

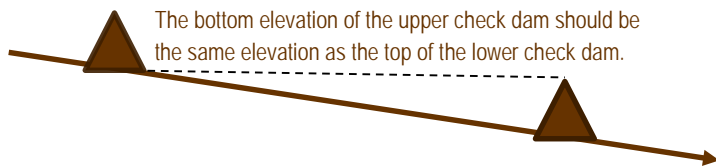
The Monthly Dirt

A Monthly Newsletter on the California Construction General Permit
By WGR Southwest, Inc.

TORTURE THE FLOW

What is the most efficient route between two points? A straight line, right? Well, not when we are talking about sediment control at a construction site. The key for sediment control at a project site is to slow the flow and to provide many opportunities for sediment to drop out. Sediment controls that should be a part of every site include check dams, linear sediment controls on slopes, sediment basins and traps, perimeter controls, and drain inlet protection.

Check dams – should be considered for most aboveground concentrated drainage conveyances. They can consist of gravel bags, fiber rolls, compost socks, rip-rap, or gravel. It is not recommended to use straw bales or silt fence and flow velocities and volume will determine which materials should be used for check dams. Any time a construction site is conveying water through a swale, check dams should be considered. However, do not use check dams for channels that drain more than 10 acres, are live streams, or have very high flow velocities. Proper spacing of check dams is as follows:



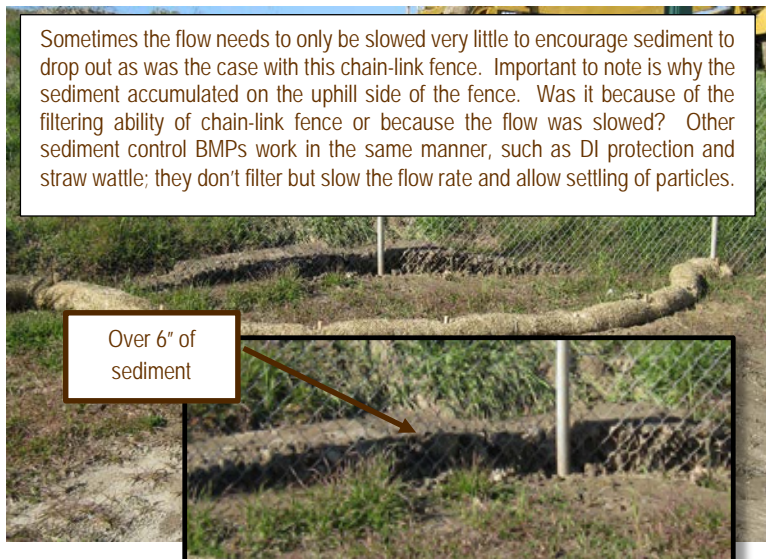
Linear sediment controls – are essentially “check dams” for slopes. Most commonly, fiber rolls or compost socks are installed on a slope parallel to its contour. The Construction General Permit (CGP) requires the following spacing:

Slope Percentage	Sheet Flow Length not to Exceed
0 – 25%	20 feet
25 – 50%	15 feet
Over 50%	10 feet

Linear sediment controls have a double advantage in that they are also an erosion control. Rills generally will form when sheet flow lengths shown in the above table are exceeded. These devices interrupt sheet flow and, basically, reset the “clock” allowing another 10 – 20 feet of sheet flow before rills will form.



Sediment basins and traps – are “fat spots” in the flow line. When storm water runoff flows into one of these, the flow velocity is significantly slowed allowing particles to settle out. Some particles (as shown in the photo below) are just begging to fall out. But, clay and silt particles want to stay in suspension and will not settle out even when given copious amounts of time. In these cases, a passive skimmer may be very effective. These devices float on the surface of the ponded water and skims the very top layer of water, which tends to have the least amount of suspended solids. What is the difference between a basin and a trap? Basically, it is just size. Basins are larger and are required by the CGP to be designed and sized in accordance with [CASQA's BMP cut sheet SE-2](#) and usually by a Civil Professional Engineer. Traps are smaller “fat spots” and can be very effective in allowing sediment to settle out. In our opinion, too many sites fail to incorporate these effective sediment traps into their SWPPP strategy. (Continued on next page)



(Continued from Page 1)

Perimeter controls – surround the construction site and are the last line of defense. Sadly, for many sites it is the only sediment control. By the time storm water surface flows have reached the perimeter controls it should have been “tortured” through two, three, or four other water slowing measures. Perimeter controls include silt fence, fiber rolls, compost socks, and curb cutbacks. Don’t let your water make a “bee-line” for the perimeter without putting obstacles in its path.

