BE PREPARED!

Sebastopol Building and Safety Department
7425 Bodega Av. Sebastopol, CA 95472
707 823 8597
www.ci.sebastopol.ca.us
City Departments/Building & Safety

HOMEOWNERS GUIDE FOR FLOOD, DEBRIS FLOW, AND EROSION CONTROL

HOW STORMS CAN EFFECT YOUR PROPERTY

UNPROTECTED HOMES

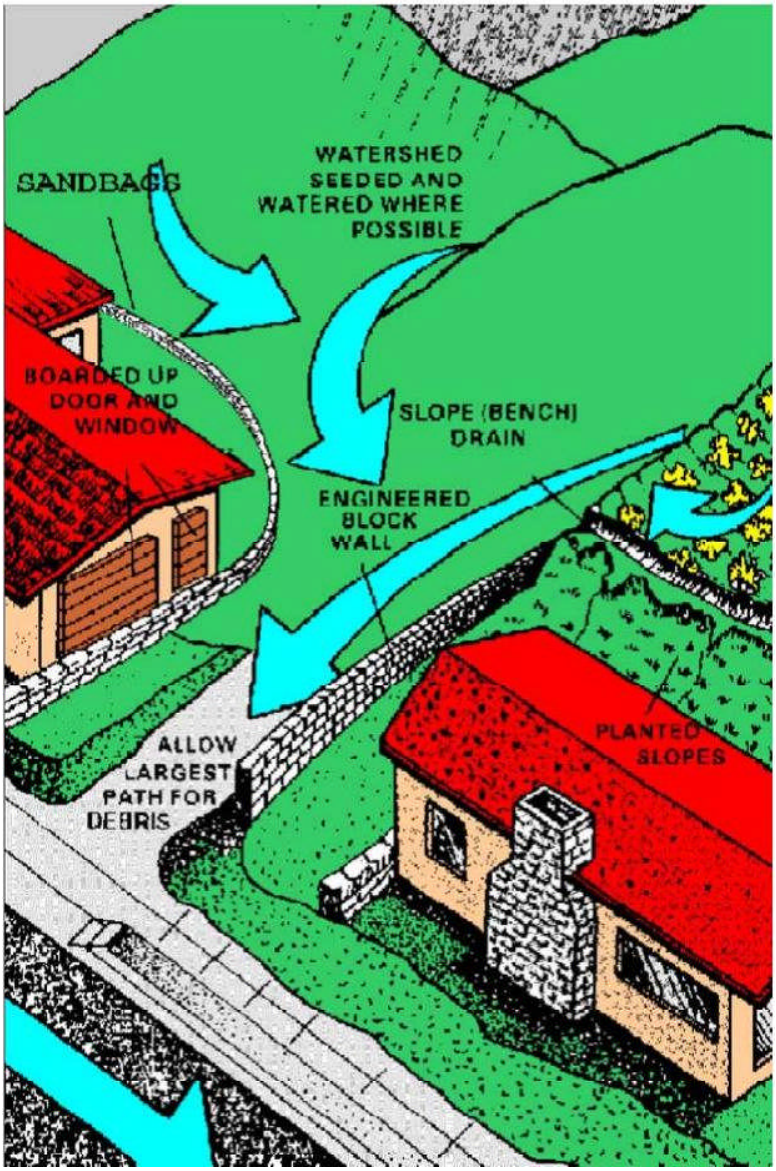
RAIN STORMS

Heavy and sustained rainfall from winter storms cause millions and, at times, billions of dollars in property damage annually. Planning and preparing against these disastrous effects, especially in hillside areas, can reduce or eliminate damage to homes and property.

This pamphlet provides homeowners and residents some useful methods for controlling the damage possible from such storms.

