Stormwater Management Plan (SWMP)

for construction activities at:

Insert Project Name

Insert Project Site Address

Insert City, State, Zip Code

**SWMP Preparation Date:** Insert Preparation Date

**SWMP Revision Date:** Insert Revision Date

**Revision No.0**

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**Objectives:**

The SWMP identifies possible pollutant sources that may contribute to stormwater pollution, and identifies control measures to reduce or eliminate potential water quality impacts during construction activities. The SWMP must be completed and implemented prior to project breaking ground, and revised by the contractor’s Qualified Stormwater Manager as construction proceeds, to accurately reflect the conditions and practices at the site until final stabilization is reached. The SWMP meets the minimum requirements to comply with the State of Colorado CDPS General Permit for Stormwater Discharges Associated with Construction Activity, and the local regulations.

**General Instructions:**

To fill out the Stormwater Management Plan (SWMP) Template, select (double right click) the blue text and enter applicable information. When a blue box  is present, check the applicable selection. **No sections shall be left blank!** If a section is “Not Applicable” to the project, select the blue text and enter “N/A”.

**Basic Acronyms:**

**ESC Plan**: Erosion and Sediment Control Plan (Site Map)

**CM**: Control Measures or **BMP**: Best Management Practices

**MS4**: Municipal Separate Storm Sewer System

# SECTION 1: SITE EVALUATION, ASSESSMENT, AND PLANNING

## 1.1 Project/Site Information

Instructions:

* Include basic site information identifying general project information, permit numbers.
* Include a project vicinity map in **Appendix 1**.
* Attach the State of Colorado CDPS Stormwater Construction Permit Certification Page in **Appendix 2**.

|  |  |  |
| --- | --- | --- |
| Project/Site Name: Insert Project/Site Name | | |
| Project Location: Insert Project Location | | |
| City: Insert City | State: CO | ZIP Code: Insert Zip Code |
| Subdivision/Project: Insert Subdivision/Project Name | | |
| State of Colorado - CDPS Stormwater Discharge Permit associated with Construction Activities Permit Number: COR-XXXXXX | | |

## 1.2 Contact Information/Responsible Parties

Instructions:

List the owner, operator, stormwater contact, and organization that prepared the SWMP. Complete by selecting the blue text, double right click, then type in the applicable information.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Owner:** | | | | |
|  | Insert Owner(s) Company or Organization Name | | | |
|  | Insert Owner(s) Name | | | |
|  | Insert Owner(s) Address, City, State and Zip | | | |
|  | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Operator:** | | | | |
|  | Insert Operator(s) Company or Organization Name | | | |
|  | Insert Operator(s) Name | | | |
|  | Insert Operator(s) Address, City, State and Zip | | | |
|  | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Site Superintendent:** | | | | |
|  | Insert Site Superintendent(s) Company or Organization Name | | | |
|  | Insert Site Superintendent(s) Name | | | |
|  | Insert Site Superintendent(s) Address, City, State, Zip Code | | | |
|  | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Qualified Stormwater Manager:** Individual responsible for implementing, maintaining, and revising the SWMP, knowledgeable in the principles and practices of ESC and pollution prevention, with the skills to:   * Assess conditions at construction sites that could impact stormwater quality, and * Assess the effectiveness of stormwater controls. * Perform inspections | | | | |
|  | Insert ESC Qualified Stormwater Manager(s) Company or Organization Name | | | |
|  | Insert ESC Qualified Stormwater Manager(s) Name | | | |
|  | Insert ESC Qualified Stormwater Manager(s) Title | | | |
|  | Insert ESC Qualified Stormwater Manager(s) Address, City, State, Zip Code | | | |
|  | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com |

\*To add additional Qualified Stormwater Managers please click on the blue plus sign.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **SWMP prepared by:** | | | | |
|  | Insert Company or Organization Name | | | |
|  | Insert Name | | | |
|  | Insert Address, City, State, Zip Code | | | |
|  | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com |

## 1.3 Nature and Sequence of Construction Activity

Instructions:

* Describe the scope of the construction activity at the project site.
* Identify the purpose of the construction activity, include estimated dates to begin and conclude.
* Describe the sequence for major construction activities at each phase of the construction project.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Project scope of work: INSERT TEXT HERE | | | | | |
| Type of construction activity: | | | | | |
| Residential | Commercial | | Industrial | | Road Construction |
| Linear Utility | Other (please specify): INSERT TEXT HERE | | | | |
| Estimated Project Start Date: Insert Estimated Project Start Date | | | | | |
| Estimated Project Completion Date: Insert Estimated Project Completion Date | | | | | |
| Estimated Project Final Stabilization: Insert Estimated Project Completion Date | | | | | |
| Major phases of Construction: | | | | | |
| Initial CM | | Demolition | | Grading | |
| Utility Installation | | Interim CM | | Road Construction | |
| Vertical Construction | | Final Grade | | Final Stabilization CM | |
| Other: INSERT TEXT HERE | | | | | |
| Earth Work Summary: | | | | | |
| Cut: Insert estimated quantities (CY) | | | | | |
| Fill: Insert estimated quantities (CY) | | | | | |

## 1.4 Construction Site Estimates

Instructions:

* Estimate total project area.
* Estimate the area to be disturbed by excavation, grading, or other construction activities, including off-site improvements, pavement cuts, dedicated off-site borrow or fill areas within ¼ mile from the site, equipment and material storage areas, and staging areas.

|  |  |
| --- | --- |
| Total site area: | Insert Total Project Area acres |
| Construction site area to be disturbed: | Insert Total Disturbed Area acres |
| Are there any control measures (CMs) located **outside** of the permitted area, that are utilized by the Permittee’s construction site for compliance with this permit, but not under the direct control of the Permittee?:  Yes /  No | |
| **If Yes**, attach user agreement if applicable, with the off-site owner/operator under **Appendix 8** and describe CMs location, specifications, etc. | |

## 1.5 Soils, Drainage Patterns, and Vegetation

Instructions:

* Describe the existing soil conditions at the construction site including soil type(s), drainage patterns, and other topographic features that might affect erosion and sediment control.
* Describe the pre-disturbance vegetation and include color pre-disturbance photos in **Appendix 3**.

|  |
| --- |
| Soil type: |
| INSERT TEXT HERE |
| Soil’s erosion potential: |
| INSERT TEXT HERE |
| Drainage pattern - Describe existing drainage patterns, slopes and changes due to the proposed grading: |
| INSERT TEXT HERE |
| Vegetation - Describe pre-disturbance vegetation: |
| INSERT TEXT HERE |
| Vegetation - Estimate the percentage of pre-existing vegetation cover of the entire site (%): |
| INSERT TEXT HERE |
| Vegetation - Describe method for determining the percentage: |
| INSERT TEXT HERE |

## 1.6 Anticipated Sources of Authorized Non-stormwater Discharge

Instructions:

* Check box for presence of any anticipated allowable sources of non-stormwater discharge at the site such as: uncontaminated springs, landscape irrigation return flows, construction dewatering, concrete washout, super-chlorinated water for pipeline testing, etc.

|  |
| --- |
| Description and location of any anticipated allowable sources of non-stormwater discharge at the site. Check if applicable: |
| Natural springs, only if:   * Uncontaminated, and * Spring flows are not exposed to land disturbance |
| Landscape irrigation return flow |
| Emergency fire fighting |
| Concrete washout (CWA), only if:   * Liquids from washing concrete tools and concrete mixer chutes are properly contained, and * No concrete washout water leaves the site as surface runoff or reaches receiving waters   Liner under CWA is required if:   * The groundwater table level is high. * CWA is within 400 feet of any natural drainage pathway or waterbody, or * CWA is within 1,000 feet of any wells or drinking water sources.   Check if the CWA liner is needed for this site. |
| Description of any other anticipated allowable sources of non-stormwater discharge at the site: |
| INSERT TEXT HERE |

## 1.7 Receiving Waters

Instructions:

* Indicate inside which watershed the project is located.
* List the general flow direction of the site (N/S/E/W), as well as waterbody(s) that would receive stormwater from your site, including streams, rivers, lakes and wetlands. Describe each as clearly as possible, such as: Niver Creek, a tributary to the South Platte River.
* List the jurisdictional storm sewer system or drainage system that stormwater from your site discharges to, such as storm sewer system within City of Thornton, or unincorporated Adams County, etc.

|  |
| --- |
| Name and description of watershed: |
| INSERT TEXT HERE |
| Name and description of ultimately receiving water(s), including stream segment designation: |
| INSERT TEXT HERE |
| Distance from the project to the closest receiving water: |
| INSERT TEXT HERE |
| Is the stream segment impaired?  Yes /  No |
| Description of all stream crossings located within the construction site boundary: |
| INSERT TEXT HERE |
| Other: |
| INSERT TEXT HERE |

## 1.8 Protected Site Features and Sensitive Areas

Instructions:

* Describe unique site features or sensitive area including historic structures, floodplain/floodway of streams, stream buffers, wetlands, specimen trees, natural vegetation, steep slopes, or highly erodible soils that are to be preserved. Describe the measures that will be used to protect these features. Include unique features and sensitive areas on the EC Plan drawings.
* Describe any known soil or groundwater contamination. Note that additional permitting is required from the State of Colorado, Water Quality Control Division.

Refer to <https://www.colorado.gov/pacific/cdphe/hwforms> and access the Hazardous Materials and Waste Management Division Site Locator Mapping Application.

|  |
| --- |
| Describe unique site feature or sensitive area to be preserved during construction: |
| INSERT TEXT HERE |
| Describe measures to preserve unique site feature or sensitive area during construction: |
| INSERT TEXT HERE |
| Describe any known soil or groundwater contamination: |
| INSERT TEXT HERE |
| Describe management plan for contaminated soils and/or groundwater: |
| INSERT TEXT HERE |
| Attach applicable Permits (check if applicable): |
| 404 Permit  401 Permit  Dewatering Permit  Remediation Permit  Other: INSERT TEXT HERE |

## 

## 1.9 Potential Sources of Pollution

Instructions:

* List and describe measures to control potential sources of pollution, which may reasonably be expected to affect stormwater quality discharges from the construction site.
* If effluent limitations are infeasible to manage, please specify (i.e. no need to stockpile topsoil due to lack of sufficient nutrient content, etc.).
* At minimum, the SWMP must identify disturbed soils, vehicle tracking of sediments, and on-site waste management as pollutants.
* Below is a comprehensive list. Add rows if additional potential sources of pollution are identified.
* If a potential pollutant source is applicable to the site, then select the blue Yes/No, **then** type “**Yes**” or “**No**”.