DI protection – like perimeter controls, drain inlet protection sometimes is relied too heavily upon for sediment control. It is an important part of a tortured path but should be the last step. Another misconception about DI protection is that it is a one-size-fits all BMP. However, each DI should be considered for its unique characteristics and designed accordingly. Is the DI in disturbed soil or on a paved surface? Is it a high volume inlet? Is it in a high traffic area? The [CASQA BMP Cut Sheet SE-10](#) lists four types of DI projection that can be used for different situations.

So, pull out your SWPPP map and see if you can draw a straight line from the sediment source to the point of discharge. If you can, you may want to contact your QSD to see what can be done about creating obstacles in the flow path to torture it a bit more before it leaves your site. *MD*

Sizing Sediment Basins

According to the CGP, sediment basins must be sized in accordance with the California Storm Water Quality Association (CASQA) [BMP cut sheet SE-2](#). The cut sheet specifies the following four-step process:

Step 1 – Hydrologic design is performed using site drainage area characteristics and local rainfall and hydrology information.

Step 2 – Hydraulic design is done by calculating the settling velocity for the diameter of the smallest soil grain particle and the outflow discharge rate for the outfall orifices.

Step 3 – Capacity of the sediment basin is evaluated by using the RUSLE equation to determine the annual sediment load and the MUSLE equation to determine the sediment yield from a single storm event.

Step 4 – Other design considerations are incorporated such as drawdown time; emergency spillway design; and the inclusion of baffles and basin zones for settling and storage of sediment.

We have created a simple Microsoft Excel-based tool to assist in the design of sediment basins. It can be downloaded for free from our Got SWPPP website by clicking [here](#). *MD*

Upcoming Training

- ✓ **Register Now!** – Storm Water Awareness Week 2015 is coming up! September 21-25, 2015 For more information, go to www.StormWaterAwareness.org
- ✓ QSP/QSD Training, **October 6 - 8, 2015 in Lodi, CA**
(For more information about these classes, go to www.gotswppp.com.)
- ✓ Need storm water training for your crew? Bring them to our training facility in Lodi and use our conference room and multi-media system, the construction sandbox (a hands-on simulated construction site complete with BMPs), living wall demonstration, a warehouse full of BMP samples, and BBQ / kitchen facilities.

Sediment Control Experiment

Last rainy season, *The Monthly Dirt* conducted an experiment to evaluate the effectiveness of fiber rolls and compost socks in reducing sediment and improving turbidity. The results were surprising. Watch the following SWPPP Radio video feature to learn about the outcome of our experiment and what it means to your construction site. Check it out:



https://www.youtube.com/watch?v=PQ_krMLJ4C4

Please contact us if you have any questions ...

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Gray Martz, QSD, PG (Southern California)
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DIVISION MANAGER
NOAA FISHERIES - WEST COAST REGION

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Keynote #1:
Why is a Storm Water Agency Concerned About Fish?
Featuring
Jeff McLain,
Division Manager,
NOAA Fisheries,
West Coast Region

Monday,
September 21, at
12:00 PM

STORM WATER AWARENESS WEEK
STORM WATER AWARENESS WEEK 2015 KEYNOTE SESSION
FEATURING QUESTIONS AND ANSWERS ON THE NEW INDUSTRIAL GENERAL PERMIT

LAUREL WARDDRIP
INDUSTRIAL PROGRAM MANAGER
STATE WATER RESOURCES CONTROL BOARD

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Keynote #2:
Questions and Answers on the New Industrial General Permit
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Laurel Warddrip,
Industrial and
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