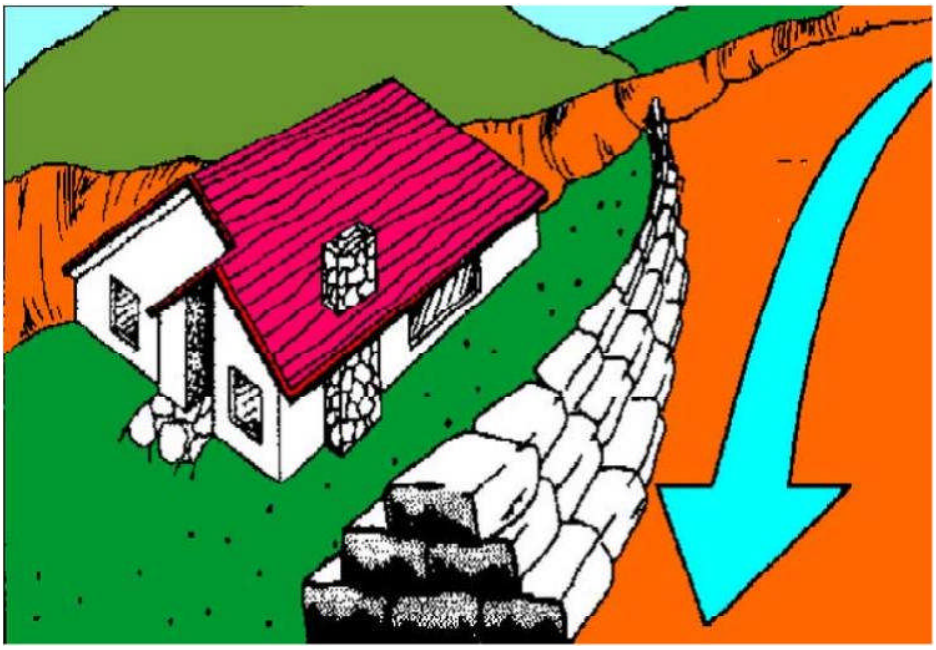
POTENTIAL FOR DESTRUCTION

Rain falling on barren or sparsely planted slopes has great destructive potential. When rain strikes a bare slope it washes and carries off the soil surface with the runoff. This erosive effect becomes destructive as the soil surface becomes saturated and the flow increases in volume and velocity. Generated mud and debris flows scour and gouge out the slope creating deep furrows in its surface. Under prolonged rainfall, the slope may even become saturated resulting in a slope failure or landslide.



HOMES PROTECTED FROM MAJOR DAMAGE

Mud and debris flows not only damage slopes, but also have sufficient momentum to damage structures in their path, at times resulting in severe injuries and fatalities to building occupants. Mud and debris flows consist of mud, brush, and trees that are moved by storm water. These flows may range in degree of severity from small mud slides to large landslides moving with destructive force down to the bottom of the slope. In either case this is of serious consequence to the property owner.

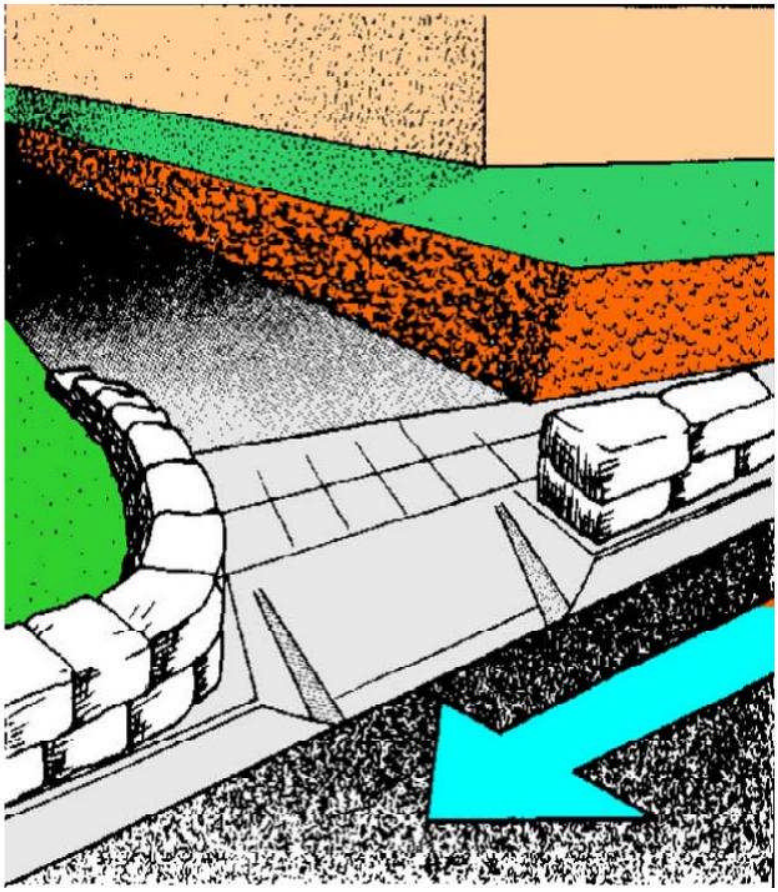


MUD AND DEBRIS FLOW DIVERTED BYSANDBAGS

HOW TO PREPARE

Early planning and continued maintenance reduce the damaging effects of storms. As the rainy season approaches, serious consideration should be given to determining what problems might arise and what procedures will be required to meet them. Once the mud and debris flows start it's too late to plan for protection; put your plans into action when weather reports predict storms.