|  |  |  |  |
| --- | --- | --- | --- |
| **Potential Pollution Source** | **Potential on this site?** | **Control Measures (CM)** | **CM Implementation (as needed)** |
| Disturbed & Stored Soils  - grading  - spoils  - stockpiles | Yes/No | ESC CMs (IP, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST)  Preservation of existing vegetation (PV, VB, CF, CP)  Materials management  Solid waste management (SP, GH)  Stockpile management (SP)  Vehicle tracking control (VTC) | 1. Delineate protected areas prior to construction. 2. Install CMs prior to construction. 3. Manage materials effectively once they arrive on site. 4. Place trash receptacles prior to construction. 5. Implement spill response. 6. Implement stockpile mgnt controls. 7. Delineate vehicle travel areas prior to construction, adjust as needed. |
| Vehicle Tracking  - all permitted vehicle traffic | Yes/No | ESC CMs (IP, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST)  Vehicle traffic controls  Vehicle tracking controls (VTC)  Street sweeping (SS) | 1. Install CMs prior construction. 2. Delineate vehicle travel areas prior to construction, adjust as needed. 3. Install VTC prior to construction. 4. Implement SS as needed, in conjunction with start of construction. |
| Contaminated Soils | Yes/No | Hazardous materials management (GH, CT)  Spill response & notification (GH)  Stockpile management (SP) | 1. Implement hazardous materials management. 2. Implement spill response procedures. 3. Implement stockpile mgnt controls. |
| Loading & Unloading  - construction materials | Yes/No | Material management (GH)  Vehicle traffic controls (VTC) | 1. Manage materials effectively once they arrive on site. 2. Delineate vehicle travel areas prior to construction, adjust as needed. |
| Vehicle/equipment maint. & fueling  - gas, oil,  - diesel  - lubricants  - hydraulic fluids | Yes/No | Spill prevention controls (GH)  Designated fuel storage area (GH)  Spill response & notification (GH) | 1. Designate fuel storage area. 2. Implement spill prevention controls. 3. Implement spill response and notification procedures. |
| Outdoor storage  - building materials  - fertilizers  - chemicals | Yes/No | Material storage procedures (GH) | 1. Designate material storage areas prior to delivery. 2. Materials left outdoors must be covered if they can pollute stormwater. 3. Secondary containment must be used for hazardous materials. |
| Dust  - wind transport  - saw cutting | Yes/No | Dust control (DC)  Temporary soil stabilization (SF, SD, GB, SSA, TRM, RECP, TOP)  Street sweeping (SS)  Preservation of existing vegetation (PV, VB, CF) | 1. Delineate protected areas prior to construction. 2. Implement dust control in conjunction with soil disturbing activities. 3. Implement temporary soil stabilization measures as soon as practical. 4. Implement street sweeping at the start of major construction and maintain as needed. |
| Routine Maintenance Activities  - fertilizers  - pesticides  - detergents  - solvents  - fuels, oils, etc. | Yes/No | Material storage (GH)  Hazardous waste management (GH, CT)  ESC CMs (IP, SF, SSA, TRM, RECP, TOP, SCL, SBB, RS, SB, ST) | 1. Designate materials storage areas prior to site arrival. 2. Practice hazardous waste management procedures during the storage of such materials. 3. Install ESC measures prior to landscape work. |
| Non-industrial Waste  - worker trash  - portable toilets | Yes/No | Sanitary waste (GH)  Solid waste management (GH) | 1. Place temporary sanitary facilities on site and prevent off-site discharges.  2. Place trash receptacles on site. |
| On-site Industrial Waste  - construction debris, etc | Yes/No | Waste management (GH)  Liquid waste management (GH)  Hazardous waste management (GH, CT) | 1. Place trash receptacles on site.  2. Place designated watertight receptacles or washout area(s) prior to activities that produce liquid waste.  3. Implement hazardous waste management procedures. |
| Concrete Truck Chute/Tool Washing | Yes/No | Concrete washout area (CWA) | Install designated concrete washout(s) prior to concrete work. |
| Drywall Mud and Paint | Yes/No | Liquid waste management (GH) | Place designated watertight receptacles or washout area(s) prior to activities that produce liquid waste. |
| Fly Ash  - concrete  - flow fill | Yes/No | Concrete washout area (CWA)  Hazardous waste management (GH) | 1. Install designated CWA prior to concrete activities. 2. Implement hazardous waste management procedures. |
| Dedicated:  - asphalt plants  - concrete batch plants  - masonry mixing stations | Yes/No | Secondary containment  Concrete washout area (CWA)  Solid waste management (GH)  Materials management (GH) | 1. Install secondary containment CMs prior to using dedicated batch plants. 2. Establish dedicated washout area before construction begins. 3. Place trash receptacles on site. 4. Manage materials effectively once they arrive on site. |
| Waste from:  - geo-tech test  - potholing  - saw cutting  - utility borings for locates | Yes/No | Dust control (DC)  Material storage (GH)  Solid waste management (GH) | 1. Implement dust control in conjunction with soil disturbing activities. 2. Designate materials storage areas prior to their arrival on site. 3. Place trash receptacles on site. |
| Demolition of infrastructure:  - concrete curb  - asphalt road  - steel/rebar | Yes/No | Dust control (DC)  Solid waste management (GH) | 1. Implement dust control in conjunction with soil disturbing activities.  2. Place trash receptacles. |
| Electric Generator  - pump | Yes/No | Secondary containment  Spill response & notification (GH)  Hazardous waste management (GH, CT) | 1. Install secondary containment CMs prior to using generators.  2. Implement hazardous waste management procedures. |
| Areas where potential spills can occur | Yes | Hazardous waste management (GH)  Spill response & notification (GH) | 1. Implement hazardous waste management.  2. Implement spill response and notification procedures. |
| Run-On Stormwater | Yes/No | Diversions, sedimentation basins, sediment traps, etc. | Describe Implementation |

\* Refer to Section 2, for acronyms used to identify CM details.

***Potential hazardous material & chemical pollutants to stormwater:***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Potentially on Site?** | **Material/**  **Chemical** | **Physical Description** | **Stormwater Pollutants** | **Location** |
| Yes/No | Fertilizer | Liquid or solid grains | Nitrogen, phosphorous | Newly seeded areas |
| Yes/No | Cleaning solvents | Colorless, blue, or yellow-green liquid | Perchloroethylene, methylene chloride, trichloroethylene, petroleum distillates | Staging areas |
| Yes/No | Asphalt | Black solid | Oil, petroleum distillates | Streets |
| Yes/No | Concrete and Grout | White solid/grey liquid | Limestone, sand, pH, chromium | Curb and gutter, sidewalk, building construction |
| Yes/No | Curing compounds | Creamy white liquid | Naphtha | Curb and gutter, sidewalk, driveways, concrete slabs |
| Yes/No | Hydraulic oil/ fluids | Brown, oily petroleum hydrocarbon | Mineral oil | Leaks or broken hoses from equipment |
| Yes/No | Gasoline | Colorless, pale brown or pink petroleum hydrocarbon | Benzene, ethyl benzene, toluene, xylene, MTBE | Secondary containment/staging area |
| Yes/No | Antifreeze/ coolant | Clear green/yellow liquid | Ethylene glycol, propylene glycol, heavy metals (copper, lead, zinc) | Leaks or broken hoses from equipment or vehicles |
| Yes/No | Sanitary toilets | Various colored liquid | Bacteria, parasites, and viruses | Staging areas |
| Yes/No | Other | Physical Description | Stormwater Pollutants | Location |

List any Effluent Limitations infeasible to manage, and why:

## 1.10 Applicable Permits and Low Risk Guidance Documents

Instructions:

* List all applicable permits and low risk guidance documents below, along with their permit numbers.
* Permits may include all CDPS permits, other Municipal, County, or State Permits, and all applicable Low Risk Guidance documents.
* Permits themselves to be stored in Appendix 2.

List of applicable Permits:

List of applicable Low Risk Guidance Documents:

# SECTION 2: EROSION & SEDIMENT CONTROL MEASURES

Instructions:

Multiple permanent (structural) and temporary (non-structural) Control Measures (CM) are used for each phase of construction to minimize stormwater pollution. Select and categorize each CM according to their purpose:

1. Minimize disturbed area, and protect natural features and soil
2. Control stormwater flowing onto and through the project
3. Soil stabilization and slope protection
4. Storm drain inlet protection
5. Perimeter control and sediment barriers
6. Retention of sediment on-site
7. Construction entrance/exit stabilization
8. Additional CMs

Describe the CMs that will be implemented to control pollutants in stormwater discharges. A list of standard and commonly use CM is provided. The information also includes the e*xpected level of information* for each CM. The e*xpected level of information* must address the following:

* + ***What*** *CMs will be installed? Select and describe CMs.*
  + ***When*** *will the CMs be implemented and removed? Timing, temporary or permanent.* *All CMs shall be installed as a phased operation as construction progresses.*
  + ***Where*** *will the CMs be implemented? Location.*
  + ***How*** *will the CMs be maintained? Describe the maintenance and inspection procedures. Include protocols, thresholds, and schedules for cleaning, repairing or replacing damaged or failing CMs.*

If a construction project uses a CM that is not included below, add the CMs and ensure that the *expected level of information* is included.

Indicate applicable measure by selecting the blue Yes/No then type “**Yes**” or “**No**”. Identify the phase of construction during which the CM will be implemented: 1, 2, 3 or N/A, and check whether the CM is Permanent (structural) or Temporary (non-structural). Add any additional CMs as needed.

Place CM detail drawings in **Appendix 4**.

Use Urban Drainage Flood Control District’s Detail Drawings:

<https://udfcd.org/wp-content/uploads/uploads/vol3%20criteria%20manual/Chapter%207%20Construction%20BMPs.pdf>

Or Colorado’s Department of Transportation Drainage Design Manual:

https://www.codot.gov/business/designsupport/standard-plans/copy\_of\_2012-m-standards-plans

## 2.1 Sediment Control Measures

Instructions:

* Describe how each unique site feature or sensitive area identified earlier will be protected during construction activity. Include these areas and associated measures on the ESC Plan (site map).
* Indicate applicable measure by selecting the blue Yes/No then type “**Yes**” or “**No**”. Identify the phase of construction during which the CM will be implemented: 1, 2, 3 or N/A, and check whether the CM is Permanent (structural) or Temporary (non-structural). Add any additional CMs as needed.

|  |  |
| --- | --- |
| ***Silt Fence (SF)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SF is a woven geotextile fabric attached to wooden posts and trenched into the ground. It is use to intercept sheet flow runoff from disturbed areas. |
| ***When: Installation*** | SF shall be installed prior to land disturbing activities. SF shall be removed when the upstream area is stabilized. |
| ***Where: Location*** | SF shall be installed at the locations identified on the SWMP. SF is typically installed along the contour of slopes, which is down slope of a disturbed area to accept sheet flow, and placed along the perimeter of a construction site. ***SF is not designed to receive concentrated flow, or to be used a filter fabric.*** |
| ***How: Maintenance & Inspection*** | SF shall be installed per detail (Appendix 4). Inspect regularly and maintain SF throughout construction. Any section of SF that has a tear, hole, slumping, undercutting or has been bypassed shall be replaced. Accumulated sediment shall be removed before it reaches a depth of ½ the height of the of the silt fence usually 6 inches. |

|  |  |
| --- | --- |
| ***Sediment Control Log (SCL)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SCL, aka “Straw Wattle”, is a linear roll made of natural materials (straw, coconut fiber or other fibrous material), trenched into the ground and held with wooden stakes, used to intercept sheet flows from disturbed areas. |
| ***When: Installation*** | SCL shall be installed during land disturbing activities and it may also be installed after formation of a stockpile. Once the upstream area is stabilized, remove and properly dispose of the SCL. If disturbed areas exist after removal, the area shall be covered with top soil, seeded and mulched. |
| ***Where: Location*** | SCL shall be installed at the locations identified on the ECSP. SCL are typically used for stockpile control, IP, and CD in small drainage ditches, on disturbed slopes to shorten flow lengths and/or as part of multi-layered perimeter control along receiving water such as a stream, pond or wetland. SCL work well in combination with other layers of erosion and sediment controls. Stockpiles stored on impervious surfaces shall not be placed in a flowline and SCL shall be weighted. Stockpiles stored on pervious surfaces may be protected by pervious SCL, SF or adequate vegetative cover. |
| ***How: Maintenance & Inspection*** | SCL shall be installed per detail (Appendix 4), along (parallel) the slope contour to avoid concentrating flows. Inspect regularly and maintain SCL throughout construction as they will eventually degrade. Accumulated sediment shall be removed before the depth is ½ the height of the SCL. |

