

Dave Jenkins, CPESC

I have attached a number of proposed, new, BMPs that I request be included in the 2019 manual. I have been unable to finish all of them, though some are completed. I would be glad to work with you to finalize all of the BMPs attached. Thanks,Dave Jenkins, CPESC

# **BMP Cxxx: Low Impact Development (LID)**

## **Protection Planning**

### ***Purpose***

To protect LID best management practices (BMPs) from erosion, sedimentation, pollution and compaction during construction.

### ***Conditions of Use***

Use whenever LID BMPs are to be constructed or when construction adjacent to LID practices is planned.

### ***Design and Installation Specifications***

Use this BMP in conjunction with other BMPs such as BMP C103: High Visibility Fence and BMP C123: Plastic Covering.

Use materials and products for diverting water away from LID practices being constructed, such as, water-filled berms, sand bags, and extruded curbing.

- Cover pervious surfaces with plastic until construction is completed and the site is cleaned.
- Divert clean and dirty water away from LID BMPs using berms.
- Keep vehicles and foot traffic away from LID BMPs using high visibility fence.
- Train all personnel in LID protection methods and procedures.
- Include detailed language in the contract specifications. An example is shown below:

The Low Impact Development Protection Plan shall identify how all LID best management practices (BMPs) are to be protected from sedimentation, pollution and compaction during construction.

At a minimum:

- (1) At no time shall water exceeding 25 NTUs drain into infiltration, bioretention, rain garden, or pervious pavement BMPs.
- (2) At no time shall water exceeding pH range of 6.5 to 8.5 S.U.s drain into infiltration, bioretention, rain garden, or pervious pavement BMPs.
- (3) At no time shall water containing petroleum sheen drain into infiltration, bioretention, rain garden, or pervious pavement BMPs.
- (4) Upon reaching final grade, native soils below infiltration, bioretention, and rain garden BMPs shall be maintained such that designed infiltration rates are not reduced.

- (5) Infiltration, bioretention and rain garden BMPs shall be fenced to prevent vehicle and foot traffic from entering.
- (6) Pervious pavement BMPs fouled with sediment or debris such that designed infiltration rates are reduced shall be cleaned to the satisfaction of the Engineer, or replaced, at the Contractor's expense.
- (7) Infiltration, bioretention, or rain garden BMPs that are damaged by sedimentation, pollution or compaction such that designed infiltration rates are reduced shall be reconstructed to the satisfaction of the Engineer, or replaced at the Contractor's expense.
- (8) Excavation equipment shall operate from outside of infiltration areas being constructed and shall use only "toothed" buckets.
- (9) Staging of materials and equipment shall not be allowed in infiltration areas.
- (10) All construction personnel shall be trained in LID protection methods and procedures before construction begins.

### ***Maintenance Standards***

- (1) Inspect all LID BMPs daily and during rain events.
- (2) Verify that:
  - Water draining into LID BMPs meets the specification requirements listed above.
  - No sediment or debris is in or on the LID BMPs reducing infiltration or flow.
  - Soils are not compacted by vehicle or foot traffic.
  - Vehicles and foot traffic are directed around LID BMPs with fencing or barriers.
  - All BMPs are installed, maintained and in good order.

### ***References***

"Moving Dirt: Challenges in LID Construction", Water Environment Federation Stormwater Report, July 10, 2014.

"LID Element 19: Pre and During Construction Inspections", City of Olympia, WA, Dec. 2015

"LID Technical Guidance Manual for Puget Sound", WSU Extension and Puget Sound Partnership, 2012

# **BMP Cxxx: Temporary Pipe Plugs**

## ***Purpose***

Use when new and existing stormwater pipes need to be plugged to make connections, modifications, and repairs.

## ***Conditions of Use***

Existing and new project storm systems can be used as temporary storage and conveyance for construction stormwater.

In some cases, clean stormwater can be diverted around the work area to other branches of the existing system.

## ***Design and Installation Specifications***

### **Air plugs:**

- Are prone to leaks and failure and should only be used in emergencies.
- Should not be utilized for more than 3 calendar days.
- Should be in new condition with no scuffs, tears, abrasions, or leaks.
- Must be used according to the manufacturer's instructions and engineering parameters.
- The Contractor should include instructions and engineering documentation in the SWPPP.

### **Mechanical plugs:**

- Should not be utilized for more than 10 calendar days.
- Should be in new condition with no cracks, breaks, chips, or leaks.
- Must be used according to the manufacturer's instructions and engineering parameters.
- The Contractor should include instructions and engineering documentation in the SWPPP.

