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Section 1300 Construction Water Quality

1301 INTRODUCTION

Construction typically results in land disturbance that can lead to erosion and sedimentation if action is not taken to prevent it. Erosion caused by construction activities can result in safety hazards, expensive maintenance problems, unsightly conditions, slope instability, ecosystem disruptions, and air and water quality problems. A commitment to control erosion and transport of sediment and other pollutants during design, construction, and maintenance is a priority to Boulder County.

This section discusses requirements and methodologies to limit erosion and the transport of sediment and other pollutants during construction, including site and material management practices. It applies to all stormwater generated from construction activity on any developed or undeveloped lands within the unincorporated county that eventually enters Boulder County's Municipal Separate Storm Sewer System (MS4), other storm drainage systems, or any waters of the state located within unincorporated Boulder County, unless specifically exempted. Discussion of features implemented to enhance water quality on a permanent basis, after construction is complete and final stabilization has been achieved, is included in Section 1200, Detention and Permanent Water Quality. The county should be contacted for additional information on county procedures regarding maintaining water quality during construction.

1302 STORMWATER MANAGEMENT PLAN DEVELOPMENT

Stormwater Management Plans (SWMPs) are required for all construction projects in Boulder County that require a stormwater quality permit from the county or a Colorado Discharge Permit System (CDPS) Construction Discharge Permit from the Colorado Department of Public Health and Environment (CDPHE), also known as a state stormwater discharge permit. Information on these permits is in Section 1400, Environmental and Regulatory Permitting. The SWMP consists of both a SWMP plan and report, both of which will be considered part of the construction documents so that construction contractors are bound to their contents, just as they would be to a construction plan set. This section describes the plan requirements, and Section 1303 describes the report requirements.

The design of construction best management practices (BMPs) for erosion and sediment control shall be consistent with the guidance in the CDOT *Erosion Control and Stormwater Quality Guide* (CDOT, 2006) or in the USDCM (UDFCD, 2016) and with the additional provisions and guidance in this MANUAL. In general, CDOT guidance will be used for linear projects such as roadways, and UDFCD guidance will be used for other projects. A combination of approaches is also acceptable. CDOT guidance can be found online at (*https://www.codot.gov/programs/environmental/water-quality/documents/erosion-storm-quality*) or via an internet search for "CDOT Erosion Control Guide."

Guidance from the UDFCD can be found online (*http://udfcd.org/volume-three*) or via an internet search for "UDFCD Drainage Criteria Manual Volume 3." These documents offer a considerable amount of guidance and background on construction BMPs that are not repeated in this section. Design engineers are encouraged to review these documents thoroughly to ensure that all appropriate considerations have been evaluated.

It should be noted that construction BMPs also include material management and site management BMPs, in addition to erosion and sediment control BMPs and that the SWMP documents need to reflect these BMPs as necessary. A key to effective stormwater management during construction is an understanding of how requirements can change over the course of a construction project. SWMPs may require multiple phases to be effective. SWMPs will require, at a minimum, initial BMPs that should be installed prior to any construction and final stabilization measures that will be completed as a last phase of the project.

Standard SWMP notes are included as an appendix to this section of the MANUAL and must be included on all plans, regardless of their assumed applicability before the start of construction. Boulder County has specific standards, in addition to what UDFCD and CDOT require, that shall be applied to all work in waterways, dewatering operations, and horizontal directional drilling. These requirements, if applicable, should be included on all SWMP documents.

Any work in or near a waterway will require a stormwater quality permit from the county. Application requirements for a stormwater quality permit are generally included in the CODE. Section 1400, Environmental and Regulatory Permitting, contains additional details.

1302.1 Work in Waterways

In addition to requiring a floodplain development permit from the county, construction in waterways requires a high standard of care in order to avoid and minimize damage to waterways, habitat, and aquatic life. The following list provides some general principles for working in a waterway:

1. Every effort shall be made to balance the protection of riparian habitat and protection of the stream bed/waterway itself.
2. No construction equipment shall be operated within the waterway or below the existing water surface unless specifically authorized by the stormwater quality permit issued by Boulder County, and any other applicable state or federal license or permit. Applicants are encouraged to create a dry work surface unless this would result in drying out a large section of the waterway and making it uninhabitable by aquatic life.
3. When work takes place within a channel, a temporary water diversion to bypass the work area is generally required to stabilize the work area and control erosion during construction. Diversions typically require an impervious liner to minimize seepage into the work area.
4. Dewatering operations will be required after the diversion is in place to manage seepage and establish a dry work surface. The water level at the work site should be below the subgrade an amount sufficient to provide a solid work surface that resists deformation during subgrade compaction.

5. Access must be planned and obtained to minimize entry into the waterway and disturbance to the channel. An engineered temporary stream crossing may be constructed only with county approval when an actively flowing waterway needs to be crossed regularly by construction vehicles. Design considerations are included in Volume 3 of the USDCM.
6. When possible, perform in-channel work between October 1 and March 31. While flood flows can happen at any time, this window historically provides a lower chance of high flows, excessive dewatering requirements, and failures during construction. Consider historical flow records for the subject waterway and other low-flow periods that may be created by diversions/water deliveries.
7. During cut and fill operations, avoid letting waste or excess material enter waterways or placing it on unstable areas. Excavated material should be carefully moved to areas needing fill or to a stockpile located outside the floodplain.

1302.2 Construction Dewatering

Dewatering is typically necessary and ongoing during construction that involves deep excavations, instream work, pumped surface diversions, or even open trench construction in some cases. Section 1302.1 contains additional information specific to instream dewatering. A discussion on permitting for discharge from construction dewatering is included in Section 1400, Environmental and Regulatory Permitting. Some general principles for dewatering that will minimize turbidity in the pumped water include:

1. For upland dewatering, use perimeter well points outside of the excavated area to draw down the water table rather than dewatering directly from the excavation
2. Place a submersible pump in a perforated bucket filled with gravel for short-term pumping
3. Construct a filtering sump pit for pumping groundwater below the bottom of the excavation for multiple-day operations
4. To avoid capturing the silt that can accumulate on the bottom of the sediment basin, use a flotation collar, or other flotation device, to pump from the surface
5. Use approved tanks or containers to provide retention time for sediment settling.