|  |  |
| --- | --- |
| ***Sediment Basin (SB)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SB is a temporary structure designed to capture sediment transported in runoff and slowly release flows to allow time for settling of the sediment prior to discharge from the site |
| ***When: Installation*** | Install SB prior to land disturbing activities. SBs are typically converted to permanent detention basins. For conversion, remove accumulated sediment and re-configure the basin and outlet to meet the requirements of the final design. For SB that are temporary, remove when is no longer needed by filling in the excavated area with soil and stabilizing accordingly. |
| ***Where: Location*** | SB shall be installed at the locations identified on the SWMP. Where feasible, the SB shall be installed in the same location where a permanent post-construction detention basin will be located. |
| ***How: Maintenance & Inspection*** | The SB shall be installed per detail (Appendix 4). Inspect regularly and maintain SB to be effective. Accumulated sediment shall be dredged from the basin when it reaches no more than ⅓ of the design storage volume. |

|  |  |
| --- | --- |
| ***Sediment Trap (ST)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | ST is an excavated or bermed area designed to capture drainage, allowing settling of sediment from upstream disturbed area smaller than 1 acre. |
| ***When: Installation*** | Install ST prior to land disturbing activities. The ST shall not be removed until the upstream area is sufficiently stabilized. |
| ***Where: Location*** | Install ST in the locations identified on the SWMP. It shall be installed across a low area or drainage swale. |
| ***How: Maintenance & Inspection*** | ST shall be installed per detail (Appendix 4). Inspect regularly and maintain the ST throughout construction. Inspect the embankments for stability and seepage, and the outlet for sediment, debris and damage. Repair damage to the outlet, and remove all obstructions. Accumulated sediment shall be removed when it reaches ½ the height of the outflow embankment. |

|  |  |
| --- | --- |
| ***Inlet Protection (IP)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | IP is a permeable barrier that is installed around an inlet drain to filter runoff and remove sediment before entering the storm system. IP can be constructed of: RS, SCL, SF, blocks and RS, or other materials. |
| ***When: Installation*** | Install IP for existing catch basins prior to land disturbing activities upslope from the inlet. IP for proposed catch basins shall be installed immediately after the drain is constructed. IP and associated sediment must be removed and properly disposed of when the drainage area upstream is stabilized. |
| ***Where: Location*** | Install IP at the locations identified on the EC Plan. IP is not a stand-alone measure. It shall be used in conjunction with other up gradient measures. |
| ***How: Maintenance & Inspection*** | Install IP per detail (Appendix 4). IP shall enable the drain to function without completely blocking the flow. Inspect regularly and maintain IP throughout construction as it is the final measure before runoff enters the storm drain. Accumulated sediment shall be removed when it has reached ½ of the height of the IP or looses functionality, whichever comes first. IP is not standalone measure and shall be part of redundant system. |

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| ***Rock Sock (RS)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | RS is an elongated cylindrical filter constructed of gravel wrapped by wire mesh or woven geotextile (aka “curb socks” if placed at angles at curb line). |
| ***When: Installation*** | Install RS prior to land disturbing activities; once upstream stabilization is complete. Accumulated sediment shall be removed and properly disposed of. |
| ***Where: Location*** | RS shall be installed at the locations identified on the EC Plan. They are use for perimeter control of a disturbed area, or as part of IP. |
| ***How: Maintenance & Inspection*** | Install RS per detail (Appendix 4). Inspect regularly and maintain RS as they are susceptible to displacement and breakage due to vehicle traffic. Accumulated sediment shall be removed to maintain functionality. |

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| Insert Additional Control Measure (CM) Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What – Description*** | INSERT TEXT HERE |
| ***When – Installation*** | INSERT TEXT HERE |
| ***Where – Location*** | INSERT TEXT HERE |
| ***How – Maintenance and Inspection*** | INSERT TEXT HERE |
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\*To add additional CMs please click on the blue plus sign.

## 2.2 Erosion Control Measures

Instructions:

* Describe how each unique site feature or sensitive area identified earlier will be protected during construction activity. Include these areas and associated measures on the ESC Plan (site map).
* Indicate applicable measure by selecting the blue Yes/No then type “**Yes**” or “**No**”. Identify the phase of construction during which the CM will be implemented: 1, 2, 3 or N/A, and check whether the CM is Permanent (structural) or Temporary (non-structural). Add any additional CMs as needed.

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| ***Surface Roughening (SR)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SR is tracking, scarifying, imprinting or tilling a disturbed area to provide temporary stabilization. Variations in the soil are created to help minimize wind and water erosion. |
| ***When: Installation*** | SR shall be performed either after final grading or to temporarily stabilize an area during active construction. |
| ***Where: Location*** | SR shall be used in the locations identified on the SWMP. It can be used on mild and steep slopes. |
| ***How: Maintenance & Inspection*** | SR shall be installed per detail (Appendix 4). SR shall always be perpendicular to the slope. Continuously inspect and maintain all surfaces that are roughened throughout construction. SR shall be inspected for erosion as it is only a temporary control. Vehicles and equipment shall not be driven over areas that have been surface roughening. Refresh SR as needed. |

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| ***Temporary and Permanent Seeding (TS/PS)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | Seed is applied to disturbed areas in an effort to establish vegetation. TS is used to stabilize disturbed areas that will be inactive for an extended period. PM is used to stabilize areas at final grade that will not be otherwise stabilized. Effective seeding includes preparation of a seedbed, selection of an appropriate seed mixture, proper planting techniques, and protection of the seeded area with mulch, geotextile, or other appropriate measures. Mulching helps to protect the bare soil and must be secured by crimping, tackifiers, netting or other measures. |
| ***When: Installation*** | TS/PS shall be performed on temporary inactive surfaces and following the completion of final grading. |
| ***Where: Location*** | TS/PS shall be completed in the locations identified on the SWMP to stabilize areas at final grade that will not otherwise be stabilized. |
| ***How: Maintenance & Inspection*** | TS/PS and secured mulching shall be installed per seed mix specifications and detail (Appendix 4). Continuously inspect and maintain TS/PS and secured mulch throughout construction. Prepare the seedbed, select an appropriate seed mixture, use proper planting techniques and protect the seeded area with secured mulch. |

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| ***Soil Binders (SB)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SB involves a broad range of treatments that can be applied to exposed soils for temporary stabilization to reduce wind and water erosion. |
| ***When: Installation*** | Use SB for short term temporary stabilization.Soil binders can break down fast due to natural weathering. |
| ***Where: Location*** | SB can be used on mild and steep slopes including stockpiles. They are often used in areas where work has temporarily stopped, but is expected to resume before revegetation can be established. |
| ***How: Maintenance & Inspection*** | SB shall be used per detail (Appendix 4). Continuously inspect and maintain all areas where SB have been applied throughout construction. SB can fail after heavy rainfall events and may require re-application. In particular, SB will generally experience spot failures during heavy rainfall events. |

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| ***Mulching (MU)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | MU consists of evenly applying straw, hay, shredded wood mulch, bark or compost to disturbed soils and securing the mulch by crimping, tackifiers or netting. |
| ***When: Installation*** | MU is used in conjunction with TS/PS to help protect the seed bed and stabilize the soil. Mulch can also be used as a temporary cover on low to mild slopes to help temporarily stabilize disturbed area where there are growing season constraints. After MU application, there shall not be bare ground surface exposed. Reapply mulch, as needed, to cover bare areas. |
| ***Where: Location*** | Temporary and/or permanent MU shall be completed in the locations identified on the SWMP. |
| ***How: Maintenance & Inspection*** | MU shall be installed per detail (Appendix 4). After MU, the bare ground surface shall not be more than 10% exposed. Re-apply mulch, as needed, to cover bare areas. |

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| ***Rolled Erosion Control Product (RECP)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | RECP consist of a variety of temporary or permanently installed manufactured products designed to control erosion and enhance vegetation establishment and survivability, especially on slopes and in channels. Categories of RECP: mulch control netting, open weave textile, erosion control blanket, and turf reinforcement mat. |
| ***When: Installation*** | RECP shall be installed upon completion of slope grading and when revegetation measures are completed. RECP are biodegradable typically and do not need to be removed after construction. |
| ***Where: Location*** | RECP shall be installed at the locations identified on the SWMP. Install RECP according to manufacturer’s specifications. |
| ***How: Maintenance & Inspection*** | RECP shall be installed per (Appendix 4). Continuously inspect and maintain all RECP throughout construction. Check for signs of erosion, including voids under the mat. Also check for damaged or loose stakes and secure loose sections of the blanket. |

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| ***Temporary Slope Drains (TSD)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | TSD is a pipe or culvert use to convey water down a slope where there is high potential for erosion. A collection system at the top of the slope directs runoff to the conveyance. The pipe outlet must be equipped with outlet protection. |
| ***When: Installation*** | Install TSD prior to up-gradient land disturbing activities and maintain in place until no longer needed, but remove prior to the end of construction. |
| ***Where: Location*** | TSD shall be installed at the locations identified on the SWMP. They are for long, steep slopes where there is a high potential for flow concentration. |
| ***How: Maintenance & Inspection*** | TSD shall be installed and maintained per detail (Appendix 4). Inspect and maintain all TSD throughout construction. Inspect the entrance for sediment accumulation. Inspect the downstream outlet for signs of erosion and stabilize, as needed. Remove accumulated sediment at the entrance and outfall, and inspect pipe anchors to ensure they are secure. |

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| ***Temporary Outlet Protection (TOP)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | TOP consist of riprap rock placed at the outlet to help reduce erosion immediately downstream of a pipe, culvert, slope drain rundown or other conveyance with concentrated flow. TOP is intended to be used for less than two years. |
| ***When: Installation*** | TOP shall be installed immediately upon the completion of grading and removed once the pipe is no longer draining upstream area or once the downstream area has been sufficiently stabilized. |
| ***Where: Location*** | TOP shall be installed at the locations identified on the SWMP. It shall be installed where a conveyance discharges onto a disturbed area where there is a potential for accelerated erosion due to concentrated flow. |
| ***How: Maintenance & Inspection*** | TOP shall be installed and maintain per (Appendix 4). The Inspect regularly and maintain TOP as the rocks may be displaced. Accumulated sediment shall be removed before the TOP becomes buried and ineffective. |

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| ***Earth Dikes/Drainage Swales (ED/DS)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | *ED/DS* are temporary storm conveyance channels used to divert runoff around slopes or to convey runoff to additional sediment control CMs prior to discharge from the site. |
| ***When: Installation*** | Install ED/DS immediately upon completion of channel grading and maintain in place until the end of construction. |
| ***Where: Location*** | ED/DS shall be installed at the locations identified on the SWMP. Typically installed around steep slopes or as temporary conveyance feature leading to a sediment basin or trap. |
| ***How: Maintenance & Inspection*** | ED/DS shall be installed per detail (Appendix 4). Continuously inspect and maintain all ED/DS for stability, compaction and signs of erosion and repair. Inspect side slopes for erosion and damage to erosion control fabric. Stabilize slopes and repair fabric as necessary. Accumulated sediment shall be removed when the sediment has accumulated to ½ of the depth of the ED/DS. |