Adequate tools such as shovels, picks, sledge hammers, and ordinary garden and carpentry tools should be handy to get to. Construction materials consisting of plastic sheeting, burlap bags (locations where sand and sandbags can be obtained are listed on pages 13-16), sand, lumber, plywood need to be stored, and flashlights, lanterns, work clothes and rain gear should be readily available. While preparation can be as simple as a few well-placed sandbags and some plastic sheeting, having these supplies available now means less time in getting ready and more time for installing temporary protection devices.



USE SANDBAGS TO DIVERT FLOWS BUT DO NOT USE THEM TO ACT AS A DAM

Sandbags can effectively and inexpensively control mud-flow. They are made of materials readily available from your local building materials supply yard, and are easily installed using household or garden tools. Properly placed sandbags re-direct storm and debris flow away from improvements. Sandbagging is most effective in diverting flows and should not be used as a dam to contain mud-flows. Large slope areas are especially prone to failure during and after prolonged rainfalls. The use of plastic sheeting provides an excellent method of temporarily protecting these and other problem slopes from saturation during storms.

Both sandbags and plastic sheeting are, as they imply, temporary devices. These materials, inexpensive and easy to work with, are not durable and will quickly deteriorate over time. In areas where erosion or mud slides are a re-occurring problem, permanent structures or devices need to be considered. Consulting with a design professional and your local nursery can result in effective and attractive long term debris and erosion control. Be sure to check with your local Building and Safety office for any permit and code requirements, especially when earth retaining structures are planned.

WHEN THE STORM IS UPON YOU

The following recommendations can greatly help reduce the damaging effects of an imminent storm. Please review these carefully now, as you may not have time when the storm is approaching.

PLASTIC SHEETING

Spread plastic sheeting across the slope and use stakes at the corners to secure it to the slope. Drive stakes along the edge at 10 to 12 foot intervals (steeper slopes may require closer spacing). Tie ropes to the stakes across the slope face and attach sandbags or old tires to the ropes to hold the plastic in place (see figure 5). On very steep slopes the plastic should be anchored at the top and secured at the bottom by placing weights on the corners. Make sure the plastic is not punctured or torn.

Make sure that water running off the plastic sheeting is directed to the street or other non-erosive device such as a paved terrace drain, driveway, or walkway. Avoid any concentration of flow onto the slopes that would cause erosion.

