

Federal Interagency and Tribal Lands Suppression Repair Plan

SQF Complex

CA-SQF-002622

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1.0 - INTRODUCTION

Purpose and Need - The suppression of the SQF Complex involved the clearing of vegetation and the disturbance of soil across the landscape. There is a need to protect those damaged areas and retain soil and vegetation productivity through repair of fire lines and other infrastructure damaged in the fire suppression activities.

Goal - Protect land and resource values of the public and private lands where suppression activities have taken place.

Objectives - The objective of the fire suppression repair plan is to place areas disturbed by fire suppression activities into a condition that will not negatively affect natural and cultural resources and will not contribute to excessive erosion on the landscape. This is to be done in a manner which does not compromise public and firefighter safety. The objectives are as follows:

- Reduce the potential for soil erosion and sedimentation.
- Reduce the visual impacts of fire line, as well as, other suppression activities, when feasible.
- Repair roads and drainage structures to a functioning condition.
- Reduce the risk of high-intensity roadside ignitions and to leave clean, functional fuelbreaks.
- Protect natural and cultural resources from additional potential damage.
- Reduce potential use of fire lines as OHV routes.

Responsibility - The Incident Management Team is responsible for starting the process and for implementing some of the suppression repair activities as listed in the “General Repair Guideline”, “Site Specific Guidelines”, and other sections detailed in this document. It is understood that some of the repair needs listed may not begin until deemed safe to do so by the IMT.

Fire suppression repairs for the SQF Complex will occur on fire lines, dozer lines, hand lines, drop points, heli-spots, sling sites, stream crossings, roads, water drafting locations, and at all facilities used by suppression resources where suppression damage occurred. Resource advisors (READs/REAFs) will add additional site-specific fire suppression impacts identified during the repair process to this plan as addendums. The current IMT is responsible for implementing repairs on those identified areas. If there is a decision to transfer command to another IMT before all suppressions repair items are completed, this Fire Suppression Repair document will guide the new IMT. READs will inspect all repairs to ensure they meet the stated objectives and conform to the below guidelines. READs will work with the division(s) responsible for suppression repair to ensure implementation meets expectations and specifications outlined in this document.

Plan Success: The suppression repair plan is implemented successfully when the repairs mentioned below and attached to this document are completed. A READ will approve all the completion of the repairs. READs will maintain a map of all needed repair items and will track completion of items.

2.0 - GENERAL REPAIR GUIDELINES

The below descriptions are guidelines for the repair of fire suppression damage. The guidelines are provided to direct repair work and provide a framework for such work. The plan recognizes that not all

situations are covered under this guidance and that site-specific conditions will require good judgment and common sense to prevail in instances where these guidelines are not appropriate. Take particular care not to damaged live trees during suppression repair. **Generally, dozer lines require excavators for suppression repair and hand lines require hand tools.** If the general repair needs discussed below are not adequate, then READs will develop specific guidelines for those areas. Site specific guidance is detailed in **Section 4.X** and attached addendums.

2.1 – FIRE LINE

2.1.1 - Pulling Back of Soil

- **Restore natural contour.**
- **SOIL MATERIAL:** Remove all berms present from line construction, where feasible, and spread across the constructed line. Removing berms will allow water to flow off the fire line as well as redistributing topsoil across the fire line for vegetative recovery.
- If sensitive resources are at risk, consider the of placement additional soil cover, vegetative materials, or erosion control materials including, but not limited to, weed-free rice or wheat straw, wood shreds, wood strands, hydromulch, or erosion control blankets.

2.1.2 - Installation of Waterbars¹

Construct waterbars when natural contour cannot be reconstructed and slope exceeds 5% for dozer lines and hand lines.

The three objectives of waterbars are: (1) to divert the overland flow of water off the fire line; (2) to discharge the overland flow onto areas where the erosive energy can be dissipated; and (3) to aid in the recovery of vegetation. The last objective will be achieved if erosion is prevented on the fire line surface. Waterbars are designed to intercept slopes, slow, and spread the precipitation run-off. The idea is to move water off the fire line before it can build up enough energy to erode soil and transport sediment. Use an excavator to construct waterbars along dozer line and construct waterbars along hand lines using hand tools.

SPACING: Use the following spacing distances as a guide. Use judgment in locating waterbars to minimize erosion potential.

Fire line Gradient (% slope)	Distance Between Waterbars (^A) (feet)
5 to 15	75-125
15 to 35	75 to 45
35 to 65	35 to 20
65+ ⁽²⁾	15 ⁽²⁾

DOZERLINES - As a rule, cut waterbars six inches into compact soil. The total height from bottom of the waterbar to the top of the waterbar should average at least 18 inches and **not exceed 24 inches.**

¹These are guidelines and are not intended to restrict the implementation of more or less waterbars if the need or lack of need is justified.