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| ***Terracing (TER)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | TER consists of grading steep slopes into a series of relatively flat sections separated at intervals by steep slope segments. They shorten the uninterrupted flow lengths on steep slopes, reducing the development of rills and gullies. |
| ***When: Installation*** | TER shall be completed during grading activities; when slope is at final grade, and vegetation shall be established as soon as possible. |
| ***Where: Location*** | TER shall be installed at the locations identified on the SWMP. It is usually used to control erosion on slopes that are steeper than 4:1. |
| ***How: Maintenance & Inspection*** | TER shall be installed per detail (Appendix 4). TER shall be used in combination with other stabilization measures that provide cover for exposed soils. Inspect regularly and maintain all TER throughout construction. Remove accumulated sediment and repair rill erosion as necessary. |

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| ***Check Dams (CD)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | CDs are temporary or permanent grade control structures use in drainage channels to reduce the velocity of runoff and concentrated flows. They can be constructed from rock, gravel bags, sand bags or proprietary devices. |
| ***When: Installation*** | CD shall be installed prior to earth disturbing activities or immediately upon completion of channel grading. Temporary CDs shall be removed and area shall be stabilized. Permanent CDs shall be cleaned and remain in place. |
| ***Where: Location*** | CD shall be installed at the locations identified on the SWMP. Typically they are placed in drainage channels, swales or on mild to moderately steep slopes. |
| ***How: Maintenance & Inspection*** | CDs shall be installed per detail (Appendix 4). They shall be placed at regularly spaced intervals along the drainage swale or ditch. The height of the CD shall allow for pooling of the runoff. Inspect regularly and maintain CD as rocks can be displaced and gravel bags or sandbags can be torn. Accumulated sediment shall be removed before it reaches ½ the height of the CD. |
| **Streambank Stabilization (SS)**Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SS is a combination of erosion and sediment control measures to protect streams, banks, and in-stream habitat from accelerated erosion. Some of the measures include PV, CD, TS/PS and RECP. |
| ***When: Installation*** | SS shall be installed prior to earth disturbing activities to protect existing vegetation, preserve exposed streambank, or mitigate erosion rates from disturbed area. SS measures that will not remain in place as a part of final stabilization, such as silt fence, shall be removed when all land disturbing activities have ceased and the area has been permanently stabilized. |
| ***Where: Location*** | SS shall be installed at the locations identified on the SWMP. They shall be installed along the banks of streams or waterways. |
| ***How: Maintenance & Inspection*** | SS shall be installed per detail (Appendix 4). Inspect regularly and maintain SS throughout construction. |

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| ***Wind Erosion/Dust Control (DC)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | DC helps keep sediments (from soils and stockpiles) from entering the air as a result of land disturbing construction activities. A variety of practices that focus on grading disturbed areas may be used. |
| ***When: Installation*** | Implement DC during conditions which result in the formation of dust from either construction activities or from naturally occurring winds. Do not overwater. |
| ***Where: Location*** | Dust abatement shall be completed throughout the project area where any material exists that has the potential to become airborne. |
| ***How: Maintenance & Inspection*** | DC measures shall be performed per detail (Appendix 4). Apply water or magnesium chloride, seed and mulch or use spray-on soil binders on disturbed areas. Water and magnesium chloride shall be applied such that concentrated flows do not form. |

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| Insert Additional Control Measure (CM) Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What – Description*** | INSERT TEXT HERE |
| ***When – Installation*** | INSERT TEXT HERE |
| ***Where – Location*** | INSERT TEXT HERE |
| ***How – Maintenance and Inspection*** | INSERT TEXT HERE |
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\*To add additional CMs please click on the blue plus sign.

## 2.3 Materials Management Control Measures

Instructions:

* Describe how each unique site feature or sensitive area identified earlier will be protected during construction activity. Include these areas and associated measures on the ESC Plan (site map).
* Indicate applicable measure by selecting the blue Yes/No then type “**Yes**” or “**No**”. Identify the phase of construction during which the CM will be implemented: 1, 2, 3 or N/A, and check whether the CM is Permanent (structural) or Temporary (non-structural). Add any additional CMs as needed.

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| **Concrete Washout Areas (CWA)**  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | A CWA is a specific area of the construction site designated and managed for concrete washing activities. Options available: excavation of a pit in the ground, use of an above ground storage area or use of prefabricated haul-away concrete washout containers. |
| ***When: Installation*** | CWA shall be installed prior to any concrete delivery to the construction site; and remove upon termination of use of the washout. Accumulated solid waste, including concrete waste and any contamination soils, must be removed from the site to a designated disposal location. |
| ***Where: Location*** | CWA shall be installed at the locations identified on the SWMP. If the groundwater table is high; or if the CWA will be placed within 400 ft of a natural drainage pathway/waterbody; or within 1,000 ft of a wells or drinking water source it must be lined. |
| ***How: Maintenance & Inspection*** | CWA shall be installed per detail (Appendix 4). Inspect regularly and maintain CWA throughout construction. Ensure adequate signage is in place identifying the location of the CWA. Remove concrete waste when filled to about ⅔ of CWA capacity to maintain functionality. |

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| **Stockpile Management (SP)** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SP includes measures to minimize erosion and sediment transport from stockpiles.SP shall be used when soils or other erodible materials are stored at a construction site. |
| ***When: Installation*** | SP locations shall be determined during construction. If temporary removal of a CM is necessary to access the SP, ensure CMs area re-installed per detail drawing. When SP is no longer needed, properly dispose of excess materials and re-vegetate or stabilize the ground surface where the SP was located. |
| ***Where: Location*** | SP locations shall be placed away from areas where concentrated stormwater flow is anticipated, major drainage ways, gutters, and storm sewer inlets. SP locations shall be noted on the SWMP. |
| ***How: Maintenance & Inspection*** | SP shall be installed per detail (Appendix 4). Inspect regularly and maintain SP throughout construction. It is recommended to place SP on a pervious surface and protected from sediment transport with measures such as SCL, VB and/or SF. SP are only allowed on impervious surfaces if no other practical alternative exists. Provide weighted sediment control measures around the perimeter of the SP, such as RS or sand bags. |

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| **Street Sweeping (SS)**  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SS is used where vehicles track sediment onto paved roadways to reduce the transport of it into storm drain systems or surface waterways. |
| ***When: Installation*** | Manual SS or mechanical vacuuming SS shall be conducted when there is noticeable sediment accumulation on roadways adjacent to the construction site. SS shall be completed prior to any precipitation events, at the end of the workday as needed, and at the end of construction. |
| ***Where: Location*** | SS shall be utilized throughout the site and also on adjacent areas to construction. |
| ***How: Maintenance & Inspection*** | SS shall be performed per detail (Appendix 4). Use standard SS equipment to adequately remove sediment from roadways adjacent to the construction site. |

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| Insert Additional Control Measure (CM) Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What – Description*** | INSERT TEXT HERE |
| ***When – Installation*** | INSERT TEXT HERE |
| ***Where – Location*** | INSERT TEXT HERE |
| ***How – Maintenance and Inspection*** | INSERT TEXT HERE |
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\*To add additional CMs please click on the blue plus sign.

## 2.4 Site Management Control Measures

Instructions:

* Describe how each unique site feature or sensitive area identified earlier will be protected during construction activity. Include these areas and associated measures on the ESC Plan (site map).
* Indicate applicable measure by selecting the blue Yes/No then type “**Yes**” or “**No**”. Identify the phase of construction during which the CM will be implemented: 1, 2, 3 or N/A, and check whether the CM is Permanent (structural) or Temporary (non-structural). Add any additional CMs as needed.

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| ***Limits of Construction (LOC)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | LOC is use todesignate the area of land that will be disturbed by construction activities. |
| ***When: Installation*** | The permitted LOC shall be designated prior to land disturbing activities. If land is disturbed outside of the limits, then the State and Local stormwater construction discharge permits and SWMP/EC Plan must be amended. |
| ***Where: Location*** | The permitted LOC shall be identified on the EC Plan. |
| ***How: Maintenance & Inspection*** | LOC are typically delineated by silt fence or construction fence. Inspect LOC continuously and maintain the permitted LOC in an effort to not disturb land outside of the boundaries. |

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| ***Construction Fence (CF)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | CF restricts site access to designated entrances and exits, delineates construction site boundaries, and keeps construction out of sensitive locations such as natural areas to be preserved as open space, wetlands and riparian areas. |
| ***When: Installation*** | CF shall be installed prior to earth disturbing activities; and removed once construction is complete. |
| ***Where: Location*** | Install CF along the site perimeter or any area within the site where access shall be restricted. |
| ***How: Maintenance & Inspection*** | CF shall be installed, maintained and removed per detail (Appendix 4). Inspect CF for damages and slumping. The CF shall be tight and any areas with slumping or fallen posts shall be reinstalled or replaced. |

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| ***Vehicle Tracking Control (VTC)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | VTC is a stabilized site access point that helps remove sediment from vehicle tires and reduces tracking of sediment onto paved surfaces. |
| ***When: Installation*** | Install VTC prior to any land disturbing activities; and removed when there is no longer the potential for vehicle tracking to occur. |
| ***Where: Location*** | VTC shall be installed at the location identified on the SWMP. Locate VTC where frequent vehicle traffic will exit the construction site onto a paved roadway. |
| ***How: Maintenance & Inspection*** | VTC shall be installed per detail (Appendix 4). All VTC must have non-woven geotextile fabric between the soil and rock pad. Recycled concrete aggregate is not allowed because concrete dust elevates pH in stormwater. Inspect regularly and maintain VTCs throughout construction. If the area becomes clogged with sediment, remove and dispose of excess sediment or replace material with a fresh layer of rock. Any sediment that is tracked onto adjacent roadways shall be cleaned with brooms, shovels (no water washing), or mechanically cleaned with a street vacuum sweeper. |

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| ***Stabilized Construction Roadway (SCR)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SCR is a temporary method to control sediment runoff, vehicle tracking, and dust from roads during construction activities consisting of aggregate base course of 3-inch diameter granular material (recycled concrete aggregate is not allowed because concrete dust elevates pH in stormwater). |
| ***When: Installation*** | SCR is installed on high traffic construction roads to minimize dust and erosion, and use in place of rough cut street controls on roadways with frequent construction and vehicle traffic. Gravel shall be removed once the road is ready to be paved. Prior to paving, the road should be inspected for grade changes and damage. Re-grade and repair as necessary. |
| ***Where: Location*** | SCR shall be installed at the locations identified on the SWMP. Apply gravel to disturbed areas that are used as a route for vehicles. |
| ***How: Maintenance & Inspection*** | SCR shall be installed per detail (Appendix 4). Inspect regularly and maintain SCR throughout construction. A stable surface cover of rigid gravel shall be maintained as well as repairing any perimeter controls. Inspect drainage ditches along the roadway for erosion and stabilize as needed. |

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| ***Stabilized Staging Area (SSA)*** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | SSA is a clearly designated area where construction equipment and vehicles, stockpiles, waste bins and other construction-related materials are stored. If the construction site is big, more than one SSA may be necessary. |
| ***When: Installation*** | SSA shall be installed prior to any land disturbing activities. |
| ***Where: Location*** | SSA shall be installed at the location identified on the SWMP. |
| ***How: Maintenance & Inspection*** | SSA shall be installed per detail (Appendix 4). Inspect regularly and maintain SSA throughout construction. A stable surface cover of rigid gravel shall be maintained as well as repairing any perimeter controls and following good housekeeping practices. |