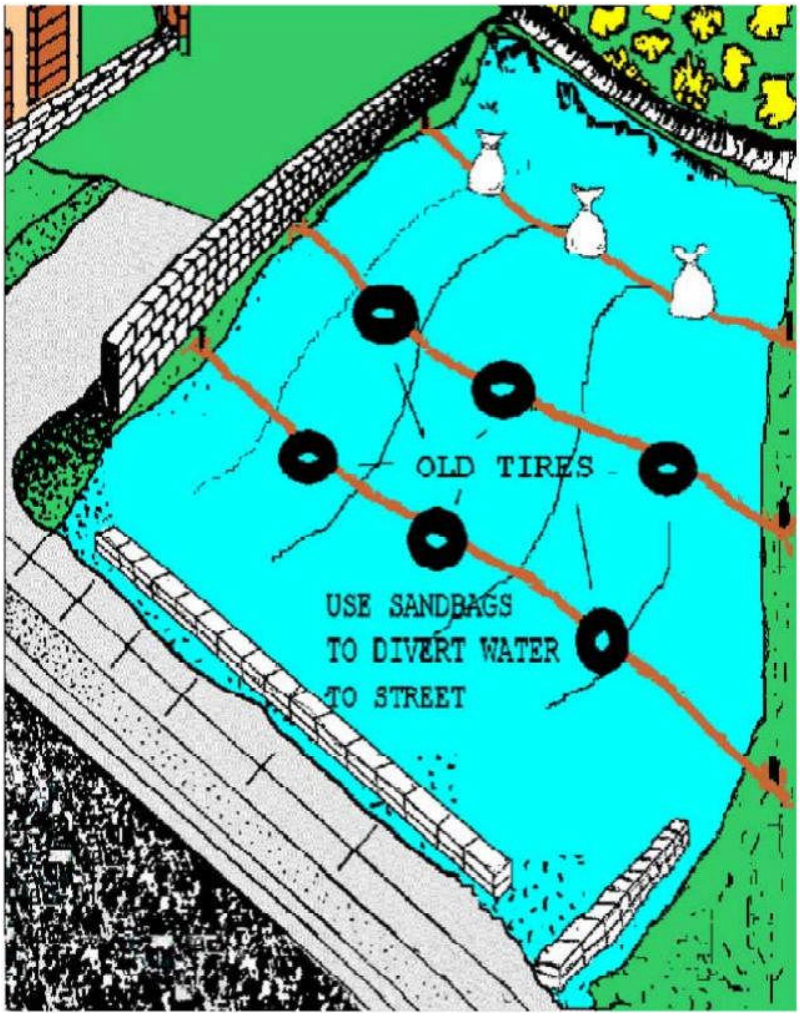


Figure 5

SAND BAGS

Sand bags should be used to divert flows away from improvements and onto the street or a natural watercourse by creating a channel or path for debris. Between storms be sure to remove any residual debris and/or silt from these channels to prevent dangerous build-up. Remember, the purpose of sandbagging is to divert debris flows, not to act as a dam. Improperly placed sand bags may cause more damage than if they had not been used at all.

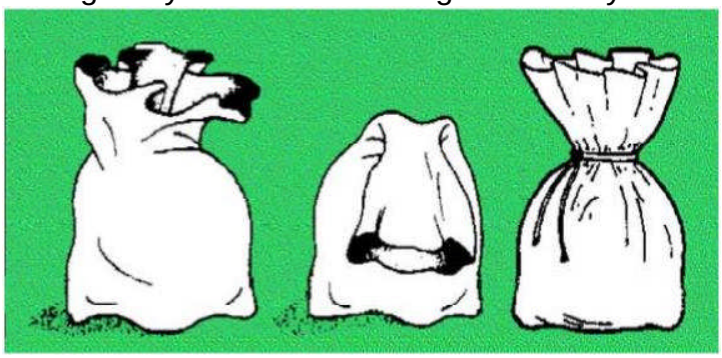


Figure 6

Fill sand bags with common construction or playground sand. If sand is not available, local soil may be used. Care should be taken that only loose topsoil is used. Do not dig into a hillside as this may cause more problems than it will prevent. Fill the sand bags half full, gather the top and tie with heavy string or cord (figure 6). If string is not available, carefully fold the top over (figure 6). In either case the opening in the flap should be in the direction of flow (figure 7).

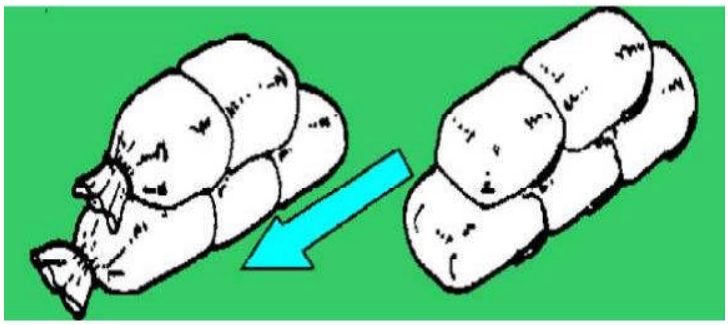


Figure 7

Lay the sand bags so that each course overlaps the previous one and stamp down firmly into place before laying the next course. Stack the sand bags no more than three courses high. You may stack higher if the base is at least as many bags wide as it is high (figure 8).

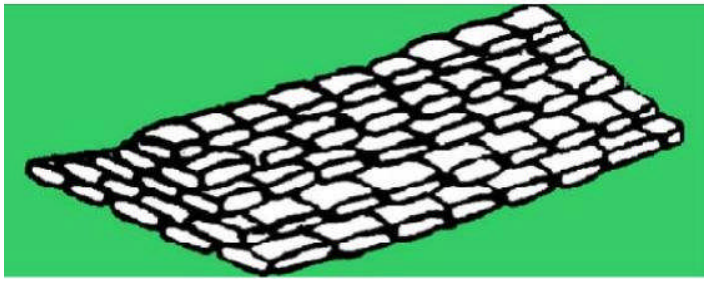


Figure 8

PLYWOOD

Plywood placed over doors and windows is an effective way of preventing mud and debris from entering through these openings (see figure 10). By placing plastic sheeting against the opening before covering with plywood, water intrusion can be further reduced. You may use inexpensive plywood at least 3/8" thick and overlap the door or window several inches. Stack sandbags or use 2"x4" braces against the plywood to secure it.

