____

Legal Description: Section; Township; Range; Subdivision, Block & Lot

_____

Total Project Area (acres): _____ Disturbance Area (acres): _____

Receiving Waters: _____

Nature of the Construction Activity (*Type and Brief Description*): _____

_____

3. Permit Requirements:

CDPHE Stormwater Permit #: _____, State SWMP On-File with City? _____

GESC Drawing Checklist Attached? _____, Fees Enclosed (*See Below*): $ _____

Plan Review and Application Fee *(Based on Total Project Area)***:**
1–4.9 acres: $50 5-19.9 acres: $100 20 – 39.9 acres: $150 40+ acres: $250
Fee will be reassessed for the third and subsequent plan reviews

Pre-Construction, Interim & Close-out Inspection Fee *(Based on Total Project Area)***:**
1–4.9 acres: $50 5-19.9 acres: $100 20 – 39.9 acres: $150 40+ acres: $250
Fee will be reassessed for inspection conducted by the City of Cañon City Engineering staff as per schedule detailed in the GESC Manual

_____ _____
Name/Signature of Legally Responsible Person Date

_____ _____
COCC Engineering Dept. Approval/Acceptance Date

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GRADING, EROSION & SEDIMENT CONTROL (GESC)

PERMIT CLOSE-OUT CERTIFICATE

Date: _____ GESC Permit #_____

Owner/Builder:_____ Total Project Area: _____

Project Address: _____

Name of Project /Development: _____

Legal Description _____

I HEREBY CERTIFY THAT:

All minimum grading, erosion, and sediment control requirements set forth in the City of Cañon City's Grading Erosion and Sediment Control Plan Manual have been adhered to, including the following:

- All control measures indicated in the GESC Plan were implemented according to Plan Drawings and Details
- All control measures indicated on the GESC Plan were maintained in accordance with the specifications in the GESC Manual
- Permanent erosion controls or adequate temporary erosion and sediment control measures designed to be effective for a minimum of 180 days have been properly implemented.
- Post-construction permanent control measures are installed according to plan drawings and details.

Close-out Fees

	Inspections	Fees
• Pre-Construction:	_____	$_____
• Interim:	_____	$_____
• Re-inspection:	_____	$_____
• Close-Out:	_____	$_____
Total Fees Due at Close Out:		**$_____**

_____ _____

Signature/Title of Legally Responsible Person Date

_____ _____

COCC Engineering Dept. Approval/Acceptance Date

City of Cañon City Engineering Department
128 Main St., P.O. Box 1460 - Cañon City, CO 81215-1460
Phone: (719) 269-9011 Fax: (719) 269-9017

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APPENDIX F
PERMANENT WATER QUALITY CONTROL MEASURES SUBMITTAL CHECKLIST

"As-built" plans must be submitted for any permanent water quality control measure(s) constructed and/or installed after final construction/installation is completed. Plans must include the following (as per City of Cañon City As-built Standard Criteria):

Yes___ No___ 1. Permanent structural control measure(s) locations including all associated inlets, outlets, drainage pipes, etc.

Yes___ No___ 2. Design details for all structural control measures implemented.

Yes___ No___ 3. A narrative reference for all non-structural control measures implemented for the site. Non-structural control measures include those that prevent or reduce pollutants from being introduced to water or that prevent or reduce the generation of runoff or illicit discharges.

Yes___ No___ 4. A statement that the control measure(s) shall be owned, operated and maintained to its design capacity by the property owner in perpetuity.

Yes___No____ 5. Documentation of operation and maintenance procedures which include inspection frequencies and maintenance activities to ensure the long-term maintenance and operation of the control measures(s).

Yes___ No___ 6. Documentation of easements or other legal means of access for the operation, maintenance and inspection of the control measure(s).

Yes___ No___ 7. Statement and signature of a Colorado licensed professional engineer certifying that the completed project is in compliance with the approved final drainage plan or other approved plans for the project.

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Appendix G-1
City of Cañon City DESC Inspection Report

This **DESC Inspection Report** must first be completed by the Permittee to insure that all elements of the DESC Permit have been met prior to the on-site inspection by the City of Cañon City Engineering Department Inspector. During the on-site inspection, the City Inspector will verify that all elements of the DESC Permit have been satisfactorily met. Both the Permittee and the City Inspector will initial in the designated area for each item below.