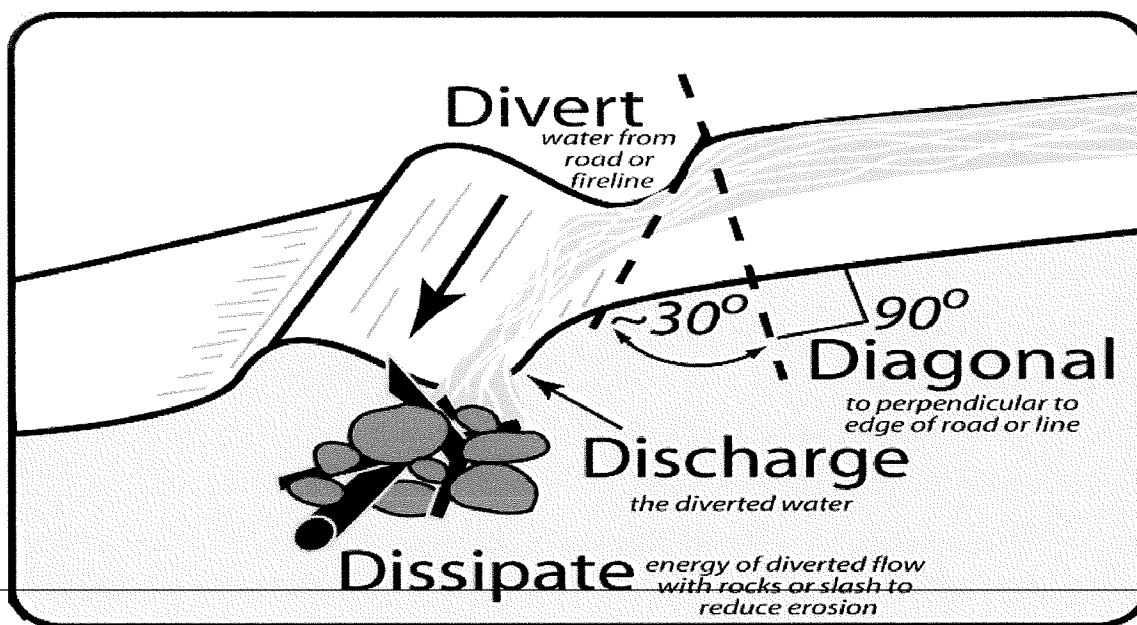
²Firefighter safety should be considered, if slopes are too steep for safe implementation then waterbars should not be constructed if sensitive resources are not present.

HANDLINES – As a general rule cut waterbars at least four inches into compact soil. Total height from bottom of ditch to top of waterbar should average at least eight inches and not exceed 12 inches.

OUTLETS - Water should be **directed primarily to unburned areas** and/or resistant surfaces with high vegetation cover when possible. Waterbars should discharge into undisturbed areas and preferably rocky ground or filter areas well protected with ground and vegetative cover, whether rocks or organic materials. Waterbars should not direct water into stream channels.

WIDTH – The waterbar channel should be enough to handle expected water flows and to avoid plugging when a normal amount of sloughing or sediment movement occurs

ANGLE: Place waterbars at an angle relative to the fire line. The angle should be **between 30 to 45 degrees**. Angle is important, if the angle is too shallow, the water will slow down and deposit the sediment it carries in the waterbar making it ineffective. If the angle is too steep, water will continue at high velocity and be able to erode and carry additional sediment where it exits the waterbar.



2.1.3 - Block Entrance and Exit

- Attempt to conceal or hide the entrance and exit using the landscape and available materials.
- To prevent access to Off Highway Vehicles (OHV) where fire lines intersect roads or trails block these intersections with large rocks, large trees, or walls of brush.

2.1.4 - Fire Line that has been Burned Over

A READ may specify special treatments such as, but not limited to, the following:

- Placing additional soil cover, vegetative materials, or erosion control materials including weed-free rice or wheat straw, wood shreds, wood strands, hydromulch, or erosion control blankets.
- Use an excavator to de-compact the fire line. Use an excavator with a toothed bucket to create a pattern of small swales and mounds on the fire line, essentially breaking up the fire line into very

small, hydrologically disconnected segments. These disconnected segments will store overland flow and will allow water to collect enough energy to become erosive.

A READ may also determine that no treatment is needed depending on slope, cover, and/or location to sensitive areas.

2.2 – HELI-SPOTS, DROP ZONES, SLING SITES, AND MEDI-VAC SITES

Use standards similar to fire line repair to repair these fire suppression activity areas. If available, use cleared vegetative material for soil cover. Place waterbars where appropriate.

2.3 – LINE IN OR THROUGH WATERCOURSES

Remove deposited soil from streams, watercourses, swales, or draws back to the original contour.

