

3.2 Erosion and Stormwater Quality Control Plan

General Principles

Purpose

The required Erosion and Stormwater Quality Control Plan is a plan for controlling erosion, sedimentation and stormwater quality during construction in compliance with the City laws, ordinances, regulations, resolutions, standards and specifications, including this *Drainage Criteria Manual – Volume 2: Stormwater Quality Policies, Procedures and Best Management Practices*. The plan shall be a part of the total site development plan and shall prescribe all the steps necessary including scheduling to assure erosion, sediment and stormwater quality control during all phases of construction including final stabilization.

The objectives for erosion and stormwater quality control during construction include the following:

1. Conduct all land disturbing activities in a manner that effectively reduces accelerated soil erosion and reduces sediment movement and 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 overlot or 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.
7. Implement other BMPs such as spill containment and control measures and proper materials storage practices to minimize impacts to stormwater quality.

Applicability

At a minimum, an Erosion and Stormwater Quality Control Plan is required whenever a Grading Plan is required or when one (1) acre or more of land will be disturbed. All requirements for any land disturbance in Hillside Overlay areas are incorporated into Section 504 of Part 5 of Article 3 of Chapter 7 of the City Code. The Erosion and Stormwater Quality Control Plan shall require the design, implementation and maintenance of BMPs as set forth in this *Manual* and shall include the plan elements as set forth in this *Manual*.

Typical activities for which an Erosion and Stormwater Quality Control Plan is generally not required are designated as minor land disturbing activities and include:

1. Any project involving earth disturbing activity of less than 1 acre, and which disturbs less than 500 cubic yards of material (cut and/or fill).
2. Individual home landscaping, gardening, maintenance and repair work.
3. Agriculture and related activities.
4. Other land disturbing activities which will result in minimum soil erosion or the movement of sediment into waters or onto property off the project site and that include land disturbance of less than 1 acre and less than 500 cubic yards of material (cut and/or fill).

An Erosion and Stormwater Quality Control Plan may be required for specific minor land disturbing activities if deemed necessary by the City Engineer.

Planning and Relationship to Other Plans

Planning for Erosion and Stormwater Quality Control shall begin with the Preliminary Drainage Report preparation, and shall include first hand knowledge of the site by the engineer. Plan approval for the Erosion and Stormwater Quality Control Plan shall be concurrent with review of the Preliminary/Final Drainage Report and approval of the Grading Plan. The plan may be combined with the Grading Plan if all information can be clearly presented.

Basic Grading, Erosion and Stormwater Quality Requirements and General Prohibitions

Any land disturbance by any owner, developer, builder, contractor, or other person shall comply with the Basic Grading, Erosion and Stormwater Quality Requirements and General Prohibitions as noted below. In many cases, this will require the design, implementation and maintenance of Best Management Practices (BMPs) as specified in the *Manual*, even if an Erosion and Stormwater Quality Control Plan is not required. A typical example for this requirement would be a home building contractor constructing one or more homes in an area on individual lots where the construction activity on each lot meets the definition of minor earth disturbing activity.

1. Stormwater discharges from construction sites shall not cause or threaten to cause pollution, contamination, or degradation of State Waters.
2. Concrete wash water shall not be discharged to or allowed to runoff to State Waters, including any surface or subsurface storm drainage system or facilities.
3. Building, construction, excavation, or other waste materials shall not be temporarily placed or stored in the street, alley, or other public way, unless in accordance with an approved Traffic Control Plan. BMPs may be required by City Engineering if deemed necessary, based on specific conditions and circumstances (e.g., estimated time of exposure, season of the year, etc.).
4. Vehicle tracking of soils off-site shall be minimized.