### **Grout plugs:**

- Should be used when a plug needs to stay in place more than 10 calendar days.
- The grout must be installed so that the length of the plug is one and a half times the diameter of the pipe.
- Bricks may be used in conjunction with grout for large diameter pipes.

## ***Maintenance Standards***

- Air plugs must be checked daily for proper air pressure. Air pressure must be documented daily.

- All plugs must be checked for water leakage daily by checking for flow in the catch basin or manhole immediately downstream from the plug.
- If the plugged pipe is part of a storm system being used to contain or convey turbid construction water, turbidity measurements must be taken daily. The location(s) must be documented on a map in the SWPPP along with the turbidity, pH and TPH measurements.

# **BMP Cxxx: Biodegradable, Reusable, Recycled BMPs**

## ***Purpose***

To reduce the environmental impact and carbon footprint of erosion and sediment controls used during construction.

## ***Conditions of Use***

Use in locations where removing BMPs would damage or harm habitat such as wetlands, streambanks and forest lands.

Use any time site conditions regulatory requirements and engineering parameters allow for the use of these materials

## ***Design and Installation Specifications***

### **Compost**

- Compost can be used as mulch, as a blanket, for berms, and in wattles.
- Compost berms can be used in place of wattles or silt fence on small, flat sites, and then spread out as mulch when construction is completed.
- Compost wattles can be used as perimeter berms and to hold down burlap silt fence flaps. The wattles should be made with biodegradable mesh that is strong enough for the intended use but will complete disintegrate, unlike photodegradable mesh.

### **Blankets**

- Blankets used on slopes and in ditches are chosen based on various engineering parameters, such as shear stress and longevity. See BMP Cxxx
- Whenever engineering parameters will be satisfied using 100% biodegradable materials, they should be chosen over other materials that do not degrade or are photodegrade.
- Biodegradable blankets use natural materials such as wood fiber, straw, coconut and are held together with string or twine rather than plastic mesh.
- If possible, choose materials that are locally or regionally produced.

### **TSDs**

- While not biodegradable, these can be reused several times if taken care of.

Wattles

Straw

## **Berms**

- Berms can consist of many materials including compost, native topsoil, subsoil covered with mulch.

## **Burlap Silt Fence**

- Burlap Silt Fence can be used instead of BMP Cxx Silt Fence in areas with low risk of significant erosion and sedimentation as they do not provide the strength of plastic fabrics.
- These should not be used at the base of slopes and they do not hold back sediment laden water.
- However, in flat areas, areas surrounding wetlands or other habitat-related construction, they can often be left in place to degrade after work is complete.
- Rather than trenching in the bottom of the fabric, it should be layed on the surface of the soil and held in place with a compost berm or straw wattle.

## **Jute Net Fence**

- Jute net fences can be used instead of BMP CXX High Visibility Fence in areas that have low vehicle and foot traffic, have low risk for incursions into areas to be protected and often can be left in place after work is complete.
- Wood posts are used instead of steel T posts.
- Jute net is attached to the wood posts using wire or heavy twine in 2 or 3 locations on each post.
- Jute net fences can be used in conjunction with compost berms as perimeter protection in areas with low potential for erosion during construction such as flat areas.
- The jute net and compost berms can often be left in place to degrade rather than removed.

## ***Maintenance Standards***

## **BMP Cxxx: Geotechnical Drilling and Boring**

### ***Purpose***

To prevent the release of sediment and sediment-laden water or process water into surface water, wetlands or other waters of the state.

### ***Conditions of Use***

Use when drilling for geotechnical exploration, wells or other similar activity.

### ***Design and Installation Specifications***

### ***Maintenance Standards***



# **BMP Cxxx: Underground Utility Excavation**

## **Planning**

### ***Purpose***

To minimize the discharge of sediment laden water during excavating for utility work such as for water, sewer and storm pipes.

### ***Conditions of Use***

Use any time excavation occurs around live water, sewer and storm systems.

### ***Design and Installation Specifications***

The SWPPP should identify when and how all underground utility work will be conducted so that water quality compliance is maintained. At a minimum, the SWPPP should address the following:

Have all shut off valves located;

Procure the means to shut off valves, such as keys or wrenches, and close within 10 minutes of a water line break.

Before cutting into an existing water line, verify that the water line is not pressurized;

Do not cut into an existing storm drain or connect new stormwater conveyance systems into existing systems until it has been verified that there will be no discharge of non-compliant water during and after cutting and connection operations.