Additional guidance on construction dewatering is provided in Volume 3 of the USDCM.

1302.3 Horizontal Directional Drilling

Horizontal directional drilling or boring allows for the installation of underground utilities without digging trenches. This technique can provide more resilient and deeper installation and causes less surface impacts such as traffic delays and land disturbance. However, because of geologic conditions and the high pressures used during this process, there is a potential for drilling fluids to be released into the environment. The following practices will help prevent drilling fluid releases and minimize their impacts.

1. Evaluate the site for areas that have the potential to release fluids (dry and cracked soils or fractures and voids in geologic strata).

2. Establish containment areas for equipment, drilling fluids, and cutting refuge. Containment areas consist of some type of plastic sheathing formed with straw wattles to form a pit-like area, or an equivalent technique such as a compacted earthen berm.
3. Stage a vacuum truck, spill kits, and cleanup materials on site for immediate spill response before initiating any construction activities.
4. Examine drilling fluid pressures and return flows. Shut down drilling operations immediately if pressures and return flows indicate that drilling fluid is being released.
5. Assign staff to inspect the bore alignment and 100 feet up and downstream of the alignment, particularly when boring underneath waterways and diversion ditches, or when the bore alignment is in close proximity to storm drainage facilities. Shut down drilling operations immediately if a drilling fluid release is detected.
6. Contain all drilling fluids and cuttings for proper transportation and disposal at an approved facility.

1303 STORMWATER MANAGEMENT REPORT DEVELOPMENT

SWMP reports for county roadway projects should use the CDOT SWMP report template. Local development and drainage projects should use the SWMP report template included as an appendix to this section. SWMP reports will be considered part of the construction documents so that contractors are bound to their contents, as they would be to a construction plan set.

The SWMP report template for use on local development and drainage projects includes sections titled Introduction, Site Description, SWMP Plans, Potential Pollutant Sources, Best Management Practices, Final Stabilization and Long Term Maintenance, and Inspection and Maintenance. Inspection forms and spill report forms are also included. The template details what information should be in each section so that the permittee complies with the state stormwater discharge permit and Boulder County's stormwater quality permit.

1304 POTENTIAL POLLUTANT SOURCES

The main pollutant resulting from erosion is sediment. Sediments are typically inorganic silt, clay, or sand particles and in fine organic particulates. Less common pollutants include metals or nutrients, such as nitrogen or phosphorus, that may be disturbed during construction activities. These kinds of pollutants are often bound to soil or dust particles and transported off site along with the sediment. The mobility of pollutants that are bound to sediment is, therefore, dependent on the transport of the sediment particles themselves.

Pollutants Commonly Discharged from Construction Sites

Sediment
Solid and sanitary wastes
Phosphorus (fertilizer)
Nitrogen (fertilizer)
Concrete truck washout
Construction chemicals
Construction debris/trash
Oil and grease
Pesticides

Other potential pollutants not associated with erosion are the chemicals that are used and stored at construction sites, including, but not limited to, pesticides, insecticides, petroleum products, solvents, disinfectants, and coolants.

1305 BEST MANAGEMENT PRACTICES

Construction BMPs should be selected, designed, installed, and maintained based on site-specific conditions before, during, and after construction. The number of stages that must be addressed in the SWMP depends on the type of construction activity. In general, the three stages of erosion and sediment control should include initial clearing and grading; utility, infrastructure and building construction; and final stabilization. BMPs appropriate to each phase of construction should be planned, installed, and monitored as construction progresses. It is important to understand whether the primary role of each BMP is erosion or sediment control. Effectively managed construction sites will provide a combination of BMPs that provide both functions. Table 1300-1 lists the various construction BMPs in the CDOT and UDFCD manuals that are available for use on projects in Boulder County. They are organized by the function they serve according to how CDOT groups them. CDOT and UDFCD have many similar BMPs, but some are unique to each organization and may not have a corresponding BMP in the other column. In addition, Faircloth Skimmers® are specifically approved by Boulder County for use during construction to modify the outlet of a sedimentation basin.

1306 INSPECTION AND MAINTENANCE

The construction site should be routinely checked for proper construction BMP installation and function in accordance with the SWMP plans and report. Any BMPs with loss of integrity, loss of function, or breaches shall be repaired immediately to reduce the potential for stormwater to transport sediment and other pollutants off site.

Good housekeeping practices such as proper waste handling, material storage, waste disposal, street sweeping, and effective vehicle tracking control reduces the potential for stormwater contamination. Documented inspections are required, but routine oversight of the site should include daily evaluation of BMPs to ensure that they are in place and operating effectively.

1307 FINAL STABILIZATION AND LONG-TERM MAINTENANCE

Final stabilization is achieved when all ground-disturbing activities at the site have been completed and the site has been revegetated. Revegetation is reached when a uniform perennial vegetative cover with a density of 70 percent of preconstruction levels has been established, or when an equivalent area of erosion control measures such as riprap have been employed. Preconstruction photographs shall be taken to aid the estimation of restored vegetative cover.