5. All wastes composed of building materials must be removed from the construction site for disposal in accordance with local and State regulatory requirements. No building material wastes or unused building materials shall be buried, dumped, or discharged at the site.
6. No chemicals are to be used by the contractor, which have the potential to be released in stormwater unless permission for the use of a specific chemical is granted in writing by the City Engineer. In granting the use of such chemicals, special conditions and monitoring may be required.
7. Bulk storage structures for petroleum products and other chemicals shall have adequate protection so as to contain all spills and prevent any spilled material from entering State Waters, including any surface or subsurface storm drainage system or facilities.
8. All persons engaged in earth disturbance shall implement and maintain acceptable soil erosion and sediment control measures including BMPs in conformance with the erosion control technical standards of the *Manual* and in accordance with the Erosion and Stormwater Quality Control Plan approved by the City of Colorado Springs, if required.
9. All temporary erosion control facilities including BMPs and all permanent facilities intended to control erosion of any earth disturbance operations, shall be installed as defined in the approved plans and the *Manual* and maintained throughout the duration of the earth disturbance operation. The installation of the first level of temporary erosion control facilities and BMPs shall be installed and inspected prior to any earth disturbance operations taking place.
10. Any earth disturbance shall be conducted in such a manner so as to effectively reduce accelerated soil erosion and resulting sedimentation.
11. All earth disturbances shall be designed, constructed, and completed in such a manner so that the exposed area of any disturbed land shall be limited to the shortest practical period of time.
12. All work and earth disturbance shall be done in a manner that minimizes pollution of any on-site or off-site waters, including wetlands.
13. Suspended sediment caused by accelerated soil erosion shall be minimized in runoff water before it leaves the site of the earth disturbance.
14. Any temporary or permanent facility designed and constructed for the conveyance of stormwater around, through, or from the earth disturbance area shall be designed to limit the discharge to a non-erosive velocity.
15. Temporary soil erosion control facilities shall be removed and earth disturbance areas graded and stabilized with permanent soil erosion control measures pursuant to the standards and specifications prescribed in the *Manual*, and in accordance with the permanent erosion control features shown on the Erosion and Stormwater Quality Control Plans approved by the City of Colorado Springs, if required.
16. Soil erosion control measures for all slopes, channels, ditches, or any disturbed land area shall be completed within twenty-one (21) calendar days after final grading, or final

earth disturbance, has been completed. Disturbed areas and stockpiles which are not at final grade but will remain dormant for longer than 30 days shall also be mulched within 21 days after interim grading. An area that is going to remain in an interim state for more than 60 days shall also be seeded. All temporary soil erosion control measures and BMPs shall be maintained until permanent soil erosion control measures are implemented.

17. No person shall cause, permit, or contribute to the discharge into the municipal separate storm sewer pollutants that could cause the City of Colorado Springs to be in violation of its Colorado Discharge Permit System Municipal Stormwater Discharge Permit.
18. The owner, site developer, contractor, and/or their authorized agents shall be responsible for the removal of all construction debris, dirt, trash, rock, sediment, and sand that may accumulate in the storm sewer or other drainage conveyance system and stormwater appurtenances as a result of site development.
19. No person shall cause the impediment of stormwater flow in the flow line of the curb and gutter, including the temporary or permanent ramping with materials for vehicle access.
20. Individuals shall comply with the “Colorado Water Quality Control Act” (Title 25, Article 8, CRS), and the “Clean Water Act” (33 USC 1344), regulations promulgated, certifications or permits issued, in addition to the requirements included in the *Manual*. In the event of conflicts between these requirements and water quality control laws, rules, or regulations of other Federal or State agencies, the more restrictive laws, rules, or regulations shall apply.
21. The quantity of materials stored on the project site shall be limited, as much as practical, to that quantity required to perform the work in an orderly sequence. All materials stored on-site shall be stored in a neat, orderly manner, in their original containers, with original manufacturer’s labels. Materials shall not be stored in a location where they may be carried by stormwater runoff into a State Water at any time.
22. Spill prevention and containment measures shall be used at storage, and equipment fueling and servicing areas to prevent the pollution of any State Waters, including wetlands. All spills shall be cleaned up immediately after discovery, or contained until appropriate cleanup methods can be employed. Manufacturer’s recommended methods for spill cleanup shall be followed, along with proper disposal methods.

Minimum Best Management Practices Elements

The following best management practices must be included in the Erosion and Stormwater Quality Control Plan. See section 3.3 – *Construction BMP Factsheets and Guidelines for Implementing Construction BMPs* for additional details.