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| **Temporary Diversion Channel (TDC)** Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | TDC diverts water from a stream to allow for construction activities to take place underneath or in the stream. |
| ***When: Installation*** | TDC shall be installed prior to the start of any construction activities within a stream. The TDC shall be removed when the work at the down gradient or natural channel is no longer required. The TDC shall be backfilled and stabilized. |
| ***Where: Location*** | TDC shall be installed at the location identified on the SWMP. TDC can be used in the following locations: construction of detention ponds, dams, in-stream grade control structures, utility installations or any activity that requires work in a waterway. |
| ***How: Maintenance & Inspection*** | TDC shall be installed per detail (Appendix 4). Inspect frequently and maintain all TDC throughout construction. Inspect flow barriers at the start and end of each workday. Inspect TDC for signs of erosion. Repair or replace the lining if necessary. |

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| ***Temporary Stream Crossing (TSC)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | TSC is needed where an actively flowing watercourse must be crossed. Crossing methods: culvert crossing, stream ford and temporary bridge. A 404 permit is required for placement of fill in a waterway from the U.S. Army Corps of Engineers per Section 404 of the Clean Water Act. |
| ***When: Installation*** | Install a TSC only when it is necessary to cross a stream; and remove it when the crossing is no longer needed for construction. |
| ***Where: Location*** | TSC shall be installed at the locations identified on the SWMP. |
| ***How: Maintenance & Inspection*** | TSC shall be installed per detail (Appendix 4). Inspect and maintain TSC throughout construction. Inspect for bank erosion and in-stream degradation. |

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| ***Paving and Grinding Operations (PGO)***  Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What: Description*** | Runoff management practices shall be used during all PGO. A variety of management practices can be used such as: IP, perimeter controls, store materials away from the storm sewer system, drainages and waterways, and keep a spill kit onsite. |
| ***When: Installation*** | PGO shall be scheduled during dry weather. Recycle asphalt and pavement material when feasible. Material that cannot be recycled must be disposed of properly. |
| ***Where: Location*** | Use runoff management practices during all paving and grinding operations such as surfacing, resurfacing, and saw cuts. |
| ***How: Maintenance & Inspection*** | PGO shall be installed per detail (Appendix 4). Inspect regularly and maintain PGO throughout construction. |

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| Insert Additional Control Measure (CM) Used: Yes/No Phase(s): 1, 2, 3, N/A | |
| ***Permanent***  ***Temporary*** | |
| ***What – Description*** | INSERT TEXT HERE |
| ***When – Installation*** | INSERT TEXT HERE |
| ***Where – Location*** | INSERT TEXT HERE |
| ***How – Maintenance and Inspection*** | INSERT TEXT HERE |
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\*To add additional CMs please click on the blue plus sign.

# SECTION 3: CONSTRUCTION SITE PHASING & ESC PLAN

## 3.1 Construction Site Phasing Summary

**Instructions:**

The SWMP and ESC Plan (Site Map) shall clearly delineate the construction sequencing between the separate phases of construction, and the CM/BMP implementation of the permanent and temporary CMs.

Using the information under **Section 1.3 Nature and Sequence of Construction Activity**, describe the construction phase and the permanent or temporary CMs associated with each of the following 3 phases:

* **Initial Construction =** **Phase I, Initial BMP/CMs**
* **Interim Construction = Phase II, Interim BMP/CM**s
* **Final Construction = Phase III, Final BMP/CM**s

The ESC Plan **must** identify location of the proposed CMs to be implemented during the 3 phases of construction. Place the ESC Plan sheets in **Appendix 5.** Place CMs details in **Appendix 4**.

## 3.2 General Notes

**City of Thornton General Erosion and Sediment Control Notes:**

1. Control Measures shall be installed before any earth disturbing activities commence.
2. Stormwater discharges from construction activities shall not cause, have the reasonable potential to cause, or measurably contribute to exceed any water quality standard.
3. Construction shall be phased in a manner to limit earth disturbing activities (i.e. the entire project site should not be disturbed if construction will only be occurring in one particular section).
4. Sediment caused by accelerated soil erosion shall be removed from runoff water before it leaves the construction site.
5. Bulk storage structures for petroleum products and any other chemicals shall have secondary containment or equivalent protection to contain all spills and prevent any spilled material from entering State waters.
6. A copy of the SWMP and EC Plans must be available at all times on the construction site unless otherwise approved by CDPHE or the City.
7. The SWMP and EC plan shall be continuously updated to reflect new or revised Best Management Practices (Control Measures) due to changes in design, construction, operation, or maintenance of the construction site. Updates must be made within 72-hours following the change in Control Measures.
8. The Owner/Contractor shall inspect the construction site (including all Control Measures, storage containers, and construction equipment) a minimum of every **7 calendar days or every 14 calendar days.** If on the 14 calendar frequency a 24-hour post storm inspection must be conducted after a precipitation event or snow melt that cusses surface erosion**.** Inspections shall continue until an Inactivation Notice is filed with CDPHE.
9. The Owner/Contractor shall keep a record of all inspections on site and available for review by CDPHE or City staff. Inspection reports must identify any incidents of non-compliance with the terms and conditions of the Permit.
10. Control Measures requiring maintenance or adjustment shall be repaired immediately after observation of the failing Control Measure.
11. For all instances of noncompliance based on environmental hazards and chemical spills and releases, all needed information must be provided orally to CDPHE spill reporting line (24-hour number for environmental hazards and chemical spills and releases: 1-877-518-5608) within **24-hours** from the time the Owner/Contractor comes aware of the circumstances.
12. Straw bales **shall not** be used for primary erosion or sediment control (i.e. straw bales may be used for reinforcement behind another BMP such as silt fence).
13. Control Measures intended for sheet flow sediment runoff shall be placed parallel to the slope.
14. All Control Measures shall be cleaned when sediment levels accumulate to half the design of the BMP unless otherwise specified.
15. A Vehicle Tracking Pad (VTP) shall be placed at all exits from the site to prevent track-out onto City streets. If track-out does occur, the Owner/Contractor shall immediately sweep the street of debris. Recycled crushed concrete or asphalt shall not be used for vehicle tracking pads.
16. All sediment collected in Control Measures shall be removed upon initial acceptance.
17. Permanent erosion control measures for slopes, channels, ditches, or any disturbed land area shall be completed within **14 calendar days** after final grading or the final earth disturbance has been completed. When it is not possible to permanently stabilize a disturbed area after an earth disturbance has been completed or where significant earth disturbance activity ceases, temporary soil erosion control measures shall be implemented within 14 calendar days. Temporary erosion control measures shall be maintained until permanent soil erosion measures are implemented.
18. Final stabilization has been achieved when all earth disturbing activities at the site have been completed, and uniform vegetative cover has been established with an individual plant density of at least **70 percent** of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.
19. All temporary Control Measures shall be removed from the site upon submitting the Inactivation Notice.
20. All site wastes (including trash and building materials) must be properly managed to prevent potential pollution of State waters.
21. Street repair operations such as rotor milling, slurry seal and chip seal. The minimum BMPs required are; inlet protection, curb socks and street sweeping.

This list is not intended to be all‐inclusive, but is intended to identify the general note identified by the City to be included as part of the SWMP for compliance with the City’s stormwater management requirements for construction activities.

# SECTION 4: WASTE MANAGEMENT PLAN

Instructions:

Complete the Waste Management Plan below by describing site-specific pollution prevention CMs that will be implemented to control pollutants in stormwater from construction sites. Indicate which of the following CM categories are applicable for your construction site:

* Covering Outdoor Storage and Handling Areas **(required)**
* Spill Prevention and Response Plan **(required)**
* Good Housekeeping **(required)**
* Vehicle Maintenance, Fueling and Storage **(required, if applicable)**
* Street Sweeping and Cleaning **(required)**
* Storm Sewer System Cleaning **(required, if applicable)**

## 4.1 Covering Outdoor Storage and Handling Areas

Instructions:

* Practices for outdoor storage and handling areas are required to be implemented in all 3 phases of construction (initial, interim and final).

|  |
| --- |
| ***Covering Outdoor Storage and Handling Areas*** Used: Yes Phase(s): 1, 2, 3 |
| ***Permanent***  ***Temporary*** |
| **Description:** When raw materials, byproducts, finished products, storage tanks, and other materials are stored or handled outdoors, stormwater runoff that comes in contact with the materials can become contaminated. Proactively covering storage and handling areas can be an effective source control for such areas. Coverings can be permanent or temporary and consist of tarp, plastic sheeting, roofing, enclosed structures, or other approaches that reduce exposure of materials to precipitation and wind.  **Uses:** Covering is appropriate for areas where solids (e.g., gravel, compost, building materials) or liquids (e.g., oil, gas, tar) are stored, prepared, or transferred. Cover the following areas that are applicable to this construction site:   * **Loading and Unloading:** Loading and unloading operations usually take place at outside storage or staging area on the construction site. Materials may be spilled during transfer between storage facilities and trucks during pumping of liquids, pneumatic transfer of dry chemicals, and mechanical transfer of bags, boxes, drums, or other containers by material handling equipment. * **Aboveground Tanks/Liquid Storage:** Accidental releases of chemicals from above-ground liquid storage can contaminate stormwater with a variety of pollutants. Several common causes of accidental releases from above-ground storage include: external corrosion and structural failure, problems due to improper installation, spills and overfills due to operator error, failure of piping systems, and leads or spills during pumping of liquids or gases between trucks to a storage facility. * **Outside Manufacturing:** Common outside manufacturing activities may include parts assembly, rock grinding or crushing, metals painting or coating, grinding or sanding, degreasing, concrete manufacturing, parts cleaning or operations that use hazardous materials. These activities can result in dry deposition of dust, metal and wood shavings and liquid discharges of dripping or leaking fluids from equipment or process and other residuals being washed away in storm runoff. In addition, outside storage of materials and waste products may occur in conjunction with outside manufacturing. * **Waste Management:** Wastes spilled, leached, or lost from outdoor waste management areas or outside manufacturing activities may accumulate in soils or on other surfaces and be carried away by storm runoff. There is also the potential for liquid wastes from surface impoundments to overflow to surface waters or soak the soil where they can be picked up by runoff. Possible stormwater contaminants include toxic compounds, oil and grease, oxygen-demanding organics, paints and solvents, heavy metals and high levels of suspended solids. Lack of coverage of waste receptacles can result in precipitation seeping through the material and collecting contaminants or the material being blown around the site and into the storm sewer system. Containment sources include waste piles, wastewater and solid waste treatment and disposal, land application sites, dumpsters, or unlabeled drums. * **Outside Storage of Materials:** Raw materials, intermediate products, byproducts, process residuals, finished products, containers, and materials storage areas can be sources of pollutants such as metals, oils and grease, sediment and other contaminants. Pollutant transport can occur when solid materials wash off or dissolve into water, or when spills or leaks occur.   **Practice Procedures:**   * Where practical, conduct operations indoors. If outdoors, then select a temporary or permanent covering to reduce exposure of materials to precipitation and runoff. * The type of covering selected depends on a variety of factors such as the type and size of activity being conducted and materials involved. Types of cover range from relatively inexpensive tarps and plastic sheeting to overhead structures or fully enclosed buildings equipped with ventilation, lighting, etc. * Covering practices should be combined with Good Housekeeping to be most effective. * Tarps and plastic sheets require more frequent inspection and maintenance. |

Place site-specific information here:

|  |
| --- |
| INSERT TEXT HERE |

## 4.2 Spill Prevention and Response Plan

Instructions: Implement spill prevention, containment and control practices during all 3 phases of construction.

