

The Monthly Dirt

October & November 2017

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

After the Fire

Last season's record rainfall caused abundant vegetation growth, on top of trees stressed by years of drought, led to another record - the "worst fire disaster in California's history" according to FEMA, the Federal Emergency Management Agency. The "October Fire Siege," as Cal Fire has dubbed the event, included 250 wildfires. At the peak of the wildfires, there were 21 major wildfires which, in total, burned over 245,000 acres, involved 11,000 firefighters, and forced 100,000 people to evacuate. In October, an estimated 6,900 structures were destroyed, and sadly, 42 lives were lost in the infernos. According to Cal Fire, 2017 was one of the worst fire seasons California has seen in many years. This year alone, California had 8,176 fires burn a total of 1,079,569 acres. But now with the fires mostly out, the long and arduous task of restoration and rebuilding starts. This includes preparing for the rainy season that is about to swing into action. WGR was recently called on to assist with developing erosion and sediment control plans for fire damage in Yuba County's Cascade Fire. In this edition of the **Monthly Dirt**, we want to share some of the important factors to consider when responding to burned areas.

Property owners and municipalities may be concerned about what might happen to fire damaged soils, slopes, and waters when the rains begin to fall. They may also wonder what can be done now to minimize the effects of erosion processes before any storm events. Still others are questioning whether or not to remove fire damaged or destroyed trees and other vegetation now or to wait. If you are concerned about the possibility of erosion, mudslides, flooding and/or other related rain impacts following the fire, then following the **10 Basic Rules** below may help you prepare and safeguard property and persons during storm water runoff events.¹

- 1. Keep it under cover.** Protect existing plant cover and establish vegetative cover on all bare or disturbed soil and slopes around your property before the winter rains. Plant materials and different types of mulches can be used to protect soil and slopes from the impact of falling rain and storm water runoff. *Note: Seeding and/or mulching is not recommended in wild land areas, only on disturbed soils on fire breaks, around structures, and alongside access roads and driveways. Grass and/or plantings should be native or non-invasive non-native plant materials.*
- 2. Do not disturb soil and slopes during the rainy season.** Slopes and soil are more susceptible to instability and erosion when vegetation is removed or disturbed and when soil becomes saturated.
- 3. Storm water conveyances, swales, ditches, roadways, long driveways, and even fire breaks, especially in fire damaged areas, need to be evaluated.** Runoff control measures including protective release points may be needed to protect down slope areas from erosion, slope failure and flood hazards. Use the following **4-D** formula when dealing with drainage and runoff issues.
 - Decrease** volumes and/or velocity of runoff by providing velocity dissipation (rock or other prepared outlets) at culvert and drain outlets and breaking up large volumes of runoff coming from roof tops and landscape into smaller less erosive forms.
 - Detain** runoff and meter it over time or store for later use to lessen impact on saturated soil and slopes during peak storm events (*also known as hydromodification.*)
 - Dissipate** runoff wherever concentrated flows encounter bare soil and/or steep slopes by installing practices (grass, mulch, rock aprons, etc.) that spread runoff and help reduce both erosive capacity of soil and runoff volumes. Install velocity dissipaters at all culvert and drain outlets to prevent soil erosion.
 - Divert** runoff if all else fails. Use this "D" with extreme caution. It may be helpful to re-route runoff and drainage away from unstable slopes, eroded areas, unprotected soil, etc.; but it can also cause other problems.
- 4. Monitor and maintain all existing and planned runoff, erosion and sediment control measures** (including vegetative cover) before and throughout the rainy

¹ Information extracted from the United States Department of Agriculture, Natural Resource Conservation Service's flyer "After the Fire: Post Fire Restoration – Preparing for Winter following Fire", California 2017

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- (For more information about these classes, please email jteravskis@wgr-sw.com)