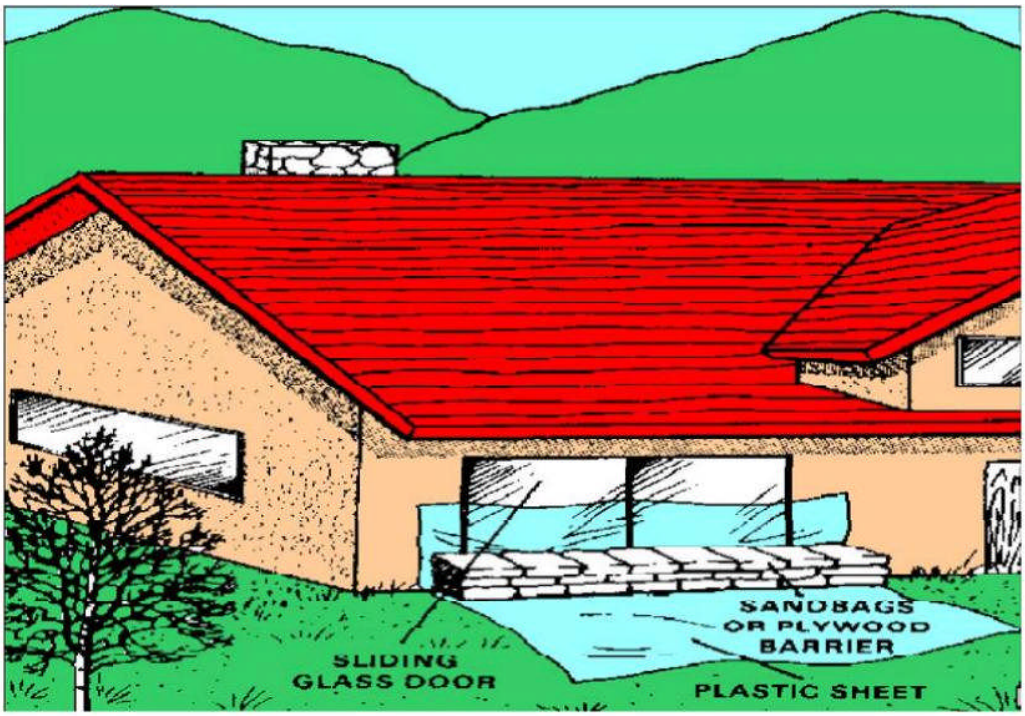


Figure 9

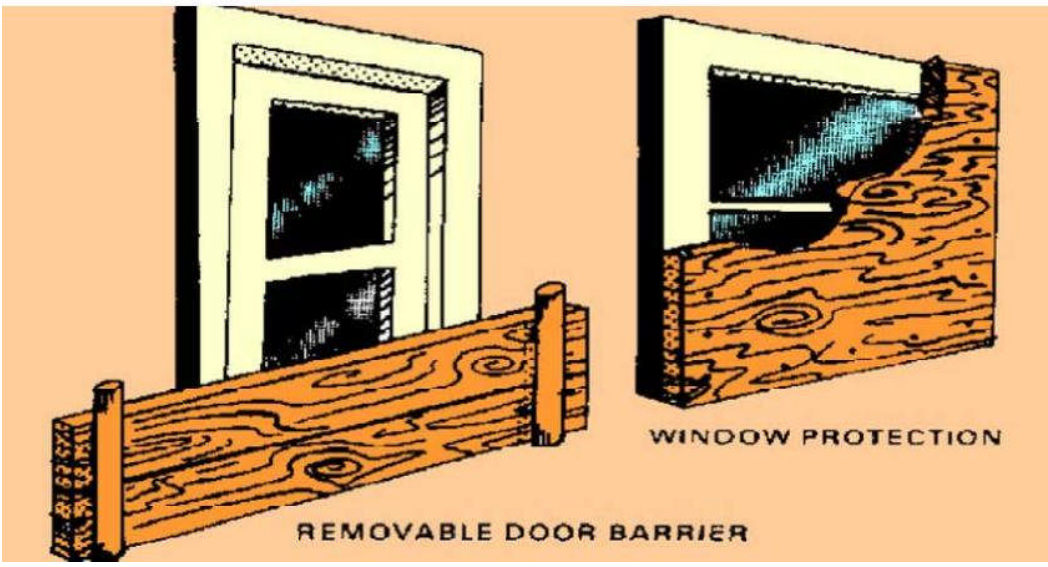


Figure 10

AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE.