Grout all holes, seams, cracks, joints, cast iron rings and grates within 24 hours of installation of each item to prevent dirty surface runoff from entering the system.

Storm systems to be demolished in place should be first blocked at the point of connection to existing section to prevent contamination of existing storm system.

### ***Maintenance Standards***

## **BMP Cxxx: Water Diversion**

### ***Purpose***

### ***Conditions of Use***

### ***Design and Installation Specifications***

### ***Maintenance Standards***

## **BMP Cxxx: Water-Filled Berms**

### ***Purpose***

### ***Conditions of Use***

### ***Design and Installation Specifications***

### ***Maintenance Standards***

## **BMP Cxxx: Stockpiles**

### ***Purpose***

### ***Conditions of Use***

### ***Design and Installation Specifications***

Soils and construction debris, including broken concrete and asphalt paving, shall not be stockpiled on asphalt or concrete surfaces.

- b. Stockpiles shall be covered with plastic and secured from blowing wind.
- c. Plastic shall be a minimum thickness of 6 mil.

### ***Maintenance Standards***

## BMP Cxxx: Flocculation

### Purpose

Gradient terraces reduce erosion damage by intercepting surface runoff and conveying it to a stable outlet at a non-erosive velocity.

### Conditions of Use

Gradient terraces are normally limited to bare land having a water erosion problem.

### Design and Installation Specifications

The maximum vertical spacing of gradient terraces should be determined by the following method:

Channel grades may be either uniform or variable with a maximum grade of 0.6 feet per 100 feet length (0.6%). For short distances, terrace grades may be increased to improve alignment. The channel velocity should not exceed that

### Maintenance Standards

Maintenance should be performed as needed. Terraces should be inspected regularly; at least once per year, and after large storm events.

# **BMP Cxxx: Tidal Bank Excavation and Grading**

## ***Purpose***

To limit bank erosion caused by tide cycles, rainfall and boat wakes and to prevent turbidity exceedances.

## ***Conditions of Use***

Upon approval from \_\_\_\_\_, work may be conducted outside of fish window as long as the design and installation below specifications are followed.

## ***Design and Installation Specifications***

A 2-ft vertical (elevation) or a 6-ft horizontal separation shall be maintained Between the tide level and all excavation and backfill.

Sufficient time shall be allowed to excavate bank material, survey excavation and backfill areas and place erosion control protection during one low-tide period.

Temporary erosion geotextile fabric shall be placed and anchored on all exposed surfaces. Anchors may include sand bags, stakes or staples of sufficient number to prevent the fabric from lifting above the soil surface during tidal fluctuations and from boat wakes.

Temporary erosion geotextile fabric shall be of sufficient weight and strength to maintain its shape and strength per manufactures requirements.

TenCate Mirafi 1120N and Layfield Environmental Systems LP12 fabrics have been successfully utilized on Duwamish Waterway riverbanks.

If this minimum level of erosion protection is not sufficient to limit erosion and protect water quality, additional BMPs shall be installed. BMPs shall be chosen from the current edition of the Stormwater Management Manual for Western Washington (SWMM), Dept. of Ecology.

## ***Other Information:***

Be ready to start work as soon as the lowering tide level meets the above specifications.

Only work as much area as can be finished and stabilized before the tide level rises to the work area.

Tide cycles with the most “slack” tide time allow for the most work time.

Consult tide charts as construction progresses to ensure that all work is completed while maintaining the vertical and horizontal separation listed above.

Current tide charts for the Duwamish Waterway, 8<sup>th</sup> Ave South station can be found at:  
<https://tidesandcurrents.noaa.gov/noaatidepredictions.html?id=9447029>

## ***Maintenance Standards***

Make sure the soil covers used are securely fastened to the soil before the tide rises to cover them.

Wave action can work staples loose so use sand bags where wave action occurs.

Staples can be used but for sandy soils, use 12 inch staples.

Check cover fabric for soil contact after each tide cycle and adjust staples or sandbags as needed.

# **BMP Cxxx: Managing Sediment Trackout**

## ***Purpose***

To prevent and minimize sediment trackout from becoming airborne as fugitive dust and waterborne as turbid runoff.

## ***Conditions of Use***

Use whenever there are project access points that are adjacent to paved roads, parking lots, or other impervious surface that drains to storm systems and waters of the state.

Use in conjunction with BMP Cxxx

## ***Design and Installation Specifications***

Preventing sediment trackout is the preferred method. This can be accomplished by using existing site asphalt, placing temporary asphalt, or construction rock roads.

