

Appendix D

**Checklist for Developing
a GESC Plan**

CHECKLIST FOR DEVELOPING A GESC PLAN
Selecting BMPs Based on Ten Elements of an Effective GESC Plan

ELEMENT 1. PRESERVE AND STABILIZE DRAINAGEWAYS

A. DRAINAGEWAYS SHALL NOT BE FILLED, REGRADED, OR REALIGNED

- yes no 1. Determine design discharges for drainageways (2 year and 100 year at a minimum).
- yes no 2. Delineate floodplain limits for all drainageways.
- yes no 3. Show limits of fill adjacent to drainageways and channel area to be preserved (shade undisturbed areas on drawings).
- yes no 4. Show **Construction Fence (CF)** or, if approved, **Construction Markers (CM)** around all stream preservation areas.

B. FREEBOARD ABOVE THE 100-YEAR FLOODPLAIN SHALL BE PROVIDED

- yes no 1. Provide freeboard above the 100-year floodplain to lot grade and lowest floor elevations (including basements in fill). Refer to Arapahoe County Stormwater Manual, as amended, and consider potential rise in 100-year water surface over the long term due to increased channel vegetation, roughness, and sediment deposition.

C. EXISTING DRAINAGEWAYS SHALL BE STABILIZED

- yes no 1. Design grade control structures in all drainage channels as necessary. Refer to Arapahoe County Stormwater Manual, as amended.
- yes no 2. Design bank stabilization improvements as necessary.
- yes no 3. Emulate natural systems in the design of Items C1 and C2, above.

D. DISTURBANCE TO EXISTING DRAINAGEWAYS SHALL BE MINIMIZED AND QUICKLY RESTORED

- yes no 1. Identify features whose construction within drainageways is unavoidable, such as the following:
 - yes no a. grade control structures
 - yes no b. bank stabilization
 - yes no c. road crossings (bridges or culverts)
 - yes no d. storm sewer outfalls
 - yes no e. utility crossings
 - yes no f. temporary stream crossings for construction access
- yes no 2. Determine limits of construction around the features identified

in Item D. 1 above that are just large enough to allow construction, but no larger than necessary, to minimize disturbance.

- yes no 3. Show **Construction Fence (CF)** or, if approved, **Construction Markers (CM)**.
- yes no 4. Identify coordinates or other means of locating **Construction Fence (CF) or Construction Markers (CM)** for contractor.
- yes no 5. Show **Check Dam (CD) or Reinforced Check Dam (RCD)** immediately downstream of each disturbed area in the stream. Check sizing criteria in Section 4.15 of the GESC Manual.
- yes no 6. Show **Temporary Stream Crossings (TSC)**, as necessary. Stream crossings shall be limited to the minimum number necessary (no more than one per 2000 lineal feet of stream unless otherwise approved).
- yes no 7. Show **Erosion Control Blanket (ECB)** in all disturbed areas of streams (within construction fence defining limits of construction) up to the top of the bank, to be installed immediately after construction in the stream is complete.

E. ANY ADDITIONAL DRAINAGEWAYS SHALL BE DESIGNED AND STABILIZED

- yes no 1. Identify any additional small drainageways that are necessary to manage stormwater runoff on the site.
- yes no 2. Determine design discharges and size the drainageways.
- yes no 3. Design stabilization improvements as necessary for drainageways including any drop structures or lining. For 2- year flows less than 10 cfs, criteria for Diversion Ditches (DD) may be used.

F. STREAM RELATED PERMITTING SHALL BE COMPLETED

- yes no 1. Determine if the following permits (and any others) are necessary. If so, complete the required documentation and submit applications.
 - a. Arapahoe County Floodplain Development Permit
 - b. US Army Corps of Engineers Section 404 Permit
 - c. US Fish and Wildlife Service Threatened & Endangered Species Approvals
 - d. Conditional Letter of Map Revision

ELEMENT 2. AVOID THE CLEARING AND GRADING OF SENSITIVE AREAS

- yes no 1. Conduct a resource inventory on the site and identify on the GESC Plan the type and Aerial extent of features such as the following:
 - a. Protected habitat for endangered species
 - b. Wetlands
 - c. Nesting bird habitat
 - d. Riparian buffer zones
 - e. Forested areas(cont.)

- f. Mature cottonwood stands
- g. Bedrock outcroppings
- h. Steep slopes
- i. Potential stormwater infiltration areas
- j. Historic, cultural, or archeological resources
- k. Areas of unique or pristine vegetation, or habitat

yes no

2. Endeavor to avoid, or minimize, disturbance to the sensitive areas identified in 1.a-k above.

yes no

3. Show **Construction Fence (CF)** or, if approved, **Construction Markers (CM)** to delineate the limits of construction adjacent to areas to be preserved.

ELEMENT 3. EARTHWORK BALANCE ENCOURAGED ONSITE

yes no

1. Endeavor to balance earthwork quantities on site through the following tasks:

yes no

- a. Develop initial grading plan.

yes no

- b. Check earthwork quantities for balance (consider shrink/swell).

yes no

- c. Raise or lower portions of the site as necessary to try to balance earthwork.

yes no

- d. Repeat steps b and c until balance is optimized.