|  |
| --- |
| ***Spill Prevention & Response Plan*** Used: Yes Phase(s): 1, 2, 3 |
| ***Permanent***  ***Temporary*** |
| Spills and leaks of solid and liquid materials processed, handled or stored outdoors can be a source of stormwater pollution. Spilled substances can reach receiving waters when runoff washes these materials from impervious surfaces or when spills directly enter the storm system during dry weather conditions. Effective controls depend on spill prevention and response measures, proper training, and may include structural spill containment or control devices. Spill containment measures include temporary or permanent curbs or berms that surround a potential spill site. Berms may be constructed of concrete, earthen material, metal, synthetic liners, or other material. Spill control devices include valves, slide gates, or other devices that can control and contain spilled material.  **Spill Prevention Measures**   * Train key employees in plan and provide clear, common-sense spill prevention practices and clean-up procedures to be strictly followed. * Identify equipment that is exposed to precipitation, pollutants that may be generated and possible sources of leaks or discharges. * Perform inspections and preventative maintenance of equipment for proper operation and to check for leaks or evidence of discharge (stains). Ensure repairs are completed or provide temporary leak containment until such repairs can be made. * Drain used motor oil and other automotive fluids in a designated area away from storm inlets. Collect spent fluids and recycle or dispose of properly. Never dispose into storm or sanitary sewer. * In fueling areas, clean up spills with dry methods (absorbents) and use damp cloths on gas pumps and damp mops on paved surfaces. * Never hose down a spill or absorbent materials into the storm drain, or down into an interior floor drain which leads to the sanitary sewer system. * Reduce stormwater contact with equipment and materials by implementing covered storage, reduce stormwater run-on and follow good housekeeping practices. * Post signs at critical locations with Spill Prevention and Response Plan information.   **Identification of Spill Areas:** Spill prevention and response measures shall be implemented at construction sites in areas where materials may be spilled in quantities that can adversely impact receiving waters or the storm system. Identify potential spill areas, potential spill volumes, material types, frequency of material used, and drainage paths from spill areas with relation to storm sewer inlets, adjacent water bodies, structural CMs, and containment structures. Use this information to determine the types of spill prevention and control measures needed specific to the site conditions. Show the potential spill areas on the EC Plan:   * Loading and unloading areas * Outdoor storage areas * Outdoor manufacturing or processing activities * Waste disposal * Areas that generate significant dust or particulates that may later deposit on the ground * Areas prone to spills based on past experience at the site * Locations where other routine maintenance activities occur * Areas where smaller leaks may occur (parking lots)   **Material Handling Procedures:** From a water quality perspective, the primary principle behind effective material handling practices is to minimize exposure to precipitation. Store the material indoors, otherwise implement the following outdoor materials handling procedures:   * Divert stormwater around materials storage areas. * Keep bulk solid materials (raw materials, sand, gravel, topsoil, compost, concrete, packing materials, metal products, etc) covered and protected from stormwater. * When practical, store materials on impermeable surfaces. * Store hazardous materials according to federal, state, and local requirements. * Adopt procedures to reduce spills or leaks during filling or transfer of materials. * Substitute less toxic or nontoxic materials for toxic materials. * Store containers that are easily punctured or damaged away from high traffic areas. * Add waste-capture containers such as collection pans for lubricating fluids. * Store drums and containers with liquids on impermeable surfaces and provide secondary containment. Place drums stored outdoors on pallets to minimize contact with runoff.   **Spill Response Procedures:** Tailor spill response procedures to site-specific conditions and industry-specific regulatory requirements. Follow procedures:   * Contain and cleanup spills promptly after the spill is discovered. * Sweep up small quantities of pollutants to reduce exposure to runoff. * Place absorbents at fueling areas or areas susceptible to spills. * Wipe up small spills with a rag, store rags in appropriate containers, dispose of rags properly or use a professional industrial cleaning service. * Contain medium-sized spills with absorbents and use berms or absorbent "snakes" as temporary booms for the spill. Store and dispose of absorbents properly. Wet/dry vacuums may be used, but not for volatile fluids. * Install drip pans below minor equipment leaks until a repair can be made. * For large spills, first contain the spill and plug storm inlet where the liquid may migrate off-site, then clean up the spill. * Excavation of spill areas to removed contaminated material may be required where large liquid spills occur on unpaved surfaces. * Maintain an inventory of cleanup materials onsite and strategically locate them based on the types and quantities of chemicals present. * Records of spills, leaks, or overflows that result in the discharge of pollutants must be documented and maintained.   Two approaches are used when implementing spill containment measures: 1) Design system to contain the entire spill; or 2) Use curbing to route spilled material to a collection basin. Both containment berming and curbing should be sized to safely contain or convey to a collection basin a spill from the largest storage tank, tanker truck, or other containment device in the possible spill area. The spill containment area must have an impermeable surface (impermeable liner, asphalt or concrete) to prevent groundwater contamination. Design containment system to enable collection and removal of spilled material through a pump or vacuum trucks, sorbent or gelling material, etc. Material removed must be disposed of or recycled according to local, state, and federal standards. If the capacity of the spill containment is exceeded, supplemental measures should be available such as a portable containment device, sorbent materials, or gelling agents to solidify the material. Water that collects within containment areas due to rainfall or snowmelt must be appropriately treated before release from the spill area. |

|  |
| --- |
| **Emergency 24-Hour Site Contact (with spill response and clean-up authority):** |
| Insert Designated Person |
| Insert Company Name |
| |  |  |  | | --- | --- | --- | | Office #: (xxx)-xxx-xxxx | Cell #: (xxx)-xxx-xxxx | Email: xxx@xxx.com | |

|  |
| --- |
| **Notification Procedures:** Some spills may need to be reported to the State of Colorado, Water Quality Control Division and Adams County Stormwater Division immediately upon discovery. Releases of chemical, oil, petroleum product, sewage, etc., which may enter State Waters must be reported to: State of Colorado, 24-hour Emergency Spill Reporting Line: 1-877-518-5608. <https://www.colorado.gov/pacific/cdphe/wq-environmental-spills>.  Tri-County Health Department: 303-220-9200. |

|  |
| --- |
| Insert: Other Notification numbers in the event of a spill |
| Insert: List of spill clean-up materials on-site |

## 4.3 Good Housekeeping

Instructions: Implement good housekeeping practices during all 3 phases of construction (initial, interim & final).

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| --- |
| ***Good Housekeeping Practices*** Used: Yes Phase(s): 1, 2, 3 |
| ***Permanent***  ***Temporary*** |
| **Description:** Good housekeeping practices are designed to maintain a clean and orderly work environment. The most effective first steps towards preventing stormwater pollution at construction sites simply involve using common sense to improve the site's basic housekeeping methods. Poor housekeeping practices result in increased waste and potential for stormwater contamination. A clean and orderly work site reduces the possibility of accidental spills caused by mishandling of chemicals and equipment and should reduce safety hazards to personnel. A well-maintained material and chemical storage area will reduce the possibility of stormwater mixing with pollutants. Some simple procedures a site can use to promote good housekeeping include improved operation and maintenance of machinery and processes, material storage practices, material inventory controls, routine and regular clean-up schedules, maintaining well organized work areas, signage, and educational program for employees and the general public.  **Practice Procedures for Operation and Maintenance:**   * Maintain dry and clean floors and ground surfaces by using brooms, shovels, vacuums or cleaning machines, rather than wet clean-up methods. * Regularly collect and dispose of garbage and waste material. * Routinely inspect equipment to ensure that it is functioning properly without leaking and conduct preventative maintenance and needed repairs. * Train employees on proper clean up and spill response procedures. * Designate separate areas for auto parking, vehicle refueling and routine maintenance. * Promptly clean up leaks, drips and other spills. * Cover and maintain dumpsters and waste receptacles. Add additional dumpsters or increase frequency of waste collection if overflowing conditions reoccur. * For outdoor painting and sanding: Conduct activities in designated areas that provide adequate protection to prevent overspray and uncontrolled emissions. All operations should be conducted on paved surfaces to facilitate cleanup. Use portable containment as necessary for outside operations. Clean up and properly dispose of excess paint, paint chips, protective coatings, grit waste, etc. * Maintain vegetation on facility grounds in a manner that minimizes erosion. Follow the Landscape Maintenance and Pesticide, Herbicide and Fertilizer Usage CMs to ensure that minimum amounts of chemicals needed for healthy vegetation are applied to minimize transport of these materials in runoff.   **Practice Procedures for Material Storage Practices:**   * Provide adequate aisle space to facilitate material transfer and access for inspection. * Store containers, drums, and bags away from direct traffic routes to reduce container damage resulting in accidental spills. * Stack containers according to manufacturer's instructions to avoid damaging the containers from improper weight distribution. Also store materials in accordance with directions in Safety Data Sheets (SDSs). * Store containers on pallets or similar devices to prevent corrosion of containers that results from containers coming in contact with moisture on the ground. * Store toxic or hazardous liquids within curbed areas or secondary containers.   **Practice Procedures for Material Inventory Practices:** An up-to-date materials inventory can keep material costs down by preventing overstocking, track how materials are stored and handled onsite, and identify which materials and activities pose the most risk to the environment. Assign responsibility of hazardous material inventory to individuals trained to handle such materials. A material inventory should include these steps:   * Identify all chemical substances present at work site. Perform a walk-through of the site, review purchase orders, list all chemical substances used and obtain Safety Data Sheets (SDS) for all chemicals. * Label all containers with name and type of substance, stock number, expiration date, health hazards, handling suggestions, and first aid information. Find info on the SDS. * Clearly identify special handling, storage, use and disposal considerations for hazardous materials on the material inventory. * Institute a shelf-life program to improve material tracking and inventory to reduce the amount of materials overstocked and ensure proper disposal of expired materials. Careful tracking of materials ordered can result in more efficient materials use. Decisions on the amounts of hazardous materials that are stored on site should include an evaluation-of any emergency control systems that are in place. All storage areas for hazardous materials should be designed to contain spills.   **Practice Procedures for Training and Participation:** Provide frequent and proper training in good housekeeping techniques to reduce mishandling of chemicals or equipment. Educate by:   * Discussing good housekeeping practices in training programs and meetings. * Publicizing pollution prevention concepts through posters or signs. * Posting bulletin boards with updated good housekeeping procedures and tips. |

Place site-specific information here:

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| --- |
| INSERT TEXT HERE |
|  |

## 4.4 Vehicle Maintenance, Fueling and Storage

Instructions:

* Identify procedures by selecting the blue Yes/NA **then** type “**Yes**” or “**N/A**”.
* If applicable, CMs is required during all 3 phases of construction (initial, interim and final).