1. Erosion and Sediment Control
 - Sediment Trapping Devices (perimeter controls, vehicle tracking, inlet protection)
 - Sediment Control Devices (Basins and Check Dams)
 - Stabilization Requirements (ground stabilization and slope controls)

2. Spill Prevention and Response
3. Material Management
4. Inspection and Maintenance

Plan Elements

An Erosion and Stormwater Quality Control Plan shall be developed that consists of a narrative description of the construction project and appropriate plans/maps. The Erosion and Stormwater Quality Control Plan shall consist of the most appropriate or best selection of erosion control practices and sediment trapping facilities in conjunction with an appropriate schedule in order to accomplish adequate control. Adequate erosion control measures shall be constructed prior to land disturbing activities such that no adverse affect of site alternatives will impact the surrounding properties. Particular attention shall be given to concentrated flows of water either to prevent their occurrence or to provide appropriate conveyance devices to prevent erosion. Sediment trapping devices shall be required at all points where sediment laden water might leave the site. The Erosion and Stormwater Quality Control Plan shall include permanent structures for conveying storm runoff, how the site will be graded, final site stabilization, temporary sediment control features including sediment basins and finally, stabilization of the site where temporary features have been removed. Plans showing improvements or construction outside the property line of the site will not be approved unless the plan is accompanied by an appropriate legal easement or written acceptance by the adjacent property owner for the area in which such work is required.

The plan shall be annotated with appropriate standard symbols as shown on the List of Standard Symbols. The symbols should be bold and tend to “stand out” on the plans.

The required plan elements are listed as follows:

Applicant Information

The name, address, telephone number, email address and fax number of the applicant and/or owner and the engineer must be listed on the plan. In addition, it is recommended that the same information be provided for the contractor, if known).

Site Map

The information listed below shall be included on one or multiple site maps. The map shall use one of the following scales; 1"=20', 1"=30', 1"=40', 1"=50' or 1"=100'. The scale selected must be suitable for practical use and readability. The contour interval for these plans shall be 2 feet or closer.

1. Construction site boundaries.
2. Areas of soil disturbance.
3. Areas of cut and fill.
4. Areas used for the storage of building materials, soils, equipment, fuel, lubricants, chemicals, or waste storage.
5. Location of any dedicated asphalt or concrete batch plants.

6. Critical erosion areas and location of major erosion and sediment control facilities or structures.
7. Existing and proposed water courses including springs, streams, wetlands and other surface waters.
8. Boundaries of the 100-year flood plains, if determined.
9. Vicinity map showing relationship of the site to existing and planned roadways, jurisdictional boundaries, and major creeks/streams.
10. Soil types.
11. Existing and proposed contours.
12. Adjacent existing and proposed development affected by the construction.
13. Other proposed features and structures on the site.
14. Vegetation.
15. Property lines for the parcel/lot on which the land disturbance will occur.
16. Existing and proposed utility locations. The following note shall be added: "The Plan shall not substantially change the depth of cover, or access to utility facilities. Additionally, the Plan shall not increase or divert water towards utility facilities. Any changes to utility facilities to accommodate the plan, must be discussed and agreed to by the affected utility prior to implementing the plan. The resulting cost to relocate or protect utilities, or provide interim access is at the expense of the Plan applicant."

Description of Construction Activities

This includes the nature and purpose of the land disturbing activity.

Timing

The proposed sequence for major construction activities. This includes the anticipated starting and completion time periods of the site grading and/or construction sequence, including installation and removal time periods of erosion and sediment control measures, and the time of exposure of each area prior to completion of temporary erosion and sediment control measures.

Areas

Estimates of the total area of the site and the area of the site that will be cleared, excavated or graded.

Soils Information

A brief description of the soils on the site including information on soil type and names, mapping unit, erodibility, permeability, hydrologic soil group, depth, texture and soil structure. In addition, an estimate of the runoff coefficient of the site before and after construction activities should be included. This information may be obtained from the soil report for the site, or, if available, from soils reports from adjacent sites.

Existing Site Conditions

A description of the existing topography, vegetation, and drainage including a description of any wetlands. This includes a description of the existing vegetation at the site and an estimate of the percent vegetative ground cover. In addition, a description should be included of any anticipated non-stormwater components of offsite discharges such as springs, and landscape irrigation return flows.

Other Pollutant Sources

The location and description of any potential pollutant sources including, but not limited to, vehicle fueling areas, storage of fertilizers or chemicals, etc.

Receiving Waters

The name of the receiving water(s) and the site, type and location of any concentrated flow points from the site. If the discharge is into an existing storm sewer system, this should be stated, along with the name of the ultimate receiving water.

Best Management Practices

The plan shall include a narrative description of appropriate controls and measures that will be implemented before and during construction activities at the facility. It shall clearly describe the relationship between the phases of construction and the implementation and maintenance of control measures. For example, what BMPs will be implemented during each of the following stages of construction:

1. Clearing and grubbing necessary for perimeter controls.
2. Initiation of perimeter controls.
3. Remaining clearing and grubbing.
4. Road grading.
5. Drainage facility installation.
6. Utilities installation.
7. Final grading.
8. Stabilization.
9. Removal of temporary control measures.