All vehicles should be kept on these surfaces for parking, deliveries, and loading trucks. Fencing can be installed to keep vehicles from driving in mud then onto clean surfaces.

Preparing road and parking lot base course and placing asphalt as soon as possible enables this.

For winter construction and for large earthwork projects, tire washes should be considered and may be required in some jurisdictions.

Tire washes should be long enough to allow two tire rotations, or about 22 feet. There should be nozzles placed so that all sidewalls, including inside dual tires, wheel wells, mud flaps, and undercarriages are cleaned.

On board polymer systems can reduce turbidity so that the wash water isn't left dirty on the truck.

On smaller projects with limited area to muddy tires, tire baths can be used. These must be cleaned often.

On very small projects, setting up a vehicle hand washing station can be effective. This requires access to a water hydrant and the ability to collect the wash water for proper disposal as "process water".

## ***Maintenance Standards***





## **BMP Cxxx: Contract Specifications**

### ***Purpose***

To ensure that all permit and regulatory requirements are properly addressed and contractually enforceable.

### ***Conditions of Use***

Contract and permit language serve different audiences. When permit language is placed into a contract verbatim, even by reference, it is often not contractually enforceable.

For example, a permit might say to “minimize” sediment trackout. Since minimize can be defined many ways, and since in contracts, it is the interpretation of the contractor rather than the owner that is ultimately enforceable, the permit language must be translated.

Rather than “minimize”, the contract could read “No visible sediment trackout shall be allowed at any time.”, or “Vehicles shall not leave the project site with dirt, mud or debris in the tire treads.”

### ***Design and Installation Specifications***

### ***Maintenance Standards***

# **BMP Cxxx: Contractor's Erosion and Sediment Control Plan (CESCP)**

## ***Purpose***

## ***Conditions of Use***

### ***Design and Installation Specifications***

The Contractor's Erosion and Sediment Control Plan (CESCP) required by this section shall be based upon the Temporary Erosion and Sediment Control (TESC) requirements of the contract but shall specifically phase, adjust, improve and incorporate the TESC requirements into the Contractor's specific schedule and plan for accomplishing the work. The CESCP shall be modified as changes are made to improve, upgrade and repair best management practices used by the Contractor and as the work progresses and TESC needs change.

4. The Contractor shall be wholly responsible for control of water onto and exiting the construction site and/or staging areas, including groundwater, stormwater, and process water. Stormwater from offsite shall be intercepted and conveyed around or through the project and shall not be combined with onsite construction stormwater.

5. Design and modifications to project hydraulic conveyances, detention facilities, and TESC plan sheets shall be stamped by a Professional Engineer (P.E.) licensed by the State of Washington. All other changes to the CESCP shall be signed by the CESCL.

#### **B. PROJECT REQUIREMENTS**

##### **1. DESCRIPTION OF WORK**

a. In order to comply with the requirements of this section, the Contractor shall:

(1) Develop and submit a Contractor's Erosion and Sediment Control Plan (CESCP). The CESCP shall, at a minimum, include and address the following:

- (a) Site Description and Drawings
- (b) Contractor Erosion and Sediment Control Personnel
- (c) Schedule and Sequencing

- (d) BMP Installation
- (e) BMP Maintenance
- (f) BMP Inspection
- (g) Record keeping
- (h) BMP Removal
- (i) Emergency Response
- (j) Construction Stormwater Management
- (k) Fugitive Dust Planning
- (l) Utilities Planning
- (m) Education
- (n) Low Impact Development (LID) Protection Planning
- (2) Revise and modify the CЕСP during the life of the contract and maintain records.
- (3) Install, maintain, and upgrade all erosion prevention, containment, and countermeasures BMPs during the life of the contract, and removal at the end of the project.
- (4) Contain, cleanup and dispose of all sediment and convey turbid water to existing or proposed detention/treatment facilities.
- (5) Perform other work shown on the project drawings, in the Contractor Erosion and Sediment Control Plan, or as directed by the Engineer.
- (6) Inspect to verify compliance with the CЕСP requirements including BMPs; facilitate, participate in, and implement directed corrective actions resulting from inspections conducted by others including outside Agencies and Port employees/consultants.