Table 1300-1. Construction Best Management Practices (Page 1 of 2)

CDOT	UDFCD
Erosion Control BMPs	
Seeding	Temporary and Permanent Seeding (TS/PS)
Mulching	Mulching (MU)
Mulch Tackifier	
Soil Binder	Soil Binders (SB)
Erosion Control Blankets	Erosion Control Blankets (ECB)
Turf Reinforcement Mats	Turf Reinforcement Mats (TRM)
Embankment Protector	Temporary Slope Drains (TSD)
Berm/Diversion	Temporary Diversion Channel (TDC)
Check Dams	Check Dams (CD)
Outlet Protection	Temporary Outlet Protection (TOP)
Temporary Drainage Swale	Earth Dikes and Drainage Swales (ED/DS)
Grading Techniques	Terracing (TER), Surface Roughening (SR)
	Compost Blanket and Filter Berm (CB)
	Rough Cut Street Control (RCS)
	Streambank Stabilization (SS)
Sediment Control BMPs	
Erosion Bale	Straw Bale Barrier (SBB)
Erosion Logs	Sediment Control Log (SCL)
Silt Fence	Silt Fence (SF)
Storm Drain Inlet Protection	Inlet Protection (IP) (multiple types)
Sediment Trap	Sediment Trap (ST)
Sediment Basin	Sediment Basin (SB)
Dewatering Structure	
Stabilized Construction Entrance	Vehicle Tracking Control (VTC) (multiple types)
Brush Barrier	Brush Barrier (BB)
Gravel Barrier	Rock Sock (RS)
Silt Barrier	
	Vegetated Buffers (VB)
	Chemical Treatment (CT)

Table 1300-1. Construction Best Management Practices (Page 2 of 2)

CDOT	UDFCD
Materials Handling and Spill Prevention BMPs	
Stockpile Management	Stockpile Management (SP)
Material Management	Good Housekeeping Practices (GH)
Material Use	Good Housekeeping Practices (GH)
Spill Prevention and Control	Good Housekeeping Practices (GH)
Waste Management BMPs	
Concrete Waste Management	Concrete Washout Area (CWA)
Solid Waste Management	Good Housekeeping Practices (GH)
Sanitary and Septic Waste Management	Good Housekeeping Practices (GH)
Liquid Waste Management	Good Housekeeping Practices (GH)
Hazardous Waste Management	Good Housekeeping Practices (GH)
Contaminated Waste Management	Good Housekeeping Practices (GH)
General Pollution Prevention BMPs and Site Management	
Dewatering Operations	Dewatering Operations (DW)
Temporary Stream Crossing	Temporary Stream Crossing (TSC) (multiple types)
Clear Water Diversion	Temporary Diversion Channel (TDC)
Nonstormwater Discharge Management	
Wind Erosion Control	Wind Erosion/Dust Control (DC)
Paving Operations	Paving and Grinding Operations (PGO)
Street Sweeping and Vacuuming	Street Sweeping and Vacuuming (SS)
Vehicle and Equipment Management	Good Housekeeping Practices (GH)
	Construction Fence (CF)
	Construction Phasing/Sequencing (CP)
	Protection of Existing Vegetation (PV)
	Stabilized Construction Roadway (SCR)
	Temporary Batch Plant (TBP)
	Stabilized Construction Roadway (SCR)
	Stabilized Staging Area (SSA)

When the site has been fully stabilized, and when construction BMPs are no longer needed and have been removed, the owner/operator shall submit a notice of termination to the county. Upon inspection and approval by the county, the owner/operator will notify the CDPHE that final stabilization is complete by submitting an Inactivation Notice.

1308 REFERENCES

Colorado Department of Transportation, 2002. *Erosion Control and Stormwater Quality Guide*, revised Chapter 5 EC 5&6 July 2014, prepared by the Colorado Department of Transportation, Denver, CO.

Urban Drainage and Flood Control District, 2016. *Urban Storm Drainage Criteria Manual: Volume 3 Stormwater Quality*, prepared by the Urban Drainage and Flood Control District, Denver, CO.

Best Management Practices

1. Contractor/permittee shall periodically inspect all installed BMPs, provide maintenance, and make repairs as necessary to prevent their failure.
2. Silt fence or an equivalent shall be placed as perimeter control on all construction activities that occur on land. Unless otherwise specified in the Contract Documents, or otherwise requested, remove perimeter controls within 30 days after the date of warranty performance of the work or in accordance with BMPs.
3. Vehicle tracking controls shall be used at all vehicle and equipment access points to the site to prevent sediment exiting the project site onto paved public roads. Access shall be provided only at locations approved by the Engineer. Vehicle tracking control locations shall be recorded on the SWMP site map.
4. All inlets and culverts shall be protected during onsite construction activities. Inlet protection locations shall be recorded on the SWMP site map.
5. Concrete wasted in designated dewatering areas shall be collected, removed from the project site, and disposed of properly. Wasted concrete also includes excess concrete removed from forms, spills, slop, and all other unused concrete that ends up on the ground.
6. The Contractor/permittee must maintain a spill kit on site when working around surface waters. If pollutants are spilled into any surface waters during the course of construction activities, the Contractor/permittee must notify the Owner's Representative or Engineer immediately.
7. All existing mature trees within the designated project area are to be fence protected in place at dripline unless otherwise directed by the Engineer. Prior to the initiation of work, the Engineer shall mark any trees and/or large shrubs to be removed as part of construction activities. Areas of tree removal shall be determined and marked in collaboration between the Contractor/permittee and the Engineer.
8. All excavation activities occurring within 10 feet of the dripline shall be performed by hand and if necessary roots shall be cleanly cut not torn or ripped. If exposed, tree roots shall be backfilled and watered on the same day of cutting and approved root stimulator shall be applied. Soils shall not be compacted within the dripline of mature trees unless otherwise approved by the Engineer.

Waste Management

1. The Contractor/permittee shall not burn, bury, or otherwise discharge construction or demolition waste on the site unless specified otherwise.
2. The Contractor/permittee shall provide a portable toilet and associated maintenance schedule for the construction area sufficient to accommodate the construction crew and all other authorized persons to be onsite during construction activities.

Hazardous Materials

1. The Contractor/permittee shall transport, use, and store hazardous materials in accordance with all regulatory requirements. Spilled hazardous materials, including hazardous liquid wastes, shall be removed from the site and the property restored to its pre-spill state in accordance with regulatory requirements.
2. The Contractor/permittee shall immediately report spills to the proper regulatory authority and shall immediately notify the Engineer.
3. Handling of construction fuels and lubricants:
   A. The Contractor/permittee shall employ persons qualified to handle construction equipment fuels and lubricants.