The description of controls shall address the following areas:

1. Erosion and Sediment Control. This includes:
 - Structural Practices – A description of structural site management practices that will minimize erosion and sediment transport.
 - Non-Structural Practices – A description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices.
2. Materials Handling. The plan shall identify any procedures of significant materials handled at the site that could contribute pollutants to runoff.
3. Spill Prevention and Response. Areas where potential spills can occur shall have spill prevention and response procedures identified.

4. Other Controls. A description of other measures to control pollutants in stormwater discharges including plans for waste disposal.

Detail Drawings

Design drawings of sediment controls, temporary diversions and any practices used that are not referenced in the BMPs or design criteria.

Plans for all Drainage Features

Plans will be submitted for all drainage features including paved areas, retaining walls, cribbing, planting, temporary or permanent soil erosion control measures, or other features to be constructed in connection with, or as a part of, the proposed work.

Final Stabilization and Long-Term Stormwater Management

A description of the measures used to achieve final stabilization and permanent measures to control pollutants in stormwater discharges that will occur after construction operations have been completed.

Final stabilization is reached when all soil disturbing activities at the site have been completed, and uniform vegetative cover has been established with a density of at least 70 percent of pre-disturbance levels and such cover is adequate to control soil erosion, as determined by the City Engineer, or equivalent permanent, physical erosion reduction methods have been employed. The seeded areas shall be kept in good condition at all times until the project is completed. The plan shall include procedures for promptly repairing any damaged areas.

For purposes of this plan, establishment of a vegetative cover capable of providing erosion control equivalent to a density of at least 70 percent of pre-existing conditions at the site and capable of adequately controlling future erosion can be considered final stabilization. The developer will be responsible for providing to the City the documentation to make this comparison. The City may, after consultation with the developer and upon good cause, amend the final stabilization criteria for specific operations. Where possible, coordination of erosion control elements and building schedule will occur so that previously seeded areas are not redisturbed.

Construction Staging and Sequencing

A schedule of anticipated starting and completion dates for each sequence and stage of land-disturbing activities and BMP installation including the expected date on which the final stabilization will be completed. Where possible, the clearing and grubbing operations shall be scheduled and performed so that grading operations and final stabilization can follow immediately.

Owner Inspections

A description of procedures to inspect the vegetation, erosion and sediment control measures, and other protective measures identified in the plan.

For sites where construction has not been completed, the owner/developer or their representative shall make a thorough inspection of their stormwater management system at

least every 14 days and after any precipitation or snowmelt event that causes surface erosion. The inspections shall be made during the progress of the work, during work suspension and until final acceptance of the work. The person making these inspections must be certified in a City-approved inspection training program.

1. The construction site perimeter, disturbed areas and areas used for material storage that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly.
2. Based on the results of the inspection, the description of potential pollutant sources, and the pollution prevention and control measures that are identified in the plan shall be revised and modified as appropriate as soon as practicable after such inspection. Modification to control measures shall be implemented in a timely manner, but in no case more than seven (7) calendar days after the inspection.
3. The operator shall keep a record of inspections. Uncontrolled releases of mud or muddy water or measurable quantities of sediment found off the site shall be recorded with a brief explanation as to the measures taken to prevent future releases as well as any measures taken to clean up the sediment that has left the site. Inspection records shall be made available to the City upon request.

The owner/developer shall make a thorough inspection of their stormwater management system at least once every month for sites where all construction activities are completed but final stabilization has not been achieved because planted vegetative cover has not become established. When site conditions make this schedule impractical, the owner/developer may petition the City to grant an alternative inspection schedule. These inspections must be conducted in accordance with the above paragraphs.

Maintenance

A detailed description of the maintenance program for sediment control facilities, including inspection programs, vegetative establishment on exposed soils, method and frequency of removal and disposal of waste materials from control facilities, and disposition of temporary structural measures shall be included. The description shall include a program for continuous maintenance of erosion and sediment control features so that they function properly during construction and work suspensions until the project is accepted by the City.

Soil Borings/Tests and Groundwater

Soil borings and tests, including groundwater analysis and plan for safe discharge must be included if appropriate.