- season. Correct deficiencies as soon as possible. In some areas, leaf litter may be a serious problem for roof, driveway and landscape drainage systems because of all the fire and heat damage done to the tree vegetation this year. Properly designed and installed trash racks, debris barriers, gutter guards and other similar devices will help to reduce maintenance and allow home and property drainage systems to function properly.
5. Use emergency/temporary practices such as sand bags, brush & slash, plastic sheeting, and hand dug drainage ditches, etc. **with extreme caution or don't use at all.** Do not install without professional guidance. For example: covering slopes with plastic sheeting or dumping brush into gullies or other eroded areas is **almost always the wrong thing to do.** An improperly designed and/or placed emergency practice can be worse than no practice at all. Additionally, emergency measures may cause new hazards
 6. **Prune or remove high hazard fire damaged trees capable of falling** onto structures or roads before winter storms. *Note: Don't remove healthy or slightly damaged trees unnecessarily. Tree root systems are still holding soil and slopes in place and tree cover is protecting soil from impact of falling rain as well as reducing winter runoff. Consult with Cal Fire and/or a registered professional forester for assistance.*
 7. There is an **increased threat of rock fall** in some areas because of damage to vegetation and shallow rocky soils and slopes in affected watersheds. Debris barriers are effective in capturing smaller rocks, but larger rocks will require more substantial measures. If there is a threat of large rocks releasing from slopes on your property, seek professional assistance.
 8. **Get professional help** with design and installation of any temporary or permanent practices to control runoff and/or prevent an erosion problem.
 9. **Work with neighboring property owners when determining permanent solutions** for drainage and runoff issues. Runoff normally extends beyond property lines.
 10. **Be prepared and don't stay in your home when it becomes unsafe.** Have a home and neighborhood evacuation plan. Have an emergency plan for your pets and livestock as well. Stock pile emergency supplies including sandbags, a supply of sand, straw, etc. Pay close attention to weather forecasts, flash flood and storm warnings, water levels in nearby creeks throughout the winter. Evacuation plans should always include at least one alternative escape route and a list of important/emergency numbers.

Our thoughts and prayers go out to those who lost loved ones and homes in the 2017 fires. We also thank the many emergency workers and Public Works Departments who risked their lives and sacrificed to respond to the fires. - MD

Hydrophobic Soils²

In severe, slow-moving fires, the combustion of vegetative materials creates a gas that penetrates the soil profile. As the soil cools, this gas condenses and forms a waxy coating. This causes the soil to repel water – a phenomena called hydrophobicity. This hydrophobic condition increases the rate of water runoff. Percolation of water into the soil is reduced, making it difficult for seeds to germinate and for the roots of surviving plants to obtain moisture. Hydrophobic soils do not form in every instance. Factors contributing to their formation are: a thick layer of litter before the fire; a severe slow-moving surface and crown fire; and coarse textured soils such as sand or decomposed granite. (Finely textured soils such as clay are less prone to hydrophobicity.) The hydrophobic layer can vary in thickness. There is a simple test to determine if this water repellent layer is present:

1. Place a drop of water on the exposed soil surface and wait a few moments. If the water beads up and does not penetrate the soil is hydrophobic.
2. Repeat this test several times, but each time remove a one-inch thick layer of the soil profile. Breaking this water repellent layer is essential for successful re-establishment of plants. But many believe that it is best for it to happen naturally through freezing and thawing, and insect and animal activity.

² Material from the Colorado State University Extension, Soil Erosion Control after Wildfire, Fact Sheet No. 6.308, article by R. Moench and J. Fusaro, revised Jan. 2012

Need an Erosion Control Plan?

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Please contact us if you have any questions ...

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Call ...

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NRCS is a non-regulatory federal agency under the U. S. Department of Agriculture whose mission is to “Help People Help the Land”. The agency was formed more than 80 years ago with the help of landowners. All services are provided, free of charge, through a mutual agreement with the RCD. Additionally, all information provided or resource data collected on private properties by NRCS is kept confidential and only shared with the property owner or legal agent unless NRCS has written permission, by the property owner, to release the information to others.



Contact Information

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Napa Resource Conservation District
Leigh Sharp
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leigh@naparcd.org



DO: Consult with the Natural Resources Conservation Service (NRCS) and the Napa Resource Conservation District (RCD) and/or a private land restoration consultant before starting any landscape, slope or soil restoration effort on areas damaged by wild fire.