B. The Contractor/permittee shall refuel and service equipment away from floodplains of rivers, streams and other bodies of water. The Contractor/permittee shall ensure equipment that enters the water is free from external grease, oil, and mud.
C. The Contractor/permittee shall prevent handling and fueling operations from contaminating the ground, surface water, and ground water. The Contractor/permittee shall use containment berms and an impermeable base course or other system to contain spilled fuel.

General Care of Water

Care of water shall include the design of all temporary care of water provisions including coffer dams, sumps, pumping systems, pipelines, channels, flumes, drains, and other protective and dewatering works to allow for work to be performed under dry conditions.

1. No construction equipment shall be operated below the existing water surface unless specifically authorized by the stormwater quality permit issued by Boulder County, and any other applicable local, state or federal license or permit.
2. The Contractor/permittee is responsible for all Care of Water including but not limited to designing, supplying, constructing, operating, and removing all care of water provision including coffer dams and sediment removal systems; designing, supplying, installing, maintaining, and removing protective works for winter operations of care of water systems.
3. The Contractor/permittee shall comply with all USACE 404 permit requirements including any special care requirements issued for this project.
4. When required the Contractor/permittee shall design temporary stream diversions to facilitate upstream fish passage. Instream velocities shall be limited to 7 ft/sec when this provision is required.
5. Care of water shall include provisions for handling groundwater, rainstorm runoff, snow, snowmelt, and ice that may enter the work area.
6. Protective works shall be designed by the Contractor/permittee as necessary to include enclosures, insulation, and heating systems to ensure that dewatering systems operate continuously and do not become frozen during cold weather.
7. The Contractor/permittee shall provide and maintain sediment ponds or other means, remove sediment from waters collected within active construction areas prior to allowing it to enter or return into the watercourse. Contractor/permittee shall dispose of sediments in a suitable off-site waste disposal facility.
8. The Contractor/permittee shall monitor water turbidity during construction activities and shall shut down works at times of excess turbidity in order to allow the water to clear prior to re-commencement of in-stream work.
9. Turbidity is expected during placement and removal of water control. If waters become noticeably turbid, Contractor/permittees should promptly halt operations to allow waters to clear prior to resuming operations. Furthermore, shutdowns for silty or turbid water may be specified by the Engineer or the Owner's Representative, at their discretion.
10. In the event of unscheduled construction activity that results in a visually conspicuous plume of sediment, Contractor/permittee shall immediately notify the Engineer and undertake mitigation actions necessary to comply with the specified clean water criteria.

Coffer Dams

1. The Contractor/permittee is responsible for the final layout, configuration, maintenance, and removal in their entirety of all coffer dams to be constructed within the project site.
2. The Contractor/permittee is responsible for the reclamation, to original or better condition, of all areas impacted by the construction of coffer dams. Reclamation may include but is not limited to the restoration of stable slopes typically equal to or less than 3H:1V, installation of approved erosion control fabric, and installation of an approved native seed mix.
3. Cofferdams located in the waterway shall be placed in a manner to prevent their erosion from normal or expected high flows. Furthermore, they should be placed to a sufficient elevation to prevent their overtopping during reasonably anticipated flood events that may compromise the design and performance of the cofferdam.
4. The use of riprap or other protection measures on the surfaces of the cofferdam, including the toe of cofferdam slopes exposed to high velocities, is required.
5. All temporary fills must be removed in their entirety following construction activities and affected areas graded to proposed conditions.
6. Coffer dams shall provide a bypass waterway that is armored and of the minimum dimensions shown in the typical water control channel detail.
7. Any coffer dam failures or other works efforts that cause a plume of turbid water to flow downstream shall be reported to the Engineer.

Heavy Equipment Operations and Maintenance

1. Equipment operated below the ordinary high water mark of the river channel, must be inspected and clean of fuel, lubricant leaks, and invasive aquatic species.
2. To minimize the spread of invasive species, all equipment shall be power-washed and free of weeds prior to its delivery to the project area. If equipment was used in another wet area within 10 days of initiating work, decontamination practices should be employed to minimize the spread of didymosphenia, New Zealand mud snails, whirling disease, zebra mussels, and other aquatic hitchhikers.
3. Equipment operating within or adjacent to any surface waters shall be free of fluid leaks. Biodegradable hydraulic fluids shall be utilized for all equipment operating in surface waters. The Contractor/permittee shall submit a list of equipment operating with certified non-toxic, biodegradable hydraulic fluids to the engineer prior to use. All fueling, oiling, or maintenance of equipment shall be performed in designated upland locations, with adequate BMPs to contain potential spills.

Construction Phase
Stormwater Management Plan
(SWMP)

for the

[PROJECT NAME]
([PROJECT LOCATION])

Prepared for:

BOULDER COUNTY

[PROJECT NUMBER]

[MONTH] [YEAR]

by:

[DESIGN FIRM]
[CITY, STATE]

[PROJECT NAME]
Stormwater Management Plan
For
BOULDER COUNTY, COLORADO

Project # [PROJECT NUMBER]

Index and Certification Page

Report Index

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Certifications(s)

INTRODUCTION

a) The Colorado Discharge Permit System (CDPS) General Permit and SWMP

For construction projects that require the disturbance of one acre or more, the U. S. Environmental Protection Agency (EPA) requires that the project owner apply for a stormwater permit under the National Pollutant Discharge Elimination System (NPDES) program. For the purposes of the NPDES program, construction activities are defined as clearing, excavating, grading, etc.

The EPA has delegated this permit program in the State of Colorado to the Colorado Department of Public Health and Environment (CDPHE). In compliance with the provisions of the Colorado Water Quality Control Act, (25-8-101 et seq., CRS, 1973 as amended), and the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251 et seq.; the "Act"), and the regulations and standards adopted and promulgated thereunder, the CDPS General Permit (COR-030000) is issued. This permit is more specifically known as the Colorado Discharge Permit System (CDPS) general permit for Stormwater Discharges Associated with Construction Activities (state stormwater discharge permit). Projects issued a certificate of permit coverage under the state stormwater discharge permit are granted permission to discharge stormwater associated with construction activity into State waters. The state stormwater discharge permit issued for this project follows this page.

