Erosion and Sediment Control On Your Construction Site

County of Santa Cruz Planning Department

2008

INTRODUCTION

Every phase of a construction project has the potential of contributing significant quantities of sediment-laden runoff. Therefore, as a site is developed, the County requires that all who are associated with the project do their part to control erosion. County regulations require builders/architects to incorporate temporary erosion control measures into their building plans to address the ongoing runoff pollution generated by land development

This pamphlet is intended to provide property owners with simple to follow guidelines for developing and implementing erosion and sediment control plans for their site.

What is erosion?

Generally speaking, erosion is a process where rain runoff causes soil to be carried away. Generally it's a natural process that takes place slowly over time. However, development and construction has lead to increased erosion rates throughout the County.

Why is erosion a problem?

Soils particles from erosion are deposited in streams and other bodies of water (wetlands, lakes, etc.). This can lead to problems such as destruction of fish habitat, degradation of drinking water supplies, clogged drainage facilities, road washouts, landslides and increased flood hazards.

What if I decide to ignore potential erosion problems?

By ignoring erosion issues, you are essentially passing the problem on to downslope or downstream property owners. This can lead to disputes between property owners as well as damage to adjacent properties.

The County of Santa Cruz's *Erosion Control Ordinance* (Section 16.22) requires erosion and sediment control measures to be in place from October 15th to April 15th each year. If erosion and sediment control measures are not in place during this timeframe, your project may be stopped until the problems are rectified. In some cases, fines are levied against property owners.

What can I do to control erosion on my property?

Follow the simple guidelines outlined in the following pages.

If done correctly, a little time and effort (and minimal costs) can go a long way to keep your project moving during the winter without impacting your neighbors or the community.

EROSION AND SEDIMENT CONTROL BASICS

There are four basic principles to controlling erosion. Your site needs to implement all four of these principles to effectively control erosion.

- Erosion Control Measures
  Erosion control measures are intended to keep the soil on your site in place. The thing to remember is that **the more bare soils that are on your site – the more problems you will have.** Think of erosion control measures as the first line of defense.

- Sediment Control Measures
  Sediment control measures are basically the second line of defense. If the erosion control measures are not fully functioning, the **sediment control measures are intended to capture onsite erosion and keep it from leaving the site.**

- Runoff (drainage) Control
  Since erosion is caused primarily by water, **control of stormwater is essential to preventing erosion**. For instance, it's not good practice to convey your stormwater to an area of bare soils.

- Maintenance
  Controlling erosion can be more of an art than a science. Therefore, one of the best things that you can do is **check on what you installed when it rains**. That way you will know what is working and what needs to be enhanced. It's also a good idea to always keep a few extra erosion control supplies handy to make adjustments if necessary.

Specific details of the above concepts are given on the following pages

DETAILS

Erosion Control Measures

The County of Santa Cruz recommends the following onsite erosion control measures (remember the underlying concept is to vegetate / cover bare soils):

1. Limit vegetation removal to the extent possible

2. Seed bare soils and cover with 2"-4" of straw

   - In the winter season, a simple, effective and inexpensive seed mix is "annual winter barley." Winter barley grows well in cold conditions and doesn't re-seed itself every year.

   - In general, **the County of Santa Cruz does not recommend the popular "Santa Cruz Erosion Control Mix".** While this mix does do a good job of preventing erosion, it's basically an invasive weed mix that can be hard to control once your project is completed.

   - Please note that on steeper slopes (especially fill slopes), seed and straw alone may not be effective.

   - **If your site is located in sensitive habitat**, check with a biologist prior to placing seed to make sure it's appropriate for the site.

Picture1. Effective use of seed and straw

3. Place erosion control blankets on slopes

   - Erosion control blankets are generally intended for steeper slopes.

- Seed mix should be applied on the slope prior to placing the erosion control blankets.

Picture 2. Effective use of erosion control blankets placed on a steep slope. Seed was spread prior to placing the blankets.

Picture 3. 45 days later.

Sediment Control Measures

The County of Santa Cruz recommends the following onsite sediment control measures (remember the underlying concept is to capture sediment that was not controlled by the measures listed above):

1. Straw Rolls (also called fiber rolls, coir rolls, or wattles)

    - Straw rolls can be used on slopes, at the bottom of slopes (see Picture 1, above) or around drainage devices (such as catch basins). If placed on slopes, the straw rolls should be placed along the contour of the land. Straw rolls should also be placed in a small trench (2”-4” deep) and staked to the ground.

2. Silt Fence

    - Silt fences are generally used at the bottom of slopes as a means to capture sediment. They should never be used on slopes and are not really effective as protection around storm drains. Silt fences when not installed correctly can actually concentrate drainage and create more problems. Their stakes break easily when sediment builds up and therefore the stakes may need reinforcement (such as rebar, attachment to a fence, or placement of straw bales behind the silt fence).

Picture 4. Use of straw rolls on a slope with a silt fence at the bottom of the slope. Note: This slope has also been seeded, and the steeper portions have been covered with erosion control blankets.