DO: Gather as much information as possible from Cal Fire, U.S. Forest Service, local fire district officials, Fire Safe Councils, NRCS, RCD, and/or local fire restoration consultants regarding reducing fire hazard and making your property fire safe when planning your property restoration.

DO: Evaluate and map out locations of existing and/or pre-fire subsurface drainage, irrigation and utility facilities on your property, including under-ground pipe drains and outlets; roof runoff/gutter drain outlets; culverts; irrigation systems; utilities, etc. Determine if still operable and/or degree of damage, if any.

Note: Many underground plastic drains and irrigation lines may have melted or otherwise been destroyed in the fire or by fire-fighting equipment.

DO: Install sediment control measures, such as straw wattles, mulching, plantings, slash, sediment traps and/or other properly designed and located sediment control measures, if necessary, and as directed by NRCS, RCD or other resource restoration specialist, such as a Certified Professional in Erosion and Sediment Control (CPESC).

Note: Sediment control measures will help to prevent eroded and displaced soil from entering streams, roadside ditches and waterways, and help protect water quality and water supplies. Consult with licensed landscape contractors or other licensed contractors with erosion and sediment control experience for design and installation assistance.

DO: Coordinate and plan restoration efforts with neighbors and/or road and neighborhood associations.

DO: Re-plant damaged landscapes with drought tolerant, fire retardant native plants with re-sprouting ability. Use planting stock and/or seed that are native to the area and is from a locally collected source. Consult with NRCS/RCD for a list of plants to consider.

DO: Obtain any necessary permits before cutting down trees, performing any major land grading activity, building any retaining wall, constructing a permanent sediment or erosion control structure, or doing any work in a riparian area, wetland, stream course or other natural area.

Note: Permits and/or consultations may be needed from the County of Napa, California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, California Regional Water Quality Control Board, U.S. Army Corp of Engineers, and NOAA/National Marine Fisheries Service.

DO: Monitor and maintain fire and fuel breaks that may have been created by fire fighters on your property. Water bars/ breaks should be provided and maintained on these fire control measures so that runoff water does not concentrate and cause erosion. Consult with Cal Fire regarding maintenance assistance of fire and fuel breaks constructed by fire fighters on your property during the Fire.

DO: Monitor and maintain all existing and planned erosion, sediment, and drainage control measures, including vegetative treatments, before during and after all future rainfall events. Correct deficiencies as soon as possible.

Note: One of the main reasons why recommended treatment practices fail following installation is the lack of long term maintenance by the landowner or responsible party.

DO: Hire and/or consult with licensed contractors, preferably ones that are certified and/or experience in soil erosion and sediment control, for design and installation assistance of vegetative and structural measures needed to restore slopes, soils, proper drainage conditions and landscape.

Dos and Don'ts

DON'T

DON'T: Be too quick to remove fire damaged vegetation, including trees that were not completely burned. Many of the damaged and scorched native plants will re-sprout and come back, including oak trees that were severely burned.

Note: Consider pruning first before removing the entire plant.

DON'T: Place loose debris, pruning's, discarded fire-damaged vegetation in gullies, drainage swales or watercourses, over stream banks, etc. in an attempt to protect bare soil without first consulting with NRCS. Piles of brush will prevent plants from reestablishing under dense brush piles and may dislodge if in contact with concentrated runoff or stream flows causing other problems.

Note: Removed brush can sometimes be used as mulch if chipped or spread thinly over the critical soil areas.

DON'T: Plant Erosion Control Seed Mixes. These mixes are likely to contain non-native mix of grasses and legumes or California natives that are indigenous to other areas of the state and/or are not intended for wild land or fire damaged soil/slope restoration. Don't plant other non-native, invasive plants or grasses, such as annual ryegrass as well.