ELEMENT 4. LIMIT THE SIZE OF GRADING PHASES TO REDUCE SOIL EXPOSURE

yes no

1. For large projects, determine separate grading phases, each disturbing less than 40 acres (70 acres for soil mitigation projects).

yes no

2. Balance earthwork for each phase following the guidance from Element 3 above.

ELEMENT 5. STABILIZE SOILS IN A TIMELY MANNER

yes no

1. Show **Surface Roughening (SR)** for all areas of grading, to be performed immediately after portions of grading are complete.

yes no

2. Indicate **Seeding and Mulching (SM)** in all areas to be seeded.

yes no

3. Indicate **Erosion Control Blanket (ECB), Flexible Growth Medium (FGM) or Compost Blanket (CB)** on slopes steeper than 4:1 and in all areas where an extra

ELEMENT 6. IMPLEMENT PERIMETER CONTROLS

A. UPSLOPE PERIMETER

yes no

1. Show **Construction Fence (CF)** and **Construction Markers (CM)** to delineate the limits of construction along the site perimeter, unless an existing fence is located there.

- yes no 2. Use **Diversion Ditch (DD)** to capture runoff entering the site via sheet flow. Follow design guidance in Section 4.15 of the GESC Manual.
- yes no 3. For steep reaches, such as where the ditch conveys runoff down a channel bank to the bottom of a stream, the diversion ditch is to be lined based on the criteria shown in Section 4.15 of the GESC Manual.
- yes no 4. For an alternative to a lined ditch in steep sections, consider a Temporary Slope Drain.

B. DOWNSLOPE PERIMETER

- yes no 1. Show **Construction Fence (CF) or Construction Markers (CM)** to delineate the limits of construction along the site perimeter, unless an existing fence is located there.
- yes no 2. If the upslope disturbed drainage area exceeds 1.0 acre, use a **Diversion Ditch (DD)** or permanent drainageway to convey runoff to a **Sediment Basin (SB)**.
- yes no 3. If the upslope disturbed drainage area is less than 1.0 acre, use a **Diversion Ditch (DD), Reinforced Rock Bern (RRB)/Curb Sock (CS), Sediment Control Log (SCL), or Silt Fence (SF)**. In general, the latter three BMPs are to be used on the contour. Check Section 4.15 of the GESC Manual for specific guidance pertaining to the use of these downslope perimeter controls.
- yes no 4. Use a **Check Dam (CD) or Reinforced Check Dam (RCD)** across a stream or drainage channel at the downslope perimeter of the site.

ELEMENT 7. TREAT RUNOFF IN A SEDIMENT BASIN

- yes no 1. Runoff from all disturbed areas greater than 1.0 acre shall be treated in a **Sediment Basin (SB)**. Use the standard design for drainage areas less than 15 acres. For areas less than 1.0 acre, a **Sediment Trap (S)** may be used.
- yes no 2. If a non standard design is used, construction drawings detailing the storage volume, embankment, spillway, and outlet are required. Refer to Arapahoe County Stormwater Manual, as amended.
- yes no 3. Wherever possible, sediment basins are to be located within any permanent water quality or quantity detention facilities. Permanent water quality or quantity detention facilities shall have a sediment basin incorporated within them.

ELEMENT 8. PROTECT STEEP SLOPES

A. PROPOSED SLOPES SHALL BE NO STEEPER THAN 3 TO 1

- yes no 1. Ensure that no proposed slopes are steeper than 3H to 1V, except small areas of riprap outlet protection near outfalls and culverts.
- yes no 2. Show **Erosion Control Blanket (ECB) or Flexible Growth Medium (FGM)** on slopes steeper than 4:1.

B. RUNOFF SHALL BE DIVERTED AWAY FROM STEEP SLOPES

___ yes ___ no

1. Use **Diversion Ditch (DD)** at the top of steep slopes to capture runoff before it flows down the slope.

C. TERRACING SHALL BE INCORPORATED INTO THE GRADING OF STEEP SLOPES

___ yes ___ no

1. Use **Terracing (TER)** in steep slopes to break up the flow of incidental water and reduce the development of rill and gully erosion runoff before it flows down the slope.

ELEMENT 9. PROTECT INLETS, STORM SEWER OUTFALLS, AND CULVERTS

___ yes ___ no

1. Show **Inlet Protection (IP)** at all street and area inlets.

___ yes ___ no

2. Show **Reinforced Rock Berm for Culvert Protection (RRP)** at all culvert inlets.

___ yes ___ no

3. Design outlet protection for all storm sewer outfalls and culvert outlets per the Arapahoe County Stormwater Manual.

___ yes ___ no

4. Show **Erosion Control Blanket (ECB) or Flexible Growth Medium (FGM)** in stream areas disturbed by the construction of the outfall or culvert.

ELEMENT 10. PROVIDE ACCESS AND GENERAL CONSTRUCTION CONTROLS

___ yes ___ no

1. Identify all limits of construction. Use **Construction Fence (CF)** or **Construction Markers (CM)** to delineate the limits of construction.

___ yes ___ no

2. Provide one or more **Vehicle Tracking Controls (VTC)** at all entrance/exit points from a public street to a site.

___ yes ___ no

3. Show a **Stabilized Staging Area (SSA)** near the main access point.

___ yes ___ no

4. Show a **Concrete Washout Area (CWA)** near all concrete work areas.

___ yes ___ no

5. Show temporary access roads and a stockpile areas.

___ yes ___ no

6. Select areas for the vehicle tracking control, stabilized staging area, access roads, and stockpile areas that avoid disturbance to trees, desirable vegetation, steep areas, and low, wet areas.