Picture 5. Use of silt fencing and straw rolls for sediment protection of the adjacent lake.

3. Gravel Bags

- Gravel bags are essentially sand bags filled with drain rock rather than sand. They can be an effective way to protect storm drain inlets. Filling the bags with drain rock rather than sand allows water to filter through without creating a dam.

Picture 6. Use of gravel bags for protection of drainage inlets.

4. Rocked Construction Entrance and Rocked Access Areas

   - Rocked construction entrances are used to keep sediment from being tracked onto adjacent roads. They are generally 30'-50' long, 12' wide and consist of large rock (3"-6").

   - Rocked access areas should be used to keep construction vehicles off of bare soils.

Picture 7. Rocked Construction Entrance.

Picture 8. Rocked Access Road.

Runoff (Drainage) Control Measures

The County of Santa Cruz Planning Department recommends the following for controlling runoff on your site.

1. Disperse Drainage in Vegetated Areas

   - Vegetated areas are generally less erosive than areas with bare soils. Where possible try to capture or divert runoff to avoid newly disturbed areas.

2. Disperse Drainage in Numerous Locations

   - Development of parcels changes pre-development runoff patterns. **One of the worst things you can do is to concentrate all of your drainage to one location.** When sites are developed, rainwater is captured and / or diverted to areas that are different from before construction began. Therefore areas of the site may see more runoff after construction than the soil is accustomed to and increased erosion may be the result.

3. Keep drainage away from fill slopes

- Fill slopes are generally more erosive than cut slopes. Concentrated runoff should never be allowed to flow over a fill slope. If there is no other option, try to break up drainage so it sheet flows over the fill slope.

Picture 7. Result of concentrated water flowing over a fill slope.

Picture 8. Result of concentrated water flowing over a fill slope.

4. Use water bars, rolling dips or curbs to breakup drainage along roads or driveways

   - Water bars are basically speed bumps (4”-6” in height) made with soil or baserock that are placed across the driveway at an angle to direct drainage. Rolling dips are shallow swales that are cut across the driveway.

5. Install Energy Dissipators

   - An energy dissipator is a structure designed to control erosion at the outlet of a pipe, conduit or channel by reducing the velocity of flow and dissipating the energy. Outlet protection helps to prevent scour and to minimize the potential for downstream erosion.

Picture 9. Rock Energy Dissipator.

Maintenance

The County of Santa Cruz Planning Department recommends the following for maintenance of your erosion, sediment and runoff control measures on your site.

1. Check on the performance of what you installed whiles it's raining

2. Keep extra supplies on hand

    - It's a good idea to keep some extra seed, straw rolls, silt fence and erosion control blankets in a dry location.

3. Remove silt that has built up behind straw rolls and silt fencing, as well as around drainage inlets.

Picture 10. Silt fencing that needs a little bit of maintenance.

Picture 11. Silt fencing that needs a lot of maintenance.

EROSION CONTROL PLANS

All grading plans submitted to the County must include an erosion control plan. The plan must include the following information (at a minimum):

- Proposed locations of erosion, sediment and runoff control measures
- Details of erosion, sediment and runoff control measures
- Re-vegetation / seeding notes
- Notes stating that the erosion control plan must be in place from October 15 through April 15 of each year

Erosion Control plans do not have to be prepared by a civil engineer, but they should be developed by someone with experience in erosion and sediment control. There are also several Certified Professionals in Erosion and Sediment Control (CPESCs) in the County who can help you to prepare an effective plan. A list of local CPESCs is available on the Planning Department's website.

For more information, go to the websites listed below or visit the Planning Department at 701 Ocean Street, 4th Floor, from 8am-noon Monday through Friday and ask to speak to an Environmental Planner.

REFERENCE MATERIAL

For more information on developing an erosion control plan see the following websites:

- California Stormwater BMP Handbook for Construction Activities
  www.cabmphandbooks.org

- Caltrans Website
  http://www.dot.ca.gov/hq/construc/stormwater/stormwater1.htm

LOCAL RETAILERS*

- Aptos Landscape Supply
  5025 Freedom Blvd, Aptos, 688-6211

- Graniterock
  303 Coral Street, Santa Cruz, 471-3400

- General Feed and Seed
  1900 Commercial Way, Santa Cruz, 476-5344

- Hansen's Feed
  2901 Freedom Blvd., Watsonville, 722-1144

- Lumberman's
  235 River Street, Santa Cruz, 423-0223

- Scotts Valley Sprinkler & Pipe Supply,
  5010 Scotts Valley Drive, Scotts Valley, 438-6450
  131 Walker Street, Watsonville, 728-0446

- Tri-County Landscape Supply
  71 Elkhorn Road, Watsonville, 728-0111

- United Rentals
  1835 Soquel Drive, Santa Cruz, 475-2125

* If you are a local retailer and would like to be on this list or future lists, please email your contact information to pln953@co.santa-cruz.ca.us