Cost Estimate

A cost estimate shall be provided for all temporary and permanent BMPs, including reasonable costs for replacement and maintenance of BMPs depending on the anticipated length of construction until final stabilization.

Plan Expiration/Resubmittal Requirements

Grading Plans and/or Erosion and Stormwater Quality Control Plans (Plans) expire if construction has not commenced within 12 months of the City Engineer's acceptance of the plan. The plans must be resubmitted for acceptance. Previously accepted Plans must also be resubmitted to the City Engineer for acceptance when any of the following occur: (1) a change in ownership of the property to be disturbed, (2) proposed development changes to the site, or (3) proposed grading revisions.

Signatory Requirements

The Erosion and Stormwater Quality Control Plan is to be signed and sealed by a Colorado Registered Engineer and to be signed by the Owner with a statement that "The Owner will comply with the requirements of the Erosion and Stormwater Quality Control Plan." This statement may be modified if a combined Grading, Erosion and Stormwater Quality Control Plan is submitted. The following Owner statement shall also be included on all Grading and/or Erosion and Stormwater Quality Control Plans: "I acknowledge the responsibility to determine whether the construction activities on these plans require Colorado Discharge Permit System (CDPS) permitting for Stormwater Discharges associated with Construction Activity."

Best Management Practices (BMPs)

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

The best management practices for a site are usually comprised of four major elements:

- Erosion Control Measures. Used to limit erosion of soil from disturbed areas at a construction site.
- Sediment Control Measures. Used to limit transport of sediment to off-site properties and downstream receiving waters.
- Drainageway Protection Measures. Used to protect streams and other drainageways located on or adjacent to the construction site from erosion and sediment damages.
- Other Stormwater Quality Control Measures. Used to control other potential pollutants from impacting stormwater runoff.

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

Sediment controls (or BMPs) 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 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 other controls (or BMPs) on equipment, material storage, or use of chemicals at construction sites.

Planning Process

Planning for the inclusion of appropriate BMPs should occur early in the site development process. The planning process can be divided into five separate steps:

1. Gather information on topography, soils, drainage, vegetation, and other predominant site features.
2. Analyze the information in order to anticipate erosion, sedimentation and stormwater quality problems.
3. Devise a plan that schedules construction activities and minimizes the amount of erosion created by development.
4. Develop an Erosion and Stormwater Quality Control Plan which specifies effective erosion, sediment, and stormwater quality control measures.
5. Follow the Erosion and Stormwater Quality Control Plan and revise it when necessary.

Site Assessment

Topography is the primary factor to be considered in determining the best management practices to be used at the site. Soils, vegetation, and hydrologic features must also be considered.

Final grading will determine the slope gradient and slope length of the disturbed area. Small areas, or subbasins, will be created that have relatively uniform characteristics of slope and slope length. After grading is completed, areas that remain exposed to precipitation and runoff will require the inclusion of BMPs. The overall size of subbasin areas will determine what BMPs are appropriate for each area.

Soil conditions should be assessed as to their potential for erosion and suitability for revegetation. A detailed analysis of soil-erosion potential is not necessary because all soils will be subject to erosion and can be generalized as equivalent for the design of BMPs.

In many land disturbing activities (excluding Hillside Overlay areas), significant vegetation will be removed from a construction site during clearing and grading operations. An assessment of existing vegetation on the site is of limited use when post-development landscaping and irrigation are planned, but can be useful in selecting grasses when non-irrigated revegetation is planned. Analysis of soil is useful to determine fertilizer requirements for vegetation establishment.

Analysis of streams and other hydrologic features of a site is important in the design of BMPs. The drainage basins upslope and within the site should be assessed. The

configuration of hillslope areas and drainageways, in the context of planned roads and buildings, will determine what erosion and sediment controls will be needed. The location of permanent drainage channels and other elements of the drainage system should be defined as a part of the plan.