This document comprises the Stormwater Management Plan (SWMP) required by CDPHE, for construction projects that disturb one acre or greater of land in accordance with the state stormwater discharge permit. This document establishes a plan to manage the quality of stormwater runoff from construction activities associated with the [PROJECT NAME] in Boulder County, Colorado with the use of best management practices.

This SWMP meets all requirements of Sections B and C of Part I of COR-030000.

This plan is a guide to be used in the field to control and reduce erosion and the discharge of sediments and other pollutants. The plan should be changed, updated, and revised as necessary throughout the construction project. Best management practices should be moved, added, or redesigned as necessary to reduce and control erosion and the discharge of sediment and pollutants in accordance with good engineering, hydrologic and pollution control practices as specified in the Boulder County SDCM.

b) Project Owner and Operator

The project owner and operator is:
CONTRACTOR NAME
CONTRACTOR ADDRESS 1
CONTRACTOR ADDRESS 2
CONTRACTOR PHONE NUMBER

c) SWMP Signatory Requirements and Certification

The SWMP must clearly identify contractor(s) and/or subcontractor(s) responsible for implementation of the day-to-day activities necessary to complete project. Contractors and subcontractors must certify that they understand the requirements of the state stormwater discharge permit and the plan. Each contractor and/or subcontractor must complete one of the Contractor's Certification Forms, on page I-4 (Photocopy as necessary).

d) SWMP Administrator

The SWMP Administrator is responsible for the developing, implementing, maintaining, and revising all aspects of the SWMP. [Identify the SWMP Administrator. This can be a specific individual, position, or title]

e) Retention of Records

CONTRACTOR must maintain a copy of this SWMP on site at all times. CONTRACTOR shall retain copies of the SWMP and all reports required by the state stormwater discharge permit for a period of at least three years from the date that the project is completed.

f) Standard Permit Conditions

This section discusses state and federal penalties for non-compliance with the state stormwater discharge permit as well as termination of coverage of the permit. Further explanation of these issues is stated within each individual heading.

f.1) Duty to Comply with Permit Conditions

The EPA and CDPHE have substantial penalties for non-compliance with the state stormwater discharge permit. Any non-compliance constitutes a violation of the Act and is grounds for enforcement action including: permit termination; revocation, re-issuance, or modifications; or denial of permit renewal application. Individuals responsible for such violations are subject to criminal, civil and administrative penalties.

f.2) Final Stabilization and Termination of Coverage

Final stabilization is achieved when all ground surface disturbing activities at the site have been completed, and when a uniform perennial vegetative cover with a density of 70 percent or pre-disturbance levels has been established or equivalent erosion reduction measures (such as the use of riprap, gabions, or geotextiles) have been employed. Preconstruction photographs shall be taken to aid the estimation of restored vegetative cover. When the site has been fully stabilized, and when BMPs are no longer needed and have been removed, the CONTRACTOR can submit a notice of termination to Boulder County. Upon approval by Boulder County, the CONTRACTOR will notify CDPHE when final stabilization is complete by submitting an Inactivation Notice to CDPHE. The Inactivation Notice is located after the Contractor Certification forms in this document.

CONTRACTOR'S AND SUBCONTRACTOR'S CERTIFICATION		
"I certify under penalty of law that I understand the terms and conditions of the general Colorado Discharge Permit System (CDPS) permit that authorizes stormwater discharges associated with industrial activity form the construction site identified as part of this certification."		
Signature	For	Responsible For
____________ (Name) ____________ (Position) ____________ (Signature) Email:____________ Date: ____________	____________ (Company) ____________ (Street / P.O. Box) ____________ (City, State, Zip) Phone:____________	____________ ____________ ____________ ____________ ____________ (Activity)
____________ (Name) ____________ (Position) ____________ (Signature) Email:____________ Date: ____________	____________ (Company) ____________ (Street / P.O. Box) ____________ (City, State, Zip) Phone:____________	____________ ____________ ____________ ____________ ____________ (Activity)
____________ (Name) ____________ (Position) ____________ (Signature) Email:____________ Date: ____________	____________ (Company) ____________ (Street / P.O. Box) ____________ (City, State, Zip) Phone:____________	____________ ____________ ____________ ____________ ____________ (Activity)

1. SITE DESCRIPTION

a) Construction Activity Description

[Provide a description of the nature of the construction activity at the site and the project itself. Include a general description of the location and extents of the project, a summary of the construction to be completed, and the end product]

b) Proposed Sequence of Major Activities

The sequencing of construction activity will be as follows:

1. [Describe the sequence of the construction activities and associated BMPs in a bulleted list or in a detailed schedule attached to this report.]

c) Area Estimates

The approximate area of the construction site is [TOTAL PROJECT AREA] acres. The area to undergo disturbance is approximately [EXPECTED AREA OF DISTURBANCE DUE TO CONSTRUCTION INCLUDING CLEARING EXCAVATION, GRADING, ETC] acres.

d) Soils

[Provide a summary of any existing data used in the development of construction plans or the SWMP that describe the soil and existing potential for soil erosion. This may include soils data, site soil investigations, etc.]

e) Existing Vegetation

[Provide a description of the existing vegetation at the site and an estimate of the percent vegetative ground cover. Pre-disturbance pictures should be taken so final stabilization can be validated as being achieved.]

f) Potential Pollution Sources

[Provide a precise location and description of all potential pollution sources] The Contractor will reduce the potential for contamination to stormwater runoff by implementing the best management practices contained in this document.

g) Non-Stormwater Discharges

[Provide a precise location and description of any anticipated allowable sources of non-stormwater discharge at the site (e.g. uncontaminated springs, irrigation return flow, construction dewatering, etc.)]

h) Receiving Waters

[Provide a general description of drainage at the site. Provide the name of receiving water(s) and the size, type and location of any outfalls. If the stormwater discharge is to a municipal separate storm sewer system, include the name, location of discharge, and the ultimate receiving water(s).]