Remove only as much as feasible without further damage to the watercourse. Restore bank channels at fire line crossings back to the shape seen adjacent to the crossing. Pull soil removed from drainage edges and spread it evenly across the fire line.

- Do not remove large woody debris that was in the channel prior to the fire. Remove bucked limbs and logs in watercourses from fire suppression activities from the watercourse.
- Pull back brush and soil to provide cover and “hide” handline where fire lines are constructed within 100 feet of intermittent and perennial streams. If necessary, use certified weed free straw, wood strands, or slash to increase soil cover and prevent sediment from entering the stream channel.
- Report any major damage to streams from fire line construction to READs who will evaluate for site specific recommendations.

2.4 – WATER DRAFTING SITES

Restore water sources used or developed as draft sites to original condition. Remove any dams, embankments, or other impoundments created for fire suppression activities. Backhaul any trash.

2.5 - CONCENTRATIONS OF SLASH

Concentrations of slash created by fire suppression activities along commonly used areas such as roadways, developed recreation areas, and structures should be chipped and spread across the landscape.

Chip piles should not exceed six inches in depth. Lop and scatter concentrations of slash not to exceed 18 inches in height.

2.6 - ROADS

Road repair should follow the existing design of the road prism. Each road should be evaluated to determine how it should be drained. Some sections only require the outside berm to be broken while others may require rolling dips be installed. Rolling dips are only effective on slopes less than 10%. Steeper sections of road should either be outsloped or drivable water bars installed.

- Clean culverts plugged with soil and rock resulting from road use by fire suppression.
- Remove all slash and debris created by fire suppression from culvert inlets and outlets.
- Clean and grade ditch lines, rolling dips, and lead off ditches to repair function.
- Repair damage to gates, cattle guards, and culverts. Remove soil pushed into cattle guards.
- Grade roads to drain freely. Grade within the existing roadbed. Restore the structure of the roadbed by watering, grading, and re-compacting.
- Lop and scatter vegetative material cut and deposited adjacent to roads to 18” of the soil surface.

- Do not stack debris in cultural sites
- Close all unauthorized routes/roads opened for suppression activities. Place rocks or logs to disguise the entrance to prevent unauthorized OHV.
- Other suppression repair may include repairs to pavement, culverts, road signs, guard rails, and other facilities directly impacted by suppression activities.

2.7 - TREE DISPOSAL FROM DOZER-LINES AND ROADSIDE HAZARD MITIGATION

Reduce fuel loadings along access roads accessible dozer-lines and cleared areas following suppression activities.

- Fallen trees will be yarded and decked.
- Do not stockpile fuels against standing live or dead trees.
- Locate decks in disturbed areas where trees can be safely processed.
- Use low impact machinery on improved surfaces.
- Locations for roadside hazard tree and fire line tree disposal will be determined by assigned Resource Advisors or agency personnel.
- The locations will be recorded on the Suppression Repair Map, which will be provided to the assigned Equipment Managers and equipment operators completing this work.

Do not enter known archeological sites with heavy equipment or skid logs across arch sites.

- Felled trees within arch sites must be left in place unless they can be removed without skidding (i.e. full suspension).
- Where it is feasible, equipment can reach into an arch site and pluck the tree (or portion of a tree) up without skidding.
- If it is necessary for equipment to pass through a known site, raise the blade or other attachments while within the site boundaries.

2.8 - LITTER, TRASH, AND FLAGGING REMOVAL

Remove all litter, trash, and flagging from all suppression activity areas; this includes micro-trash. This is an important function to ensure visual quality as well as land stewardship in the completion of fire suppression activities. Signs and location flagging can remain until fire suppression damage repair is complete. All equipment and supplies remaining on the fire line should be removed and returned to Supply.

2.9- OTHER SUPPRESSION DAMAGE REPAIR NEEDS

- Repair fences, gates, and cattle guards so they are functional. These repairs must be related to suppression fire activities. **Note current damage should be rust free.**
- Fell hazard trees only if they pose a safety threat to the public. Division Group Supervisor or Felling Boss will identify and mark hazard trees.

3.0 - WILDERNESS AND WILDERNESS STUDY AREA (WSA) GUIDELINES

Areas of fire suppression in wilderness and WSAs will follow many of the *General Repair Guidelines* previously discussed, but with an emphasis on restoring wilderness aesthetics and characteristics. One way to think of this is to “make it look like we were never there.” Non-mechanical uses will be required

to repair wilderness. An exception to this is if chainsaw use was authorized in wilderness areas. For WSAs, Verify with the appropriate land manager before use of equipment.

To accomplish repair in wilderness and WSAs the follow guidelines are to be followed.