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| --- |
| ***Vehicle Maintenance, Fueling and Storage***  Used: Yes/NA Phase(s): 1, 2, 3 |
| ***Permanent***  ***Temporary*** |
| **Description:** Areas where vehicles are fueled, maintained, and stored/parked can be pollutant "hot spots" that can result in hydrocarbons, trace metals, and other pollutants being transported in precipitation runoff. Proper fueling operations, storage of automotive fluids and effective spill cleanup procedures can help reduce contamination of stormwater runoff from vehicle maintenance and fueling facilities. Fuel-related spills can occur due to lack of attention during fueling or "topping off" fuel tanks. Common activities at construction sites include vehicle fluid replacement and equipment replacement and repair. Some of the wastes generated maintaining automobiles include solvents (degreasers, paint thinners, etc.), antifreeze, brake fluid, brake pad dust, battery acid, motor oil, fuel, and lubricating grease.  **Uses:** procedures are applicable to vehicle maintenance and fueling. Vehicle wash water is considered process wastewater that will not be discharged to the storm sewer system.  **Practice Procedures for Vehicle Maintenance:** The most effective way to minimize wastes generated by automotive maintenance activities is to prevent their production in the first place. The following practices will be implemented:   * Perform maintenance activities inside or under cover. When repairs cannot be performed indoors, use drip pans or absorbents. * Keep equipment clean and free of excessive oil and grease buildup. * Promptly cleanup spills using dry methods and properly dispose of waste. When water is required, use as little as possible to clean spills, leaks, and drips. * Use a solvent collection service to collect spent solvent used for parts cleaning. * When using liquids for cleaning, use a centralized station to ensure that solvents and residues stay in one area. Locate drip pans and draining boards to direct solvents back into a solvent sink or holding tank for reuse. * Store used oil for recycling in labeled tanks. Locate used oil tanks and drums away from storm sewer, flowing streams, and preferably indoors. * Use non-hazardous or less hazardous alternatives when practical. For example, replace chlorinated organic solvents with non-chlorinated ones like kerosene or mineral spirits. * Properly recycle or dispose of grease, oil, antifreeze, brake fluid, cleaning solutions, hydraulic fluid, batteries, transmission fluid, worn parts, filters, and rags. * Drain and crush oil filters before recycling or disposal. * Drain all fluids and remove batteries from salvage vehicles and equipment. * Closely monitor parked vehicles for leaks and place pans under leaks to collect the fluids for proper disposal or recycling. * Install berms or other measures to contain spills and prevent work surface runoff from entering storm sewer system. * Develop a spill prevention plan with measures such as spill kits, and information about location of storm drains and how to protect them if a large spill occurs. * Conduct periodic employee training to reinforce proper disposal practices. * Promptly transfer used fluids to recycling drums or hazardous waste containers. * Store cracked batteries in leak-proof secondary containers. * Inspect outdoor storage areas regularly for drips, spills and improperly stored materials (for example: unlabeled containers, auto parts that might contain grease or fluids, etc). This is particularly important for parking areas for vehicles awaiting repair. * Structural CMs, such as traps, installed in vehicle hotspot areas require routine cleanout of oil and grease. During heavy rainfall, cleanout is required more often to ensure that pollutants are not washed through the trap. Sediment removal is also required on a regular basis to keep the CM working efficiently.   **Practice Procedures for Vehicle Fueling:**   * Fueling areas should be designed to prevent stormwater runoff and spills. Fuel-dispensing areas should be paved with concrete or equivalent impervious surface, with an adequate slope to prevent ponding, and separated from the rest of the site by a grade break or berm to prevent run-on of precipitation. * For sites using a mobile fuel truck, establish a designated fueling area. Place temporary "caps" over nearby catch basins or manhole covers so that if a spill occurs, it is prevented from entering the storm sewer. Secondary containment should be used when transferring fuel from the tank truck to the fuel tank. Cover storm drains in the vicinity. Install vapor recovery nozzles to help control drips, and reduce air pollution. * Keep spill response information and spill cleanup materials onsite and readily available. * Employ dry cleanup methods cleaning up fuel spills. Such methods include sweeping to remove litter and debris, and using rags and absorbents for leaks and spills. * Water should not be used to wash fuel spill areas. During routine cleaning, use a damp cloth on the pumps and a damp mop on the pavement. Fuel dispensing nozzles should be fitted with automatic shutoff except where prohibited by fire department. Post signs at the fuel dispenser warning operators against "topping off' vehicle fuel tanks. * Provide written procedures describing CMs to employees who will be fueling. |

Place site-specific information here:

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| INSERT TEXT HERE |

## 4.5 Street Sweeping and Cleaning

Instructions:

* Identify CMs for the construction site by selecting the blue Yes/NA **then** type “**Yes**” or “**N/A**”.
* If applicable, street sweeping shall be implemented for all 3 phases of construction (initial, interim and final).

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| ***Street Sweeping (SS)***  Used: Yes/NA Phase(s): 1, 2, 3 |
| ***Permanent***  ***Temporary*** |
| **Description:** SS uses either manual or mechanical pavement cleaning practices to collect or vacuum sediment, litter and other debris from the streets before being washed into storm sewers by runoff. This practice can reduce pollutant loading to receiving waters, reduce clogging of storm sewer pipes, prolong the life of infiltration CMs and reduce clogging of outlet structures in detention ponds. Mechanical designs include: broom and conveyor belt sweeper, wet or dry vacuum-assisted sweepers, and regenerative-air sweepers. The effectiveness depends upon particle loadings being swept, street texture, moisture conditions, parked cars, equipment conditions and frequency of cleaning.  **Uses:** SS is a technique in urban areas where sediment and litter accumulated on streets is of concern for aesthetic, sanitary, water and air quality reasons. SS is required at constructions sites per SWMP to reduce off-site tracking.  **Procedures:**   1. SS may be performed manually (broom and shovel) or with a vacuum sweeper (no kick-broom). Choose the most effective approach for site conditions. 2. SS shall be completed when there is sediment tracking from the construction site exits into the public road or right-of-way. 3. SS frequency depends on presence of sediment tracking. If tracking is occurring, either a VTC shall be installed, the VTC needs maintenance, or the VTC is inadequate; all require SWMP updates. 4. Off-site sediment tracking from the construction site shall be swept immediately. 5. Conduct SS prior to precipitation events. 6. Operate sweepers at manufacturer recommended optimal speed levels. 7. Regularly inspect vehicles and equipment for leaks and repair promptly. 8. Keep accurate logs of number of curb-miles swept and amount of waste collected. 9. Dispose of SS debris and dirt at a landfill. 10. Do not store swept material along the side of the street or near a storm drain inlet. |

Place site-specific information here:

|  |
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| INSERT TEXT HERE |

## 4.6 Storm Sewer Cleaning

Instructions:

* Select CMs to remove accumulated sediment, trash, and other pollutants from the storm system for the applicable construction site wastes identified in **Section 1.8 Potential Sources of Pollution** to maintain a clean and orderly construction site.
* Identify CMs by selecting the blue Yes/NA **then** type “**Yes**” or “**N/A**”. If applicable, the following practices shall be implemented for all 3 phases of construction (initial, interim and final).

|  |
| --- |
| ***Storm Sewer System Cleaning*** Used: Yes/NA Phase(s): 1, 2,3 |
| ***Permanent***  ***Temporary*** |
| **Description:** Periodic storm sewer cleaning can help remove accumulated sediment, trash, and other pollutants from the storm system including inlets, pipes and also construction CMs. Routine cleaning reduces the amount of pollutants in the storm system and in receiving waters. Clogged drains can cause overflow, leading to increase erosion. Cleaning increases dissolved oxygen, reduces levels of bacteria, and supports in-stream habitat. Areas with flat grades or low flows should be given special attention because they rarely achieve high enough flows to flush themselves. Water used in storm drain cleaning must be collected and properly disposed of, typically at a sanitary wastewater treatment facility. Simpler methods in localized areas can also include manual trash collection and shoveling sediment and debris from inlets and outlets. Frequency and prioritization of storm sewer cleaning is affected by the activity and intensity of construction and the proper installation and maintenance for construction CMs.  **Uses:** Inspection of the existing storm system is recommended prior construction to document condition. The storm sewer shall be cleaned at minimum at completion of construction.  **Practice Guidelines:** Inspect the storm system as part of the required stormwater inspection.   * **Technology available**: manual cleaning (shovel), vacuum cleaning and vacuum combination jet cleaning. Choose the most effective approach for site conditions. * **Staff training**: train about maintenance, waste collection and disposal methods. * **Waste disposal**: Most catch basin waste is acceptable for landfills. If hazardous material is suspected, it should be tested and disposed of accordingly. |

Place site specific information here:

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| --- |
| INSERT TEXT HERE |

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# SECTION 5: FINAL STABILIZATION

## 5.1 Final Stabilization Requirement

Instructions:

Final stabilization of the construction sites occurs when all ground surface disturbing activities at the site have been completed, and for all areas of ground surface distrusting activates where a uniform vegetative cover has been established with an individual plant density of at least 70 percent of pre-disturbance levels, or equivalent permanent, physical erosion reduction methods have been employed.

Final Stabilization is reached when all ground disturbing activities are complete, and all disturbed areas have either been built on, paved over or a uniform vegetative cover has been established per SWMP. Prior to closing the State Stormwater Permit, all the items listed below must be completed in order for the construction site to be considered to have final stabilization.

1. The site has a uniform vegetative cover with a density of at least 70% compared to the original undisturbed site. Such cover must be capable of adequately controlling soil erosion.
2. If applicable, proper installation and maintenance of all approved, permanent, post-construction stormwater quality treatment drainage facilities.
3. Removal of all stockpiles of soil, construction material/debris, construction equipment, etc. from the construction site.
4. Streets, parking lots and other surrounding paved surfaces are clean and free of any sediment or debris.
5. Removal of sediment, debris or other pollutants within the private and adjacent public storm drainage system.
6. Restoration of any damaged public infrastructure caused by the construction activities.

## 5.2 Final Stabilization Measures

Instructions:

Describe CMs for final stabilization of all disturbed areas at the site, such as: erosion control blankets, mulch and seeding, approved landscape plan, etc. Update the ESC Plan (site map) to indicate areas that have achieved final stabilization.

|  |  |
| --- | --- |
| **Permanent Seeding (PS)**Used: Yes/NAPhase(s): 3 | |
| ***Permanent***  ***Temporary*** | |
| **Seed Mix Selection According to Soil Type** | INSERT TEXT HERE |
| **Seed Application Method** | INSERT TEXT HERE |
| **Soil Preparation** | INSERT TEXT HERE |
| **Soil Amendment** | INSERT TEXT HERE |

|  |
| --- |
| **Crimped Straw**Used: Yes/NAPhase(s): 3 |
| ***Permanent***  ***Temporary*** |
| INSERT TEXT HERE |

|  |
| --- |
| **Hydromulch**Used: Yes/NAPhase(s): 3 |
| ***Permanent***  ***Temporary*** |
| INSERT TEXT HERE |

|  |
| --- |
| **Rolled Erosion Control Products (RECP)**Used: Yes/NAPhase(s): 3 |
| ***Permanent***  ***Temporary*** |
| INSERT TEXT HERE |

|  |
| --- |
| Insert Additional Control Measure (CM)Used: Yes/NAPhase(s): 3 |
| ***Permanent***  ***Temporary*** |
| INSERT TEXT HERE |

## 5.3 Removal of Temporary CMs

Once the site has met the final stabilization conditions, the remaining temporary CMs such as perimeter controls, inlet protection, silt fence, etc. shall be removed and disposed of properly.

## 5.4 Stormwater Permits Close-out

Submit the CDPS Stormwater Discharge Permit Inactivation Form to CDPHE.

## 5.5 Long Term Stormwater Management

Instructions:

Describe planned practices to control pollutants in stormwater discharges that will occur after construction operations are completed. Including, but not limited to, detention/retention ponds, rain gardens, underground stormwater vaults, etc.