This old adage certainly applies here. Practicing the following recommendations can save you considerable expense and grief.

PLANTING FOR SLOPE PROTECTION

After the rainy season, fire resistive plants should be planted. The purpose of this re-planting is to protect slopes and watershed areas to prevent or minimize damage from erosion. In areas where controlled planting exists, the damage from erosion tends to be relatively small.

Fire resistive plants that are hardy and drought resistant, with a good root structure are the best choice for ground cover plants to limit erosion. These include grasses or other ground cover, evergreen shrubs, and trees.

After a fire the remaining ash can contribute to the regrowth of plants as long as it's not too thick. Rake the ash and soil together 2-3 inches in depth and water it thoroughly before replanting. Water lightly twice or three times daily until the ground cover is established.

Your local Fire Department will sometimes use a chemical called Borate to extinguish fires. This chemical is usually dropped from the air by helicopter or airplane onto the fire below. If borate was used to extinguish the fire, the soil may be sterile and unable to support plant growth for up to 3 years. All visible borate should be removed. Consult with a landscaper or nursery on how to treat the soil to revitalize it.

Plant growth for erosion resistance takes time to stabilize the soil. Some degree of surface stability can be achieved before and during plant growth by any of the following methods:

STRAW MULCH - Straw applied thickly to the soil surface after seed planting, can be punched in or covered with chicken wire to prevent its being blown away. This will hold the soil surface and moisture for the germinating seeds.

JUTE MATTING - Heavy woven jute mesh can be rolled over the slope face and staked or stapled to the ground. When properly installed, after planting, the jute will not be blown or washed away and will not interfere with plant growth as it slowly decomposes, gradually being replaced by grasses and plants.

HYDRO-MULCH - This mixture of fibrous material, fertilizer, bonding agent and seed is blown on under pressure onto slopes to create an erosion resistant surface that both plants and stabilizes. The application of hydro-mulch is available only through commercial outlets.

IRRIGATION OF SLOPES

Slope irrigation is as important to slope stability as planting. Sustained moisture is absolutely necessary in order for seeds to germinate and to maintain healthy plants. An effective method of irrigation should be provided. Watering can be as simple and portable as a hose connected from the garden faucet to a board with sprinkler heads mounted to it, or as complex as a buried pipe irrigation system. No satisfactory ground cover can be grown without watering and the weather cannot be depended on for irrigation.

Do not over water the ground cover before it has been fully established. This could cause the soil to erode and carry away the germinating seeds. If automatic or timer activated irrigation is used, it should be monitored closely during the rainy season (October 1-April 15). The combination of normal irrigation and heavy storms can erode a slope to the point that no amount of planting can resist.

MAINTENANCE

The owner of a hillside property is responsible for maintaining all yard and slope areas. Maintenance is of greatest importance during the period between a destructive summer fire and the rainy season. Every effort should be made to restore damaged hillside ground cover in order to stabilize the property through the rainy season.

The owner or person responsible for maintaining the yard areas, should periodically inspect the slopes for potential failures. While this is especially true just prior to the rainy season, checking earlier in the year will allow time for improvements or repairs. The following recommendations may prevent slope failure during heavy rains:

1. Make sure all drainage is directed to the street or other water course by approved devices, such as drainage channels, ground gutters, paved swales, or yard or area drains.

2. Check all drainage devices and remove any accumulated dirt and debris. In some areas, drainage devices may cross property lines or be in what is considered common areas. Don't let conditions on your property create a problem for those next to you. Cooperate with your neighbors and work together to prevent problems for both of you.

3. Catch basins, grates and underground drainage piping are frequently blocked by silt, weeds and debris. Inspect and clean them regularly to make sure they are free flowing.