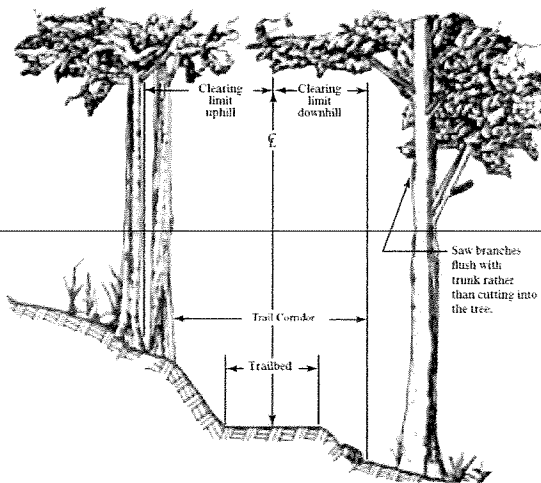
3.1 – FIRE LINE

Primarily this is for indirect line or where it is “black on both sides” and suppression repair does not compromise fire containment.

- Disguise entrances and exit points of fire line by using available vegetation. If vegetation is not present, use down litter, limbs, rocks, and or sticks. If there is nothing to disguise the trail, use a rake or similar tool to “comb over” the trail and recontour. The purpose is to not confuse users of the system trails into thinking a fire line is another system trail.
- Disguise the fire line by raking and/or pulling back native materials.
- Flush cut tree stumps as much as possible.

3.1.1 – System Trails as Fire Line

- Flush cut exposed stumps and camouflage the ends with soil and vegetation (if available).
- Place all cut limbs & seedlings alongside trail, near their source if possible, with the cut ends facing away from the trail.
- Camouflage and block entrances to non-system trails and switchback short cuts used as handline.
- Retrieve and remove all litter, flagging, tools, etc.
- Rebuild any trail features such as, but not limited to, switchbacks, retaining walls, signs, culverts, ditches, and puncheons, impacted by use.
- Ensure all equipment, supplies, trash, flagging, etc. are removed.
- Return trail back to standards width and grade. See guidelines below.



Trail bed width is 3 feet wide

- Remove obstacles, such as rocks or fallen trees, from the Trail bed and place outside of the Trail Corridor to make it possible to ride or walk on the tread.
- If a trail crosses riparian vegetation adjacent to streams and meadows, do not cut/remove any ground vegetation. Pruning branches hanging over the Trail bed and Trail Corridor is okay.

Trail Corridor is 8 ft wide by 10 ft high (Saw cut 4ft from both sides of Trail bed).

- Clear brush to the ground and scatter pieces outside of the Trail Corridor
- Remove fallen trees
- If rounds are created, place outside of Trail Corridor and

hidden from view as best as possible. Do NOT roll rounds down into drainages.

- Sawed ends of down trees that remain along the edge of the Trail Corridor need to cut at varying angles for wilderness aesthetics and rubbed with dirt to remove that “fresh” saw cut.
- For live trees on the outside of the corridor, but with branches hanging into the trail corridor.
- Saw branches flush with trunk rather than cutting into the tree (see figure above)

- Remove hazardous trees, if safe to do so, that are hanging over/within the trail corridor.

3.2 - SLING SITES/LANDING ZONES/MEDEVAC SITES

- Remove all equipment, flagging, glow sticks, hose, and trash.
- Remove wind direction indicators.
- Flush cut all stumps and cover.
- Hide cut rounds, cut green trees, and cut brush.

3.3 - SPIKE CAMPS

- Backhaul supplies and trash from spike camp.
- Rehab camp location by disguising tent sites and the kitchen area(s) with forest litter/debris.
- Filling and disguising latrine hole and scattering the seating structure.
- Remove all flagging.
- Berms will be pulled or raked back into the site.
- Vegetation will be pulled or raked back into the site.
- Any cut vegetative will be lopped and scattered over the cleared areas to reduce erosion
- Thoroughly policing the area for any remaining micro-trash.

4.0 - SITE SPECIFIC REPAIR GUIDELINES

Site specific repair guidelines are in addition to the previous sections. Additions will be submitted as on-the-ground assessments and future fire suppression activities are completed and cataloged.

4.1 - SENSITIVE AREAS (NATURAL AND CULTURAL RESOURCES)

All “**at risk**” sensitive natural and cultural resource areas are flagged in **one blue and one red flagging (this may vary, Division will verify actual flagging used with READs prior to initiation of repair)**. Site specific damage repair prescriptions will be developed between the IMT and READs. Avoid causing additional ground disturbance. Mechanical equipment may walk through site upon approval by a READ. Impacted sites will be reported to the IMT and READs as soon as possible and work in the immediate area will stop until a READ can access the damage. Work can continue in non-sensitive areas. **If identified sites are encroached upon, work will stop immediately and the Division Supervisor, and READ will be notified.**

5.0 - ADDITIONAL SITES AS DETERMINED

Additional sites will be determined for site specific repair as surveys of the fire line and suppression damage are completed by FOBSs and READs.