Describe the planned practices to control pollutants in stormwater discharges that will occur after construction operations are completed, including permanent water quality treatment facilities:

INSERT TEXT HERE

# SECTION 6: STORMWATER INSPECTIONS

## 6.1 Inspections

Instructions:

Identify the individual responsible for conducting inspections and describe qualifications. Select the frequency of inspections and procedures to inspect CMs that will occur at your site. Identify procedures to document the repairs and maintenance of CMs as a result of the inspections. Use the Stormwater Inspection Form in **Appendix 6**. Place completed stormwater inspections in **Appendix 7**.

|  |
| --- |
| 1. ***Qualified Stormwater Management*** ***Inspection Personnel:***   Identify the inspection person(s) who will be responsible for conducting stormwater inspections and describe their qualifications: |
|  |
| 1. ***Inspection Frequency:***   Inspections shall start within 7 calendar days of commencement of construction activities.  **Minimum Stormwater Inspection Schedule:** A thorough inspection of the site inspection shall be performed in accordance with one of the following minimum frequencies:   * At least one inspection every 7 calendar days, **or** * At least one inspection every 14 calendar days, if post-storm event inspections are conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. Post-storm inspections may be used to fulfill the 14-day routine inspection requirement.   **Post-Storm Inspections at Temporarily Idle Sites** - For permittees choosing to combine 14-day inspections and post-storm-event inspections, if no construction activities will occur following a storm event, post-storm event inspections must be conducted prior to re-commencing construction activities, but no later than 72 hours following the storm event. The delay of any post-storm event inspection must be documented in the inspection record. Routine inspections must still be conducted at least every 14 calendar days.  **Inspections at Completed Sites/Areas** - When the site, or portions of a site are awaiting establishment of a vegetative ground cover and final stabilization, the permittee must conduct a thorough inspection of the stormwater management system at least once every 30 days. Post-storm event inspections are not required under this schedule. This reduced inspection schedule is allowed if all of the following criteria are met:   * 1. All construction activities resulting in ground disturbance are complete;   2. All activities required for final stabilization, in accordance with the SWMP, have been completed, with the exception of the application of seed that has not occurred due to seasonal conditions or the necessity for additional seed application to augment previous efforts; and   3. The SWMP has been amended to locate those areas to be inspected in accordance with the reduced schedule allowed for in this paragraph.   The minimum inspection frequency required does not affect the permittee’s responsibility to implement and maintain effective control measures as prescribed in the SWMP. Proper maintenance may require more frequent inspections. |
| 1. ***Inspection Procedures:***  * At minimum, inspect the construction site perimeter, all disturbed area, designated haul routes, material and/or waste storage areas that are exposed to precipitation, discharge location(s), and locations where vehicles exit the site shall be inspected for evidence of, or the potential for, pollutants leaving the Permitted boundaries, entering the storm sewer system, or discharging to the MS4. * Refer to **Section 5.2 Inspection Sequence**. * Visually verify whether all implemented CMs are in effective operational condition and are working as designed in their specifications to minimize pollutant discharges. * Determine if there are new potential sources of pollutants. * Assess the adequacy of CMs at the site to identify areas requiring new or modified CMs to minimize pollutant discharges. * Identify all areas of non-compliance and implement corrective action. |
| 1. ***Correcting Problems:***   Take steps to minimize the discharge of pollutants until a CM is implemented and operational, or an inadequate CM is replaced or corrected, and returned to effective operating condition. If it is infeasible to install or repair the CM immediately after discovering the deficiency, the following must be documented:  (a) Describe why it is infeasible to initiate the installation or repair immediately; and  (b) Provide a schedule for installing or repairing the CM and returning it to an effective operating condition asap.  Remove and properly dispose of any unauthorized release or discharge. Clean up any contaminated surfaces to minimize discharges of the material in subsequent storm events.  INSERT ADDITIONAL INFORMATION ABOUT CORRECTING ISSUES HERE |
| Responsible staff or company for making corrections: INSERT NAME HERE |
| 1. ***Inspection Form:***   Use the form[[1]](#footnote-1) in **Appendix 6** for all Capital Improvement Projects. Place completed inspections or refer to where the inspections are kept electronically in **Appendix 7**. At a minimum the form should document:   * Inspection date; * name & title of inspector; * weather conditions; * phase of construction; * estimated acreage of disturbance at the time of inspection; * location(s) of discharges of sediment or other pollutants from the site; location(s) of CMs needing maintenance; * location(s) and identification of inadequate CMs; * location(s) and identification of additional CMs needed that were not in place at the time of inspection; * description of the minimum inspection frequency; * deviations from the minimum inspection schedule; certification statement for corrective action(s) or inspection (if no actions). |

## 6.2 Inspection Sequence

Instructions:

When conducting stormwater inspections of your construction site it is recommended that one always follows this recommended inspection sequence to ensure that all procedures and measures are being followed.

|  |
| --- |
| 1. **Plan your stormwater inspection**  * Use the inspection form (or equivalent) under **Appendix 6**. |
| * Obtain a copy of the EC Plan (Site Map) with CMs locations marked. |
| * Plan to walk the entire site, including discharge points from the site and any off-site support activities. |
| * Follow a consistent pattern each time to ensure you inspect all areas. |
| 1. **Determine Inspection frequency** |
| * Site inspections must be conducted at least once every 7; or 14 calendar days. |
| * If 14-day inspections, then post-storm inspections must be conducted within 24 hours after the end of any precipitation or snowmelt event that causes surface erosion. |
| * 30-day inspections are conducted once construction is complete, temporary stabilizations has been installed and the site is waiting to reach final stabilization. |
| 1. **Inspect discharge points and downstream, off-site areas** |
| * Inspect discharge locations to determine whether erosion and sediment control measures are effective. |
| * Inspect nearby downstream locations. |
| * Walk down the street to inspect off-site areas for signs of discharges. |
| * Inspect down slope existing catch basins to ensure they are free of sediment and other pollutants and to ensure that they are adequately protected. |
| 1. **Inspect perimeter controls and slopes** |
| * Inspect perimeter controls to determine if sediment should be removed. |
| * Check the structural integrity of the CM. Determine if CM replacement is needed. |
| * Inspect slopes and temporary stockpiles to determine if erosion controls are effective. |
| 1. **Compare CMs in the EC Plan with the construction site conditions.** |
| * Determine whether CMs are in place as required by the EC plan. |
| * Evaluate whether CMs have been adequately installed and maintained. |
| * Look for areas where CMs are needed but are missing on the field, or are not documented on the SWMP. |
| 1. **Inspect construction site entrances** |
| * Inspect the construction exits to determine if there is tracking of sediment from the site onto the street. |
| * Refresh or replace the rock in designated entrances and concrete washout areas. |
| * Look for evidence of additional construction exits being used that are not in the SWMP or are not stabilized. |
| * Sweep the street if there is evidence of sediment accumulation. |
| 1. **Inspect sediment controls** |
| * Inspect any sediment basins for sediment accumulation. |
| * Remove sediment when it reduces the capacity of the basin by ⅓ of the design storage volume. |
| 1. **Inspect pollution prevention and good housekeeping practices** |
| * Inspect trash areas to ensure that waste is properly contained. |
| * Inspect material storage and staging areas to verify that potential pollutant sources are not exposed to stormwater runoff. |
| * Verify that concrete, paint, and stucco washouts are being used properly and are correctly sized for the volume of wash water. |
| * Inspect vehicle/equipment fueling and maintenance areas for signs of stormwater pollutant exposure. |
| 1. **Inspect for final stabilization** |
| * Inspect all temporary and permanent CMs for correct application and installation with the CM details. |
| * Remove sediment from the private storm sewer system - do not jet pollutants down into the public storm sewer system. |

## SECTION 7: RECORDKEEPING

## 7.1 Recordkeeping

Instructions:

The following section provides a list of records that shall be kept available at your construction site for review, including the length of time those records shall be preserved for.

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| --- |
| The following records shall be available at the construction site, or be on-site when construction activities are occurring:   * + An updated SWMP, reflecting current conditions and CMs.   + Keep record of SWMP/EC Plan changes made including the date and identification of the changes (\*).   + Completed inspection reports, can be placed or electronically stored and the location referenced in **Appendix 7**   + Any document or plan incorporated by reference to the SWMP. |
|  |

(\*) The SWMP must be amended when the following occurs:

1. A change in design, construction, operation, or maintenance of the site requiring implementation of new or revised control measures;
2. The SWMP proves ineffective in controlling pollutants in stormwater runoff in compliance with the permit conditions;
3. Control measures identified in the SWMP are no longer necessary and are removed; and
4. Corrective actions are taken onsite that result in a change to the SWMP.

A notation must be included in the SWMP to identify the date of the site change, the control measure removed, or modified, the location(s) of those control measures, and any changes to the control measure(s). The permittee must ensure the site changes are reflected in the SWMP. The permittee is non-compliant with the permit until the SWMP revisions have been made

SWMP documentation required under this permit are considered reports that must be available to the public under Section 308(b) of the CWA and Section 61.5(4) of the CDPS regulations. The permittee must make plans available to members of the public upon request. However, the permittee may claim any portion of a SWMP as confidential in accordance with 40 CFR Part 2.

Records will be retained for a minimum period of at least 3 years after the CDPHE permit is terminated.

# SWMP APPENDICES

Attach the following documentation:

|  |  |
| --- | --- |
| ***Appendix 1 - Project Vicinity Map*** | ***(Section 1.1)*** |
| ***Appendix 2 - State CDPS Stormwater Construction Permit and Additional Permits (if applicable)*** | ***(Section 1.2)*** |
| ***Appendix 3 - Pre-disturbance Photos*** | ***(Section 1.4)*** |
| ***Appendix 4 - Erosion and Sediment BMPs/CMs Details*** | ***(Section 1.10)*** |
| ***Appendix 5 - Erosion and Sediment Control Plan (ESC Plan) - Site Map*** | ***(Section 2.10)*** |
| ***Appendix 6 - Stormwater Inspection Form*** | ***(Section 5.1)*** |
| ***Appendix 7 - Completed Stormwater Inspection Logs*** | ***(Sections 5.3 & 5.5)*** |
| ***Appendix 8 - Agreement for off-site Control Measures (if applicable***) | ***(Section 1.5)*** |

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APPENDIX 1: Project Vicinity Map

APPENDIX 2: CDPHE Stormwater Construction Permit and Additional Permits (if applicable)

APPENDIX 3: Pre-Disturbance Photos

(ADD COLOR PICTURES)

APPENDIX 4: Erosion & Sediment CMs/BMPs Details

APPENDIX 5: Erosion & Sediment Control Plan (ESC Plan) – Site Map

ESC Plan includes, at a minimum, the following:

1. Construction site boundaries;
2. Flow arrows that depict stormwater flow directions on-site and runoff direction;
3. Areas of ground disturbance including areas of borrow and fill;
4. Areas used for storage of soil;
5. Locations of all waste accumulation areas, including areas for liquid, concrete, masonry, and asphalt;
6. Locations of dedicated asphalt, concrete batch plants and masonry mixing stations;
7. Locations of all structural control measures;
8. Locations of all non-structural control measures;
9. Locations of springs, streams, wetlands and other state waters, including areas that require pre-existing vegetation be maintained within 50 ft of a receiving water; and
10. Locations of all stream crossings located within the construction site boundary.

APPENDIX 6: Stormwater Inspection Form (Template)

**Instructions:**

The inspection report template can be found on the city’s here [Construction & Education](https://www.thorntonco.gov/government/infrastructure/stormwater/Pages/construction.aspx). The inspection report has been developed to complete the 7 day (**or** 14 day and storm event site inspections) and 30-day inspections at completed sites.

APPENDIX 7: Completed Stormwater Inspection Logs

(File completed inspection forms or reference electronic location of inspections here)

APPENDIX 8: Agreement for off-site Control Measures

***(if applicable****)*

Attach use agreement between the Permittee and the owner/operator of any control measures located outside of the permitted area, that are utilized by the Permittee’s construction site for compliance with this permit, but not under the direct control of the Permittee.

The Permittee is responsible for ensuring that all control measures located outside of their permitted area, that are being utilized by the Permittee’s construction site, are properly maintained and in compliance with all terms and conditions of the permit.

Include all information to any such off-site control measures located outside the permitted area, including location, installation specifications, design specifications and maintenance requirements

1. An equivalent form may be used for all projects except Capital Improvement Projects. [↑](#footnote-ref-1)