2. SWMP PLANS

[Provide a brief description of attached maps for the SWMP. The map(s) must include

1) Construction site boundaries
2) All areas of ground surface disturbance
3) Areas of cut and fill
4) Areas used for storage of building materials, equipment, soil, or waste
5) Locations of dedicated batch plants
6) Locations of all structural BMPs
7) Locations of all non-structural BMPs as applicable
8) Delineations of all floodplains and floodways
8) Locations of springs, streams, wetlands and other surface waters

SWMP plans shall include construction details for each construction BMP that is specified on the SWMP plan.]

3. POTENTIAL POLLUTANT SOURCES

The following sources and activities have been identified as having the potential to contribute pollutants to stormwater discharges. These sources will be controlled through BMP selection and implementation as described in Section 4 Best Management Practices of this chapter.

[Identify and describe sources determined to have the potential to contribute pollutants to stormwater discharges. As required under Section I.B.3.d of the state stormwater discharge permit, at a minimum, each of the following sources/activities must be evaluated for the potential to contribute pollutants to stormwater discharges:
1) All disturbed and stored soils
2) Vehicle tracking of sediments
3) Management of contaminated soils
4) Loading and unloading operations
5) Outdoor storage activities (building materials, fertilizers, chemicals, etc.)
6) Vehicle and equipment maintenance and fueling
7) Significant dust or particulate generating processes
8) Routine maintenance activities using fertilizers, pesticides, detergents, fuels, solvents, oils, etc.
9) On-site waste management practices (waste piles, liquid wastes, dumpsters, etc.)
10) Concrete truck/equipment washing, including the concrete truck chute, fixtures and equipment
11) Dedicated asphalt and concrete batch plants
12) Non-industrial waste sources such as worker trash and portable toilets; and
13) Other areas or procedures where potential spills can occur]

4. BEST MANAGEMENT PRACTICES

a) Erosion and Sediment Control Devices

Soil erosion and sediment controls are measures that are used to reduce the amount of soil particles that are carried off a land area and deposited in the receiving water. This section provides a general description of the most appropriate measures planned for this project. The contractor or whoever the owner/operator has chosen as the responsible party for the erosion and sediment control devices must amend this SWMP and adjust the locations and types of best management practices as needed depending on the daily construction activities so that erosion, sediment, and other pollutants are controlled in accordance with good engineering, hydrologic and pollution control practices as specified in the Boulder County SDCM..

All applicable soil erosion and sediment control measures shall be implemented in accordance with the guidelines contained herein prior to commencement of field construction activities at each location. Measures shall be maintained during and after the construction activity until final stabilization is accomplished. Upon successful revegetation of the disturbed area, all temporary soil erosion and sediment control measures will be removed by the contractor.

a.1) Structural Practices

Various structural erosion and sediment control devices will be used on site. This section gives a description of each. [Provide a description and location of all structural erosion and sediment control practices that will be implemented with this project in the following subsections or in a general paragraph where appropriate. Practices may include, but are not limited to straw bales, wattles/sediment control logs, silt fences, earth dikes, drainage swales, sediment traps, subsurface drains, pipe slope drains, inlet protection, outlet protection, gabions, and temporary or permanent sediment basins.] The locations of these measures are shown on the SWMP Plans.

a.1.1) [NAME OF PRACTICE]

[Provide a description and location of the structural erosion and sediment control practice. Description should include the installation and implementation of the BMP. Insert additional sections as needed.]

a.2) Non-Structural Practices

Various non-structural erosion and sediment control devices will be used on site. This section gives a description of each. [Provide a description and location of all non-structural erosion and sediment control practices that will be implemented with this project in the following subsections or in a general paragraph where appropriate. Practices may include, but are not limited to temporary vegetation, permanent vegetation, mulching, geotextiles, sod stabilization, slope roughening, vegetative buffer strips, protection of trees, and preservation of mature vegetation.]

a.2.1) [NAME OF PRACTICE]

[Provide a description and location of the non-structural erosion and sediment control practice. Description should include the interim and permanent stabilization practices and site-specific scheduling for implementation. Insert additional sections as needed.]

b) Phased BMP Implementation

[Provide a description of the relationship between phases of construction, and the implementation of structural and non-structural stormwater management controls. Identify stormwater management controls to be implemented during the project phases. These controls can include, but are not limited to clearing and grubbing; road construction; utility and infrastructure installation; vertical construction; final grading; and final stabilization. Phased implementation should be based on the proposed sequence of major activities included in Section 1.b.]

c) Materials Handling and Spill Prevention

[Describe and locate all practices implemented at the site to minimize impacts from procedures or significant materials (defined in Part I.E. of the state stormwater discharge permit) that could contribute pollutants to runoff. Such procedures or significant materials could include exposed storage of building materials, paints and solvents, fertilizers or chemicals, waste material, and equipment maintenance or fueling procedures. Identify any areas or procedures where potential spills can occur and response procedures.]

c.2.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

d) Dedicated Concrete or Asphalt Batch Plants

[Provide a description and location of all practices implemented at the site to control stormwater pollution from dedicated concrete batch plants or dedicated asphalt plants included in this certification.]

d.2.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

e) Vehicle Tracking Control

[Provide a description and location of all practices implemented at the site to control potential sediment discharges from vehicle tracking. Practices can include minimizing site access, street sweeping or scraping, tracking pads, graveled parking areas, requiring that vehicles stay on paved areas on-site, wash racks, contractor education, and/or sediment control BMPs, etc.]

e.2.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

f) Waste Management and Disposal

[Provide a description and location of the practices implemented to control stormwater pollution from all construction site wastes (liquid and solid), including concrete washout activities. Describe and locate the practices to be used that will ensure that wash water from concrete activities is never discharged from the site as surface runoff or to surface waters as this is an illegal practice.]

f.2.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

g) Groundwater and Stormwater Dewatering

[Provide a description and location of the practices implemented to control stormwater pollution from the dewatering of *uncontaminated* groundwater or stormwater from excavations, wells, etc. to the ground. For any construction dewatering of groundwater not authorized under a separate CDPS dewatering permit, the SWMP shall clearly describe and locate the practices to be used that will ensure that no groundwater from construction dewatering is discharged from the site as surface runoff or to surface waters.]

g.2.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

5. FINAL STABILIZATION AND LONGTERM MANAGEMENT

a) Final Stabilization

Final stabilization consists of the final planting of perennial vegetation in all disturbed, unvegetated areas affected by construction that are not covered with a hardscape such as rock, asphalt, or concrete.