Note: In some situations bare and disturbed soil and slopes can be re-seeded/re-planted with native grasses and plants but only if the seed and plant materials are from local known sources and indigenous to the area that needs treatment. Other native grasses and plants may discourage local natives from reestablishing on their own, and/or compete with, and/or slow down native re-establishment. If white ash is present, then resident seed from pre-existing native plants may no longer exist. White ash is an indicator that the fire burned very hot. Any resident seed bank in the soil was likely killed during the fire in these white ash areas. Re-seeding these areas to native grasses and/or re-planting with native plants of the same genotype, according to a re-vegetation plan developed by an experienced fire ecologist/native plant specialist, may be a good idea.

DON'T: Use materials such as broken asphalt or concrete, inorganic debris or other objects as an emergency or permanent erosion control measure, especially if these materials can come in contact with runoff water, natural drainages and stream courses.

Note: In some cases, rock and broken concrete can be used as velocity dissipaters and placed at the outlets of road culverts or other drains to protect the soil from erosion and washout, provided these dissipaters are designed by an appropriate professional.

DON'T: Cover fire damaged slopes with plastic sheeting in an attempt to prevent slope failure and protect bare or disturbed soil from next year's rainfall. Plastic sheeting will: increase runoff and the likelihood of erosion; retain moisture in the ground increasing the possibility of slope saturation and instability; and kills root systems of native plants trying to re-establish naturally. Plastic sheeting is almost always the wrong thing to do.

Note: Depending on site conditions, an alternative to plastic sheeting might be the use of hydro-mulch, a proper application of rice straw, or an erosion control blanket if recommended by a Certified Professional Erosion and Sediment Control (CPESC) or geo-technical consultant.

DON'T: Control and concentrate future property drainage and runoff without a proper drainage control design that considers proper drainage facility sizing, location, and dispersion method. Whenever possible keep surface runoff in natural "sheet" flow and incorporate practices such as vegetative cover to slow runoff and improve the water infiltration capacity of the soil.

Note: Consult with NRCS/RCD for general planning information on controlling drainage around your home and property before proceeding with drainage repairs and improvements following fire damage. For design and installation assistance contact a landscape contractor experienced in erosion and drainage control.

DON'T: Use straw bales (in whole bale form) as water diversion and detention devices or for sediment control in burn areas. Contrary to popular belief and use these devices require a great deal of maintenance and are not right for most situations. Their design, location, and installation should only be done by a qualified contractor certified in erosion and sediment control. Straw wattles and loose straw that is simply spread over bare and disturbed soil is much more effective in protecting soil than keeping it in bale form.

Note: Rice or weed-free straw should only be used to prevent the possibility of nonnative grasses and weeds, contained in straw bales, from colonizing treatment areas.

DON'T: Disturb the hydrophobic soil layer that forms on some soils following fire on slopes susceptible to land sliding. Hydrophobicity is a natural phenomenon that actually gives the soil a water repellent ability that reduces infiltration and the capacity of the soil to hold water. The hydrophobic layer is normally found within 6 inches of the surface. In other areas, it may be advisable to break up this layer to aid in plant establishment and water infiltration lessening the impacts of runoff and erosion. For more information on soil hydrophobicity and/or an on-site soil evaluation and site assessment contact NRCS.

DON'T: Disturb potentially unstable slopes, especially those in fault areas and/or with signs of previous movement or known historic instability. Disturbances such as grading, cutting, removing trees root wads or other deep excavations will increase the likelihood of future slope failure.

Note: If these slope alternations are absolutely necessary, then consult with a registered geologist or geo-technical expert before slope disturbance/restoration activity.

DON'T: Do anything. This may be the best solution on some properties. Doing nothing will allow nature and time to heal soil and vegetation damage naturally, especially in wild land and other natural areas. In fact, tampering with natural processes may very well delay natural recovery and re-establishment of pre-existing native cover.

DON'T: Do what your neighbor's doing. Every situation is unique whether or not the neighbor had expert advice or not before installing temporary or permanent land and water protection measures. Your property is different in many regards including soil type, slopes, drainage conditions, type and condition of plant cover, degree of fire damage, etc. Get expert advice and a site damage assessment, including treatment recommendations, from NRCS before proceeding with your property restoration efforts.