4. Roof gutters and down spouts may become damaged or clogged with leaves, twigs and silt. Inspect and clean them to ensure that they are free flowing. If your roof shows signs of wear, have it checked by a licensed roofing contractor. Do not allow the down spouts to discharge directly onto the soil, use splash stones, driveways or walkways to divert runoff to the street or other watercourse.

5. Concrete swales around the perimeter of a structure, are designed to direct water away from it. Make sure that they are not cracked or broken to the point that they loose their effectiveness. Keep them clean and repair any fractures that may allow water to penetrate them.

6. Building sites that were developed since the mid-fifties have berms of densely compacted earth at the top of slopes to prevent water from running over the slope. Make sure that these are maintained in good condition.

7. Check slopes for large amounts of loose soil, rocks, brush, or debris and remove any that may become dislodged during storms. Loose brush can act as a dam for silt. During storms it can wash down slopes causing damage or blocking drainage devices. If the brush is firmly rooted, it should be allowed to remain until after the rainy season which will help support the soil.

8. Large rocks and boulders may become loose during storms. Consult with a licensed Geologist or Soils Engineer in order to determine the best method for correcting this condition.

9. Don't let water run wild. During heavy rains and storms, inspect the slope for erosion and correct any problems immediately. If unusual cracks, settling, or earth slippage start, don't wait, act immediately.

10. Inspect any retaining walls that may effect your property. If there is any listing, leaning, overturning, or cracking, contact a licensed engineer immediately.

When landscaping, avoid disrupting the flow patterns established when your property was originally developed. When in doubt, consult a licensed Geologist or Soils Engineer.

For further questions regarding these or other related matters, please feel free to call the Department of Building and Safety at: **707 823 8597**

Local Radio Station **KRSO 1350 AM**

Local TV Station **TV 50**

Sonoma County Fire and Emergency Services Department

2300 County Center Drive Suite 221A Santa Rosa, CA, 95403

(707) 565-1152

http://www.sonoma-county.org/des/index.htm

FIRE STATION LOCATION

7425 Bodega Avenue

707 823 8061

http://ci.sebastopol.ca.us/
City Services/Fire Department

PUBLIC WORKS SAND BAGS

During the storm season, the Public Works Department also offers free sand and sandbags. Individuals may pick up sand and sandbags at the Bureau of Street Services locations listed below. Please note that residents must fill the sandbags themselves. Shovels will be available at the yard. The maximum number of bags per resident is 25 bags at the yards.

WHERE SAND AND SANDBAGS ARE AVAILABLE

Corporation Yard

714 Johnson Street

To report storm-related emergencies such as trees down, landslides, road erosion and downed power lines please call **911**

REDUCE THE CHANCE OF FLOODING IN YOUR NEIGHBORHOOD

Even in the best of weather, **urban runoff pollution** is a major threat to the health of our local rivers and bays. But in stormy weather, the threat increases over a million fold.

Urban runoff pollution is all the materials that flow from our yards and streets into the catch basins at the end of the block, and from there directly to local bays through local channels and underground drains designed to carry storm water quickly and safely out of our neighborhoods.

Urban runoff pollution can include: all litter and trash; pet droppings; chemicals dripped and spilled from our vehicles; chemicals like fertilizers and pesticides washed from our lawns; chemicals (like motor oil) deliberately dumped in storm drains—in short, anything on the street.

In dry weather, as much as *100 million gallons* of water runs through the storm drains and into the bay— water from lawn overwatering, from washing cars, from construction sites, from industrial discharges, etc.— carrying with it urban runoff pollution. These pollutants can linger in the storm drains, attracting vermin and smelling up the neighborhood. When flushed through, they cover our beaches, can make human beachgoers sick, and can harm or kill the creatures that live in our bays.

Wet weather compounds the situation, because *billions of gallons* can run through the storm drains in a single storm. Heavy rains sweep everything before them; sometimes clogging storm drains with debris, causing neighborhood flooding, or carrying pollution to the Russian River and San Francisco Bay.

Here are the best ways to keep urban runoff pollution from clogging our storm drains and flooding our neighborhoods. In the hours before a storm arrives:

1. Pick up all litter and loose objects in your yard and on your property. Anything loose can be washed away. This includes yard clippings, branches, etc., that can clog storm drains. Dispose of yard clippings in your green container.
2. Check your own yard drains to make sure they aren't clogged. If they are, clean them and properly dispose of the debris. Also, look at the catch basin at the end of your street. If it's clogged, report it to the City at 707 823 5331**.**
3. Sweep all dirt from driveways and walkways and throw it in the black trash containers. Even dirt is a pollutant when carried into the bay. Never hose down sidewalks or walkways.
4. Don't fertilize or use pesticides on your lawn and garden before a storm. These chemicals are washed off the lawn into the street and storm drains.
5. Don't store paints or any other toxic chemicals outdoors. Only store them in containers with tight- fitting lids.
6. Always clean up pet waste and flush it down the toilet, or throw it, wrapped, in the black container.

