

**OUTLETS/VELOCITY DISSIPATION DEVICES****DEFINITION AND PURPOSE:**

These devices are placed at pipe outlets to prevent scour and reduce the velocity and/or energy of storm water flows. These devices protect the receiving area from erosion.

**APPROPRIATE APPLICATIONS:**

These devices may be used at the following locations: outlets of pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels, outlets located at the bottom of mild to steep slopes, discharge outlets that carry continuous flows of water, outlets subject to short, intense flows of water, such as flash floods, points where lined conveyances to unlined conveyances, and at emergency overflows or outlet pipes of a sediment basin.

**CONDITIONS FOR EFFECTIVE USE:**

Type of Flow: Concentrated flow

Flow at Outlet: See *Storm Water Design Criteria Manual*

**WHEN BMP IS TO BE INSTALLED:**

With the construction of the upstream BMP that creates the concentrated discharge.



Looking downstream, below a culvert outfall, at a riprap velocity dissipation pad.

**STANDARDS AND SPECIFICATIONS:**

Install riprap, grouted riprap, concrete apron, etc. at selected outlet. Riprap aprons are best suited for temporary use during construction. Carefully place riprap to avoid damaging the filter fabric. Align the apron with the receiving stream and keep straight throughout its length. If a curve is needed to fit site conditions, place it in the upper section of the apron. If the size of the apron riprap is comprised of large rocks, protect the underlying filter fabric with a gravel blanket.

**OPERATION AND MAINTENANCE PROCEDURES:**

Inspect every week and after every ½” storm event during construction. Remove sediment and trash accumulation. Inspect apron for displacement of the riprap and/or damage to the underlying fabric. Repair fabric and replace riprap that has washed away-larger rock may be required. Inspect for scour beneath the riprap and around the outlet. Repair damage to slopes immediately-extend pad if necessary.

**SITE CONDITIONS FOR REMOVAL:**

Temporary devices need to be completely removed as soon as the surrounding drainage area has been stabilized, or at the completion of construction.

**TYPICAL DETAILS:**

EC-13.1, EC-13.2, and EC-13.3