The Contractor shall prepare a Stormwater Pollution Prevention Plan (SWPPP). The contents of a construction SWPPP may vary with the amount of new or replaced impervious surface, acres of land disturbing activity and the classification of water. The SWPPP shall comply with the Director's Rules based on the City of Seattle "Stormwater Code", SMC Chapters 22.800 through 22.808 and with Section 3.01, B (2) in this Section

In order to comply with these requirements, the Contractor shall include and address the following in the CЕСP:

1. Site Description and Drawings

- a. Included in the CЕСP shall be a written description of the construction site, including location of staging areas, stockpile areas, material storage areas, natural and constructed drainage systems within the work area and staging areas, and proximity to other construction projects.
- b. Drawings shall be included in the CЕСP which show the location of the construction site, including location of staging areas, stockpile areas, material storage areas, natural and constructed drainage systems within the work area and staging areas, and proximity to other construction projects.
- c. The drawings shall show locations of BMPs during each phase of construction as identified by the Contractor in the Project Schedule.
- d. The drawings and written description shall detail temporary stormwater conveyance facilities and other measures proposed by the Contractor to limit the contributing drainage areas to not exceed the capacity of each of the stormwater ponds.

The CЕСP shall include:

- (1) Schedules for accomplishment of temporary and permanent erosion control work, that include as a minimum all specific work items as are applicable for clearing and grubbing; grading; construction; paving; structures at watercourses, sawcutting, and dewatering, underground utilities-and Stormwater conveyances-.
- (2) Proposed method of erosion and dust control on haul roads - and a plan for disposal of waste materials including sweeper waste;
- (3) Estimated removal date of all temporary BMPs;
- (4) Estimated date of final site stabilization.
- (5) Dates of earthwork and concrete pouring activities.
- (6) Dates when construction activities temporarily or permanently cease on any portion of the site.
- (7) Dates when any stabilization measures are installed.
- (8) Dates when structural BMPs are initiated.

b. Erosion control work activities consistent with the CЕСP shall be included in the Project Schedule for each work area and project activity as shown on the drawings.

## 5. BMP Installation

- a. The CЕСP shall include installation instructions and details for each BMP used during the life of the Project;
- b. To prepare or modify Contractor's Erosion and Sediment Control Plans, use BMPs from the Washington State Department of Ecology, Stormwater Management Manual for Western Washington,

Vol. 2, and (Current Version). May be downloaded at:  
<http://www.ecy.wa.gov/programs/wq/stormwater/manual.html>

c. The CESCL shall certify that all BMP installers are trained in proper installation procedures.

6. BMP Maintenance

a. The CESC shall include a description of the maintenance and inspection procedures to be used for the life of the project.

b. BMPs shall be maintained for the life of the project, the completion of a work phase and/or until removed by direction of the Engineer;

c. BMPs shall be maintained during all suspensions of work and all non-work periods;

d. BMPs shall be maintained and repaired as needed to assure continued performance of their intended function and in accordance with the approved CESC;

e. Sediments removed during BMP maintenance shall be placed away from natural and constructed storm water conveyances and permanently stabilized.

f. All maintenance shall be completed within 24 hours of inspection

7. BMP Inspection

a. The Contractor shall inspect all TESC best management practices daily during workdays and anytime 0.5" of rainfall has occurred within 24 hours on weekends, holidays, and after hours.

b. The Contractor shall provide an onsite rain gauge or other method for determination of rainfall as accepted by the Engineer.

c. Deficiencies identified during the inspection shall be corrected within 24 hours or as directed by the Engineer.

d. Note repairs or improvements needed, if any, and notify CESCL or site project superintendent to implement improvements;

e. Observe runoff leaving the site during storms, checking for turbid water;

f. Implement additional BMPs, if needed, to address site-specific erosion control;

g. Inspect all paved surfaces for visible dirt, mud and sediment tracking;

h. Inspect for dust.

i. The Contractor shall visually inspect all stormwater runoff that discharges from the project for petroleum or chemical sheen, or "rainbow". Occurrences of sheen shall be reported immediately to the

Engineer and shall follow procedures specified in Section 01 57 23 – Pollution Prevention, Planning & Execution.

j. Discharge of stormwater with sheen shall not be allowed at any time.

k. The Contractor shall collect samples and test all stormwater runoff that discharges from the project for turbidity and pH using properly calibrated meters. Turbidity that exceeds 25 NTUs or pH that is below 6.5 or above 8.5 shall be reported immediately to the Engineer.

l. Discharge of stormwater exceeding the turbidity and pH limits in Section 3.02, A, 7 (k) shall not be allowed at any time.