Selection of Controls

The following guidelines are recommended in determining the appropriate BMPs for the site:

1. Determine the limits of clearing and grading. If the entire site will not undergo excavation and grading, the boundaries of cut-and-fill operations should be defined. Buffer strips of natural vegetation may be utilized as a control measure.
2. Define the layout of buildings and roads. This will have been decided previously as a part of the general development plan. If building layout is not final, the road areas stabilized with pavement and the drainage features related to roads should be defined as they relate to the plan.
3. Determine permanent drainage features. The location of permanent channels, storm sewers, detention ponds, roadside swales, and stormwater quality controls such as detention ponds, wetlands, grassed-lined swales, buffer strips, and areas of porous pavement, if known, should be defined.
4. Determine extent of temporary channel diversions. If permanent channel improvements are a part of the plan, the route, sizing, and lining needed for temporary channel diversions should be determined. Location and type of temporary channel crossings can be assessed.
5. Determine the boundaries of watersheds. The size of drainage basins will determine the types of sediment controls to be used. Areas located off the site that contribute overland flow runoff must be assessed. Measures to limit the size of upland overland flow areas, such as diversion dikes, may be initially considered at this stage.
6. Select sediment controls. Areas greater than one (1) acre will require that sediment basins be installed. Division of large drainage basins into subareas each served by a sediment basin can also be considered.
7. Areas smaller than one acre can utilize other sediment controls. Limitations on the size of areas served by individual controls are defined in these criteria.
8. Determine preliminary staging of construction. The schedule of construction will determine areas to be disturbed at various stages throughout development of the site. The opportunity for staging cut-and-fill operations to minimize the period of exposure of soils can be assessed. The sequence for installing sediment controls and erosion controls can also be determined at this time. This staging plan and schedule is subject to modification by the contractor in coordination with the City.
9. Identify locations of topsoil stockpiles. Areas for storing topsoil should be determined and noted as to a general location.

10. Identify location of temporary construction roads, vehicle tracking controls, and material storage areas. These three elements can be determined in the context of previously defined aspects of the plan.
11. Select Erosion Controls. All areas of exposed soil will require a control measure be defined dependent on the duration of exposure. These can be selected based on the schedule of construction.

Summary of Criteria

All runoff leaving a disturbed area shall pass through at least one BMP before it exits the site. The list below is a summary of recommended BMPs. Additional information on these BMPs can be found in section 3.3.

- Silt Fence. Silt fences shall be used at the perimeter of the site to prevent overland flows from transporting sediment off-site.
- Sediment Basin. Sediment basins are to be installed when the contributing area to be disturbed is greater than one (1) acre.
- Temporary Swales/Berms. Temporary swales are to be used to convey stormwater runoff to a sediment-trapping device or to divert runoff away from a slope face. Temporary swales can also be used at the perimeter of the site to prevent overland flows from transporting sediment off-site.
- Vehicle Tracking Controls. Whenever construction vehicles enter onto paved roads, provisions must be made to prevent the transport of sediment (mud and dirt) by vehicles tracking onto the paved surface. Sediment transported onto a public road, regardless of the size of the site, shall be cleaned at the end of each day.
- Check Dam. Check dams are to be used in open channels that receive flow from drainage areas between 1 and 10 acres, also in steeply sloped swales.
- Slope Drain. Slope drains shall be used to convey stormwater down steep slopes.
- Erosion Control Blankets. Erosion control blankets shall be installed in temporary swales with slopes greater than 2 percent, but less than 5 percent and with velocities less than 8 feet per second and on recently seeded slopes, as necessary. See Temporary Swale Figure TSW-3 for swales where slope is greater than 5% or velocity is greater than 8 feet per second.
- Inlet Protection. All storm sewer inlets made operable during construction must have sediment entrapment facilities installed to prevent sediment-laden runoff from entering the inlet.
- Surface Roughening. Surface roughening should be performed after final grading to create depressions two to four inches deep and four to six inches apart, parallel to contours.
- Temporary Mulching/Seeding. All disturbed areas must be properly mulched, or seeded and mulched, within 21 days after final grade is reached on any portion of the site not otherwise permanently stabilized.

- Chemicals, Oils and Material Storage. Areas used for storage of chemicals, petroleum-based products and waste materials, including solid and liquid waste, shall be designed to prevent discharge of these materials in the runoff from a construction site.
- Maintenance. All temporary and permanent erosion and sediment control practices shall be maintained and repaired by the owner during the construction phase as needed to assure continued performance of their intended function. All facilities must be inspected and then cleaned, repaired or replaced if necessary, following each precipitation or snowmelt event that results in runoff.

Additional Information Requirements/Modifications to Plan

City Requested

Additional information may be required for projects where the City Engineer deems that soil erosion, sedimentation, or stormwater quality control problems will not be adequately handled by the submitted plan. Such data may include, but not be limited to, other engineering studies, computations, schedules, and supportive data such as product design information and specifications as deemed necessary by the City Engineer.