PETS AND DISASTERS

People cannot prevent a disaster from occurring but they can reduce the impact of a disaster on their pets. Pet owners are responsible for their pets before, during and after a disaster. Pets are completely dependent on their owners for their survival and well being. To assure that their needs are met pet owners should have an emergency response plan. Readily accessible kits with provisions for family members and pets are a must. The following information has been compiled to help pet owners prepare:

*Keep current identification on your dog or cat. If your pet can't wear an I.D. then label their containers and cages.
*Take current color photos of your pet(s) showing any special markings and keep them with your emergency supplies.
*If you are certain a disaster is going to occur, control your animal with a leash or carrier.
* Ask a neighbor to care for your pet in your absence.
* If you need to evacuate, take your pet with you if possible
*Predetermine a safe place for your animal to stay during a crisis. Most evacuation shelters will not accept animals, except service animals.
*Contact the Sebastopol Police Department to find out their available services during a disaster. They may provide temporary sheltering for pets and they have plans for livestock evacuation.

You should have adequate supplies for your pet readily available such as:

* Portable carrier
* Pet food in plastic bottles
* Medications
* Health records
* Leashes
* food/water bowls
* litter and litter box for cats
* first aid kit with manual for animal care
* special instructions for diet or feeding

Animal Services

Information:

Sebastopol Police Department

6850 Laguna Park Way

707 823 4400

Animal Control

County of Sonoma Animal Care and Control

1247 Century Court

Santa Rosa, CA 95403-1043

707 565 7100

Sonoma Humane Society

5345 California 12

Santa Rosa, CA

707 542 0882

FLOOD HAZARD AND
FLOOD PROTECTION INFORMATION

Free Flood Information: The City of Sebastopol provides free flood zone information. Copies of the Federal Emergency Management Agency Flood Insurance Rate Maps are available for review at the Sonoma County Library Sebastopol Branch and the Sebastopol Building and Safety Department.

This information is also available to you directly through the Internet at: http://msc.fema.gov

Investigation of Drainage Deficiencies: Request a drainage investigation when the water in the streets overtops the curb by calling 823 5331

Clogged Catch Basins: Report clogged catch basins to the Public Works Department 823 5331

Before You Build in the Floodplain: All new development and construction in the floodplain is regulated and requires a special review before a building permit is issued. Contact the Floodplain Manager at 823 8597 during the planning stages to inquire about the regulations applicable to your project. Suspected illegal floodplain development can be reported at the same number.

Flood Protection Library: Additional information regarding flood protection, floodplain management and the National Flood Insurance Program (NFIP) can be found through the FEMA website at http://www.fema.gov/business/nfip or at the City's Library.

NFIP Phone Numbers: General Information - (800) 427-4661
Looking for a Flood Insurance Agent? - (800) 720-1093

FloodSmart

Phone: 800-611-6122
TTY: 800-427-5593
Fax: 202-646-2818

The Sebastopol Community Emergency Response Team (CERT) Program

The Sebastopol Community Emergency Response Team Program educates people about disaster preparedness for hazards that may impact our area, trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, law enforcement, communication, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional first responders are not immediately available. CERT members are also encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community.

The Sebastopol CERT training will benefit any citizen who participates. This individual will be better prepared to respond to and cope with the aftermath of a disaster. The CERT program promotes a partnering effort between emergency services and the people they serve.

The CERT Certification Series for Sebastopol is presented in eight classes, with classes lasting 2 ½ hours. This training includes the following:

- FIRE SAFETY
- DISASTER MEDICAL 1 & 2
- LIGHT SEARCH AND RESCUE
- TEAM ORGANIZATION
- LAW ENFORCEMENT
- COMMUNICATIONS
- REVIEW & DISASTER exercise

For more information on CERT and disaster preparedness:

Visit the Website under City Departments/Fire:

www.ci.sebastopol.ca.us

CALL: 707 823 8061

NOTES