A. DOCUMENTATION

I. DESC Permit (the signed and approved application)

a) Address and building permit number verified: Permittee _____ City Inspector _

b) Signature and Activation Date verified: Permittee _____ City Inspector _____

II. DESC Plan

c) All landscaping and permanent structural drainage and erosion controls are illustrated:

Permittee _____ City Inspector _____

III. DESC Drainage Certificate in Compliance with Ordinance

d) A minimum six inches + 2% slope from the foundation:
Permittee _____ City Inspector _____

e) A minimum 2% slope and a maximum 33% slope established in all other areas:

Permittee _____ Citiy Inspector _____

f) Impervious surfaces slope away from the foundation (driveway, hard landscaping):

Permittee _____ City Inspector _____

g) Certification statement indicating all drainage patterns are in conformance with ordinance:

Permittee _____ City Inspector _____

B. ON-SITE INSPECTION

IV. Drainage Patterns on-site Consistent with DESC Plan and Drainage Certificate

h) Verify existing site conditions consistent with planned design:

Permittee _____ City Inspector _____

i) Verify adequate drainage away from foundation and off lot:

Permittee _____ City Inspector _____

j) Downspout extensions attached and extend beyond backfill zone:

Permittee _____ City Inspector _____

V. Best Management Practices Adequate

k) Confirm that BMP's utilized are appropriately sited and sized to manage expected runoff:

Permittee _____ City Inspector _____

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Permit # _____
Date Paid: ____/____/____
Check _____ Cash _____
Activation Date: _____

City of Cañon City Engineering Department
128 Main St., P.O. Box 1460 - Cañon City, CO 81215-1460
Phone: (719) 269-9011 Fax: (719) 269-9017

DRAINAGE EROSION & SEDIMENT CONTROL (DESC)

PERMIT APPLICATION

1. Permit Applicant (Must be the Responsible Party):

Name: _____

Address:_____, City, _____, State:_____, Zip:_____

Phone (___)_____, Email: _____

Applicant (circle one): **Owner** **Developer** **Contractor/Builder**

2. Location Information:

Street Address (or Cross Streets): _____

Name of Project or Development: _____

Legal Description: Section; Township; Range; Subdivision, Block & Lot

_____

3. Permit Requirements:

Building Permit #: _____ Fee Enclosed : $20.00

4. Contact Information (as applicable):

Builder: _____ Phone; _____

Project Manager: _____ Phone: _____

I have read, understand, and will abide by the requirements of Part 8 – "*Single Family Residential Drainage, Erosion and Sediment Control*", of the City of Cañon City's Grading Erosion and Sediment Control Plan Manual. I understand that failure to do so may result in issuance of a Stop Work Order and/or prosecution for violation of City of Cañon City Ordinance.

_____ _____
Signature/Title of Legally Responsible Person Date

_____ _____
COCC Engineering Dept. Approval/Acceptance Date

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DRAINAGE EROSION & SEDIMENT CONTROL (DESC)

PERMIT DEACTIVATION CERTIFICATE

Date: _____

Owner/Builder:_____ Building Permit #: _____

ProjectAddress: _____

Name of Project /Development: _____

Legal Description _____

I HEREBY CERTIFY THAT:

All minimum drainage, erosion, and sediment control requirements set forth by Part 7 – "*Single Family Residential Drainage, Erosion and Sediment Control*", of the City of Cañon City's Grading Erosion and Sediment Control Plan Manual have been adhered to, including the following:

- Adequate drainage away from the structure(s) and off the lot has been established and verified on a drainage certificate.
- The purchaser (*if applicable*) has been informed of the need to maintain established drainage patterns as shown on the drainage certificate.
- Permanent erosion controls or adequate temporary erosion and sediment control measures designed to be effective for a minimum of 180 days have been properly implemented on the above named lot.

_____ _____

Signature/Title of Legally Responsible Person Date

_____ _____

COCC Engineering Dept. Approval/Acceptance Date

City of Cañon City Engineering Department
128 Main St., P.O. Box 1460 - Cañon City, CO 81215-1460
Phone: (719) 269-9011 Fax: (719) 269-9017

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TRANSFER OF EROSION & SEDIMENT CONTROL RESPONSIBILITY

Date: _____ DESC Permit #: _____

Builder:_____ Owner(s): _____

Property Address: _____

The intent of this document is to transfer responsibility for erosion and sediment control at the property listed above from the builder who certifies that;

- Adequate drainage away from the structure(s) and off the lot has been established
- The purchaser (*if applicable*) has been informed of the need to maintain established drainage patterns as shown on the drainage plan.
- Adequate temporary erosion and sediment controls designed to be effective for a minimum of 180 days have been properly installed according to the DESC Plan.

to the owner(s) who certify that they have been made aware of, and understand that:

i. All installed temporary erosion and sediment controls must remain in place until at least 70% of the disturbed area is stabilized through the establishment of vegetation or landscaping.

ii. Permanent landscaping and drainageway installation must be completed within 180 days of the date of this document.

iii. Failure to comply with either i or ii above constitutes a violation of Cañon City Municipal Code Chapter 20.10 and could result in penalties

_____ _____
Signature/Builder-Contractor Date

_____ _____
Signature/Owner(s) Date

_____ _____
Signature/Owner(s) Date

_____ _____
COCC Engineering Dept. Approval/Acceptance Date