Note: Practices such as sandbags, plastic, straw bale basins and check dams, etc. are all temporary and require a great deal maintenance. Furthermore, they are not right for every situation and can actually make problems worse or create new ones.

DON'T: Wait until the last minute to plan, design and install erosion, sediment or drainage control practices that may be necessary to safeguard your home and property before next winter.

Note: The nature and extent of your restoration effort will depend on the degree of damage; time needed to get a site assessment; acquiring an appropriate plan and design; securing any necessary permits; lining up a contractor and doing the work.



Have an on-site assessment of fire damage done to your property by NRCS or another qualified fire restoration specialist that is certified in soil erosion and sediment control.

This information sheet was developed by Rich Casale, Certified Professional in Erosion and Sediment Control #3, USDA Natural Resources Conservation Service.

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WHAT IS THE EMERGENCY WATERSHED PROTECTION PROGRAM?

The Emergency Watershed Protection Program, EWP, was created by Congress to respond to emergencies caused by natural disasters. The program is designed to help people reduce imminent hazards to life and property caused by floods, fire, drought, earthquakes, windstorms and other natural disasters.

The purpose of the EWP program is to help communities with a common problem. It is generally not an individual assistance



program. All projects undertaken must be sponsored by a political subdivision of the State such as a city, county, or a flood control district.

The USDA Natural Resources Conservation Service (NRCS) is responsible for administering the program.

WHAT KIND OF ASSISTANCE IS AVAILABLE?

There are two types of assistance available:

Exigency – An imminent threat to life and property exists and requires immediate federal action. Work must generally be completed within 10 days of accessing the site in order to protect life and property.

Non-Exigency – A situation where the threat to life and property is high enough to constitute an emergency, but the situation is not considered urgent and compelling. Work in this category does not require immediate action, but should be completed as soon as possible (within 220 days from starting work).

NRCS can pay up to 75 percent of emergency measures. The remaining 25 percent comes from local sources and can be in the form of cash, in-kind services or a combination of both.

WHAT ARE THE CRITERIA FOR ASSISTANCE?

All EWP work must reduce threats to life and property. Work must be economically and environmentally defensible and sound from an engineering standpoint.

EWP work must yield benefits to more than one person. All work must represent the least expensive environmentally sound alternative.

WHO IS ELIGIBLE?

Public and private landowners are eligible for assistance but must be represented by a project sponsor. The project sponsor must be a public agency of a state, county, or city government, or a special district.

WHAT DOES THE SPONSOR HAVE TO DO?

Sponsors are responsible for providing landrights to do repair work and for securing all necessary permits.

Sponsors are also responsible for furnishing the local cost share and for implementation of work. The work can be done either through local contracts administered by the sponsor, or the sponsor can use their own equipment and personnel. If sponsors do not have capability to do the work by either of these options, work can also be done by Federal Contract.

For projects where the sponsors or their consultants prepare designs and contract documents, these documents shall be provided to NRCS for review and approval prior to advertising for bids or starting work. Technical assistance costs born by the sponsor for design and/or inspection will be compensated as an “in-kind service” toward 25 percent cost share as defined in the project agreement.



NRCS will not allow work to be done in streams outside the time limits specified in the necessary permits.

WHAT KIND OF WORK CAN BE DONE?

EWP work is not limited exclusively to any one set of prescribed measures. A case-by-case investigation of the needed work is made by NRCS. EWP work can generally include:

- debris removal from stream channels, road culverts and bridge abutments;
- reshaping and protection of eroding banks;
- correction of damaged drainage facilities;
- repair of levees and structures;
- reseedling of damaged areas.



WHAT EWP CANNOT DO

EWP funds cannot be used to solve problems that existed before the disaster. Nor can they be used to improve the level of protection above that which existed prior to the disaster.

EWP cannot fund operation and maintenance work or repair private or public transportation facilities or utilities.

EWP work cannot adversely affect downstream water rights and EWP funds cannot be used to install measures not essential to the reduction of hazards. In addition, EWP funds cannot be used to perform work on measures installed by another federal agency.



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