The temporary erosion control devices shall be removed upon project completion by the contractor. The owner/operator is responsible for final site stabilization (with perennial vegetative species) within 30 days of project completion or as otherwise specified by the contract documents. Following the completion of construction and planting activities, the construction inspector shall conduct periodic site reviews to ensure that vegetation establishment is satisfactory. If vegetative cover is not adequate, special steps to correct problems shall be implemented such as over-seeding, mulching, sodding, or the use of erosion control blankets.

Final stabilization is achieved when all soil-disturbing activities at the site have been completed, and when a uniform perennial vegetative cover with a density of 70 percent has been established or equivalent measures (such as the use of riprap, gabions, or geotextiles) have been employed. When the site has been fully stabilized and all stormwater discharges from construction activities that are authorized by this state stormwater discharge permit are eliminated, the project is then terminated. The Contractor will notify CDPHE and Boulder County when final stabilization is complete by submitting an Inactivation Notice. The Inactivation Notice is located after the Contractor Certification forms at the end of the Introduction.

[Provide a description of all practices to be used to achieve final stabilization of all disturbed areas at the site. Final stabilization practices must include, as appropriate, seed mix selection and application methods, soil preparation and amendments, soil stabilization practices, and appropriate sediment control BMPS as needed until final stabilization is achieved.]

a.1) [NAME OF PRACTICE]

[Provide a description and location of the practice. Insert additional sections as needed.]

b) Long-Term Practices

The following practices will be installed as permanent controls or controls that do not need to be removed after construction is terminated and the site is fully stabilized with vegetation. These practices will be used to control pollutants in stormwater discharges that will occur after construction operations have been completed.

b.1) [NAME OF PRACTICE]

[Provide a description of the practice that will be used to control pollutants in stormwater discharges that will occur after construction operations have been completed at the site. Insert additional sections as needed.]

6. INSPECTION AND MAINTENANCE

a) Maintenance and Inspection

All erosion and sediment control devices shall be installed pursuant to the specifications and the construction details. They shall be maintained so that they remain effective at all times. Sediment will be removed from behind sediment controls when it reaches one-half the height of the control.

A thorough inspection of the stormwater management system shall be performed at least once every 14 days and within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Any reduction in inspections shall comply with the requirements of section I.6.a of the state stormwater discharge permit and shall be documented in the inspection record. During inspection, the construction inspector shall complete the inspection forms found in Appendix 1. These sheets should be copied and used as necessary. Ineffective temporary erosion control measures shall be repaired as soon as possible after identification. The construction inspector shall immediately install additional temporary erosion control devices in any area deemed in need of protection.

If inspection results indicate a need for revision to the SWMP, the plan shall be revised and implemented, as appropriate, within seven calendar days following the inspection. All modifications should be noted on the Record of Revisions sheet found in Appendix 1. The inspection reports shall identify any incidents of non-compliance with the state stormwater discharge permit.

b) Material Management Practices

Properly managing hazardous, toxic, or petroleum products on the construction site will greatly reduce the potential for stormwater pollution by these materials. Good housekeeping along with proper use and storage of these construction materials form the basis for proper hazardous material management.[Provide a description of all maintenance procedures implemented at the site to maintain all erosion and sediment control practices and other protective practices identified in the SWMP.]

b.1) Good Housekeeping

The proper use of materials and equipment along with the use of good housekeeping practices greatly reduces the potential for contaminating stormwater runoff. The following is a list of good housekeeping practices to be used during the construction project:

- Storage of hazardous materials, chemicals, fuels, and oils, and fueling of construction equipment, shall not be performed within 150 feet of any stream bank, wetland, water supply well, spring, or other water body.
- An effort will be made to store only enough product required to do the job.
- Materials stored on the site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure.

- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of the product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal of a product will be followed.
- If surplus product must be disposed of, manufacturers' or local and state recommended methods for proper disposal will be followed.

b.2) Product-Specific Practices

Due to the chemical makeup of specific products, certain handling and storage procedures are required to promote the safety of handlers and prevent the possibility of pollution. Care shall be taken to follow all directions and warnings for products used on the site. All pertinent information can be found on the Material Safety Data Sheets (MSDS) for each product. The MSDS sheets should be located with each product container it represents. Several product-specific practices are listed in the following sections. [delete or add subsections as applicable]

b.2.1) Petroleum Products

On-site vehicles will be monitored for leaks and receive regular maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers that are clearly labeled. Preferably, the containers will be stored in a covered truck or trailer that provides secondary containment for the products.

Bulk storage tanks having a capacity of greater than 55 gallons will be provided with secondary containment. Containment can be provided by a temporary earthen berm or other means. After each rainfall, the contractor shall inspect the contents of the secondary containment area. If there is no visible sheen on the collected water, it can be pumped to the ground in a manner that does not cause scouring. If a sheen is present, it must be cleaned up prior to discharging the water.

Bulk fuel or lubricating oil dispensers shall have a valve that must be held open to allow the flow of fuel or oil. During fueling operations, the contractor shall have personnel present to detect and contain spills.

b.2.2) Fertilizers

Fertilizers used to stimulate vegetation growth will be used in minimal amounts recommended by the manufacturer with the approval of Boulder County Parks and Open Space if the project is subject to their approval. Once applied, the fertilizer will be worked into the soil to limit exposure to stormwater.

c) Spill Control and Cleanup

In addition to the material management practices discussed previously, the following spill control and cleanup practices will be followed to prevent stormwater pollution in the event of a spill:

- Spills will be contained and cleaned up immediately after discovery.
- Manufacturer's methods for spill cleanup of a material will be followed as described on the material's MSDS.
- Materials and equipment required for cleanup procedures will be kept readily available on the site, either at an equipment storage area or on contractor's trucks. Equipment to be kept on the site will include but not be limited to brooms, dust pans, shovels, granular absorbents, sand, saw dust, absorbent pads and booms, plastic and metal trash containers, gloves, and goggles.
- Personnel on the site will be made aware of cleanup procedures and the location of spill cleanup equipment.
- Toxic, hazardous, or petroleum product spills will be documented to the appropriate federal, state, and local agencies.
- Spills will be documented and a record of the spills will be kept with this SWMP.