It shall be understood that additional or revised BMPs may be required should construction site observation indicate the BMPs are not adequately controlling erosion, sedimentation or stormwater runoff from equipment fueling/maintenance and materials storage areas.

Owner/Contractor/Engineer Proposed

Minor field modifications may be approved by the City Engineering Inspector. Such modifications would include minor adjustments to BMP field locations or a change to a similar BMP to better correspond to actual site conditions or to improve BMP performance. No plan changes or formal written approval will be required, except that documentation of acceptance should be provided by the City Engineering Inspector to the contractor/owner. All other requested modifications shall be in writing and submitted to City Engineering. Such proposed modifications, including revised plans, shall be submitted at least ten (10) working days prior to desired date of implementation. City Engineering will re-approve the Plan/Permit if the proposed modifications are acceptable.

Plan Implementation

Acceptance

No clearing, grading, excavation, filling, or other land-disturbing activities shall be permitted until signoff and acceptance of the Grading Plan and Erosion and Stormwater Quality Control Plan is received from City Engineering.

Installation of BMPs

Once signoff and acceptance is received, the approved erosion and sediment control measures must be installed before land-disturbing activities are initiated so that no adverse effect of site alteration will impact surrounding property. These measures shall apply to all features of the construction site including, but not limited to, street and utility installations,

as well as to the protection of individual lots. During all phases of construction, it shall be the responsibility of those initiating such land disturbing activities to maintain all erosion control features in a functional manner.

City Inspections

Right to Inspect

The City shall have the right to enter the construction site at any time to determine if the site is in compliance with the plan.

Correction of Deficiencies

If the approved or implemented erosion, sediment and stormwater quality control BMPs are observed to be inadequate, as determined by the City Engineer, modifications to correct deficiencies shall be made immediately.

Record Keeping

1. The owner or developer shall retain all copies of the approved plan, all reports and inspections required by the permit and records of all data used to complete the plan.
2. The owner or developer shall retain a copy of the plan and all required reports and inspections at the construction site from the date of project initiation to the date of final stabilization, unless the City approves another location, specified by the owner or developer.

Guarantee

A financial assurance of all temporary and permanent BMPs included on the Erosion and Stormwater Quality Control Plan shall be provided, subject to current policies.

Relation to CDPS Stormwater Requirements

The Erosion and Stormwater Quality Control Plan has been structured to meet the requirements of the CDPS Stormwater Construction Permit, in addition to City requirements. It is anticipated that a single plan could meet both State and City requirements. However, City requirements for the Erosion and Stormwater Quality Control Plan are more inclusive than State requirements for a Stormwater Construction Permit. In addition, the developer should note that compliance with one program does not fill the need to comply with the other. Currently, a CDPS permit is required whenever the site disturbance exceeds 1 acre.

Consistency and Compliance with Other Plans and Regulations

Drainage, Grading, Utility, and Site Development Plans

The Erosion and Stormwater Quality Control Plan should be consistent with the final drainage report for a development and other plans including Grading Plans, site development plans, and utility facility plans. All hydrologic features of the drainage report should be incorporated into the site at the time of development. Permanent drainage features will be built during the construction phase. Temporary sediment controls can be

located and designed to take advantage of the final drainage design features. All temporary controls should be staged and removed at the appropriate time relative to the construction of permanent drainage features.

Stormwater Quality Plans

New developments may incorporate elements of permanent stormwater quality controls (BMPs) in the design of construction BMPs. The Erosion and Stormwater Quality Control Plan must be prepared consistent with these structural and nonstructural controls. If practical, temporary controls should be modified into permanent controls. Where possible, permanent stormwater quality controls should be constructed at the initial stages of construction, or modified at the end of construction.

Other Regulations

Compliance with all other local, State and Federal regulations is the responsibility of the owner, developer, contractor and engineer as it relates to the development and implementation of the Erosion and Stormwater Quality Control Plan.

3.3 Construction BMP Factsheets

This section provides a description, criteria for use, construction details/installation requirements, and maintenance requirements for the following Construction BMPs:

1. Check Dam.
2. Erosion Control Blankets.
3. Inlet Protection.
4. Mulching.
5. Sediment Basin.
6. Silt Fence.
7. Slope Drain.
8. Straw Bale Barriers.
9. Street Wash Water Associated with Construction Activities.
10. Surface Roughening.
11. Temporary Seeding.
12. Temporary Swale.
13. Vehicle Tracking.