8. Record keeping

a. Reports summarizing the scope of inspections, the personnel conducting the inspection, the date(s) of the inspection, major observations relating to the implementation of the CЕСCP, and actions taken as a result of these inspections shall be prepared and retained as a part of the CЕСCP;

b. All inspection reports shall be kept on-site during the life of the project and available for review upon request of the Engineer.

c. Copies of all inspection records and updated CЕСCP shall be submitted to the Engineer weekly.

d. The CЕСCP shall include the Contractor's inspection form which includes the following:

(1) All best management practices to be inspected and monitored for all work areas and work activities identified in the schedule for the life of the contract.

(2) Inspection time and date.

(3) Weather information including current conditions, total rainfall since last inspection and rainfall in the 24 hours prior to the current inspection.

(4) Locations of BMPs inspected.

(5) Locations of BMPs that need maintenance and reasons why.

(6) Locations of BMPs that failed to operate as designed or intended.

(7) Locations where additional or different BMPs are needed and reasons why.

e. A description of stormwater discharged from the site. The CESCL shall note the presence of suspended sediment, turbid water, discoloration, and/or petroleum sheen.

f. Any water quality monitoring performed during inspection.

g. General comments and notes, including a description of any BMP repairs, maintenance or installations made as a result of the inspection.

h. A statement that, in the judgment of the person conducting the site inspection, the site is either in compliance or out of compliance CЕСP. If the site inspection indicates that the site is out of compliance, the inspection report shall include a summary of the remedial actions required to bring the site back into compliance, as well as a schedule of implementation. If the site inspection indicates that the site is out of compliance, the CESCL shall notify the Engineer immediately.

i. Name, title, and signature of the CESCL conducting site inspection and the following statement: "I certify that this report is true, accurate, and complete, to the best of my knowledge and belief."

9. BMP Removal

a. Temporary BMPs shall be removed upon permanent stabilization or as directed by the Engineer.

b. Areas disturbed during removal of temporary BMPs shall be permanently stabilized.

c. Permanent stabilization shall occur upon installation of:

(1) Concrete or asphalt pavement.

(2) On grades 3:1 and less, soil is covered by a minimum of 85% grass growth, as determined by the Engineer.

(3) On grades greater than 3:1 soil is covered by an approved erosion control blanket or bonded fiber matrix and a minimum of 85% grass growth, utilizing the "Line Intercept Method".

(4) Final landscaping and Low Impact Development Facilities

(5) All stormwater discharges from the project meet the following criteria:

(a) 0-25 NTUs.

(b) 6.5-8.5 pH.

(c) No visible sheen.

(d) No settleable solids.

(e) Washington State Stormwater Quality Standards (WAC 173-201A) at the receiving water, as determined by the Engineer.

10. Emergency Response

a. The CЕСP shall contain information on how the Contractor shall control and respond to turbid water discharges, sediment movement, and fugitive dust. At a minimum, the Contractor's employee responsible for, or first noticing, the discharges shall take appropriate immediate action to protect the work area, private property, and the environment (e.g., diking to prevent pollution of state waters). Appropriate action includes but is not limited to the following:



- (1) Hazard Assessment - assess the source, extent, and quantity of the discharge.
- (2) Securement and Personal Protection - If the discharge cannot be safely and effectively controlled, then immediately notify the CESCL and the Engineer. If the discharge can be safely and effectively controlled, proceed immediately with action to protect the work area, private property, and the environment.
- (3) Containment and Elimination of Source - Contain the discharge with silt fence, pipes, sand bags or a soil berm down slope from the affected area. Eliminate the source of the discharge by pumping turbid water to a controlled area, building berms, piping clean water away from the area or other means necessary.
- (4) Cleanup - when containment is complete, remove sediment, stabilize, dispose of contaminated water and prevent future discharge.
- (5) Notification - report all discharges immediately to the Engineer.

## ***Maintenance Standards***

# **BMP Cxxx: Construction Water Management**

## ***Purpose***

## ***Conditions of Use***

## ***Design and Installation Specifications***

## ***Maintenance Standards***

# **BMP Cxxx: Perimeter Controls**

*Purpose*

*Conditions of Use*

*Design and Installation Specifications*

*Maintenance Standards*

## **BMP Cxxx: Managing Process Water**

### ***Purpose***

### ***Conditions of Use***

### ***Design and Installation Specifications***

### ***Maintenance Standards***

(1)

## **BMP Cxxx: Constructing Cut and Fill Slopes**

*Purpose*

*Conditions of Use*

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*Design and Installation Specifications*

*Maintenance Standards*

## **BMP Cxxx: Dewatering**

*Purpose*

*Conditions of Use*

*Design and Installation Specifications*

*Maintenance Standards*