If a spill occurs that is reportable to the federal, state, or local agencies, the contractor is responsible for making the notifications.

The federal reportable spill quantity for petroleum products is defined in 40 CFR 110 and is any oil spill that:

- Violates applicable water quality standards,
- Causes a film or sheen upon or discoloration of the water surface or adjoining shoreline, or
- Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

The federal reportable spill quantities for hazardous materials are listed in 40 CFR, Part 302.4 in the table entitled *List of Hazardous Substances and Reportable Quantities*. Ethylene glycol (antifreeze) should be included in this list and has a reportable quantity of one pound. A procedure for determining a reportable spill is included in Appendix 2 along with a copy of the Spill Report Form to be filled out in case of a spill.

A release of any chemical, oil, petroleum product, sewage, etc., which may enter waters of the State of Colorado (which include surface water, ground water and dry gullies or storm sewers leading to surface water) must be reported to CDPHE immediately (25-8-601 CRS). Written notification to CDPHE must follow within five (5) days (5 CCR 1002-61, Section 61.8(5)(d)). Any accidental discharge to the sanitary sewer system must be reported immediately to the local sewer authority and the affected wastewater treatment plant.

Releases of petroleum products and certain hazardous substances listed under the Federal Clean Water Act (40 CFR Part 116) must be reported to the National Response Center as well as to CDPHE as required under the Clean Water Act and the Oil Pollution Act.

If a spill is reportable, the Contractor's superintendent will notify the Owner and the following authorities:

Federal:	National Response Center - 1-800-424-8802
State:	Colorado Department of Public Health and Environment Toll-Free 24-hour Environmental Emergency Spill Reporting Line 1-877-518-5608
Local:	Local Emergency Planning Committee (OEM) (303) 273-1622 Division of Oil & Public Safety-Storage Tanks (303) 318-8547 Oil and Gas Conservation Commission (303) 894-2100

If a reportable release occurs, a modification to the SWMP must be made within 14 days. The modification shall include:

- a description of the release;
- the date of the release;
- an explanation of why the spill happened;
- a description of procedures to prevent future spills and/or releases from happening; and
- a description of response procedures if a spill or release would occur again and within 14 days of the release.

A written description of the release must be submitted to the permitting authority that includes:

- a description of the release, including the type of material and an estimated amount of spill;
- the date of the release;
- an explanation of why the spill happened;
- a description of the steps taken to prevent and control future releases.

These modifications to the SWMP must be made by the contractor and will be documented on the Spill Report form in Appendix 2. In addition, the Spill Report form must be certified at the bottom.

SWMP REPORT APPENDIX 1
INSPECTION FORMS

Boulder County, Colorado
[Project Name]
([Project Location])
SWMP INSPECTION REPORT

Project: [Project Name] Drawing No.:

Construction Engineer: Contractor:

Inspector: Title: Date:

Site Conditions:

Type of Inspection: WEEKLY BIWEEKLY PRECIP EVENT

OTHER

If deviated from minimum schedule explain why:

Control Measure [Insert applicable control measures]	Location of Control Measure	In Conformance with Design Standards	Corrective Action Required (see page 2)
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO
[Control Measure]		YES / NO	YES / NO

LIST LOCATION OF DISCHARGES FROM THE SITE (Sediment or other pollutants):

LIST LOCATION WHERE ADDITIONAL BMPS ARE NEEDED:

LIST LOCATION WHERE BMP MAINTENANCE IS NEEDED:

VIOLATIONS NOTED: (Explain each "NO circled above)

RECOMMENDED REMEDIAL ACTIONS:

Correction Actions

Location	BMP	Comments: (Provide Description of Corrective Action and Preventative Measures Taken)	Date

After corrective actions(s) have been taken, or where a report does not identify and incidents requiring corrective action, the report shall contain a signed statement indicating the site is in compliance with the state stormwater discharge permit to the best of the signer's knowledge and belief.

Signed: _____

Name: _____

Date: _____

Boulder County, Colorado
[Project Name]
([Project Location])
STORMWATER MANAGEMENT PLAN
RECORD OF REVISIONS

Project: [Project Name] Drawing No.:

Construction Engineer: Contractor:

Inspector: Date:

Date	Sections Modified	Description of Modification	Approval Signatures

SWMP REPORT APPENDIX 2
SPILL REPORT FORMS

Boulder County, Colorado

[Project Name]

([Project Location])

Stormwater Management Plan

Spill Report Form

Spill Reported By: _____
Name Phone Number

Company: _____

Date Reported: _____ Time:

Date of Spill: _____ Time:

Name of Facility:

Legal Description:_____ QTR, SEC _____, TWP_____, Range _____

County Adams

Describe Spill Location and Events Leading to Spill:

Material Spilled:

Source of Spill:

Amount Spilled (Gallons or Pounds):

Amount Spilled to Waterway (Gallons or Pounds):

Nearest Municipality:

Containment or Cleanup Action:

List Environmental Damage (fish kill, etc.):

List Injuries or Personal Contamination:

Date and Time Cleanup Completed or Terminated:

If Cleanup Delayed, Nature and Duration of Delay:

Description of Materials Contaminated:

Approximate Depth of Soil Excavation:

Action To Be Taken to Prevent Future Spills:

Agencies Notified:

Local: _____ Date: _____

State: _____ Date: _____

Fed: _____ Date: _____

Signed: _____
Contractor Superintendent or
Environmental Inspector

SWMP REPORT APPENDIX 3
GENERAL PERMIT APPLICATION