ARCADIA FIRE DEPARTMENT
STANDARD OPERATING GUIDELINE

GRASS FIRE OPERATIONS

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PURPOSE

This shall serve as an operational guide for all Arcadia Fire Department members in fire operations involving Grass or Brush.

RESPONSIBILITY

This guide shall apply to all members while operating at the scene of a Grass or Brush fire. This guideline shall also be used in accordance with Arcadia Fire Department Standard Operating Guideline # 101, *Personal Protective Equipment.*

PROCEDURE

For the purpose of this Guideline, Grass/Brush fire operations shall also be referred as Wildland fire operations.

1. At the time of alarm all members should perform their own size-up, as to time of day, weather conditions, and location of the incident.
2. Company Officers upon arrival shall give a report on conditions (Size-up) to Verdugo. This Size-up shall include:
    - Location of the incident.
    - Size of the fire in feet or by acres.
    - Type of fuel involved: grass, brush (light, medium, or heavy fuel).
    - Rate of spread (creeping/running) and spread direction (uphill/downhill).
    - Wind speed and direction.
    - Exposures threatened or not threatened.
    - You and your company's actions.
3. Company Officers shall also give Verdugo a follow-up report including the following information:
    - Name the Incident.
    - Identify a Command Post location.
    - Request appropriate resources if incident is outside of Verdugo's automatic aid jurisdiction, resources must be requested through mutual aid (Sierra Madre, L.A. Co Fire, U.S.F.S.)
    - Identify a staging and/or check-in location.

All members shall incorporate LCES (Lookout, Communication, Escape routes, and Safety) into all operations.

Considerations

1. Where the fire is currently, where is the fire going, and where will it be in the next hour?
2. Announce what you see en-route and note size, shape, color, and angle of the smoke column, as it tells you the wind direction and air stability, and hints as to what is burning.

Strategy

1. Assign resources to the most urgent tasks, life safety, and exposure protection.
2. Determine whether to make a direct attack or an indirect attack or a combination of the two.

Direct Attack

1. Used when the fire perimeter is burning at low intensity and fuels are light, allowing for safe operation at the fire edge.
2. Control efforts, including line construction, are done at the fire perimeter, which becomes the control line.
3. Unless special situations dictate otherwise, line construction will start from an anchor point. Keep one foot in the black.
4. Advantages:
    - Safest place to work. Firefighters can usually escape into the burn
    - There is minimal area burned.
    - No additional area is intentionally burned.
    - Full advantage is taken of burn out areas
    - May reduce the possibility of the fire moving into the crowns of the trees or brush.
    - Eliminates the uncertain elements of backfiring.

2. Disadvantages
    - Firefighters can be hampered by heat, smoke and flame.
    - Control lines can be very long and irregular, because the line follows edge of fire.
    - Firefighters may accidentally spread burning materials across line.
    - Doesn't take advantage of natural or existing barriers.
    - Usually more mop up and patrol.

Indirect Attack

1. Use when direct attack is not possible or practical.
2. Fireline is located some distance from fire's edge.
3. Terrain, fuels, fire behavior, and available resources will dictate fireline placement.
4. Burning out of indirect line is handled as a second phase of line construction.

5. Advantages
    - Can locate line along favorable topography
    - Take advantage of natural or existing barriers
    - Firefighters work out of smoke and heat
    - More time to construct line.
    - Allows line to be constructed in lighter fuels
    - May be less danger of slop over
6. Disadvantages
    - More acres will be burned
    - May be dangerous to firefighters, because they are some distance from the fire and can't observe it
    - Fire may cross line before it fires out
    - Burning out may leave unburned islands
    - Brings into play the dangers of backfiring
    - Fails to take advantage of line that has already burned out

Tactical Watch Outs

1. Building fireline downhill
2. Building underslung or mid-slope fireline
3. Building indirect fireline or unburned fuel remains between you and the fire
4. Attempting frontal assault on the fire
5. Terrain and/or fuels make escape to safety zones difficult
6. Small fire emerging into a larger fire or an isolated area of a large fire
7. Suppression resources are fatigued or inadequate
8. Assignment or escape route depends on aircraft support
9. Night-time operations
10. Wildland-Urban interface operations

Equipment Placement

1. Identify escape routes and safety zones
2. Always stay mobile
3. Back equipment in for quick escape
4. Mark entrance to long driveways to show that protection is in place
5. Park in a cleared area.
6. Keep egress route clear
7. Have protection line charged
8. Do not make long hose lays
9. Keep sight contact with all crewmembers

Structure Protection

1. All actions, including LCES, should be based on a fire behavior prediction. Remember to time tag your tactics based on your fire behavior prediction.
2. Structures must be triaged, (Defendable vs. Not Defendable). Defendable is defined as a structure in which your crew and engine will not be affected if the fire makes a significant run on your position.
3. Place companies ahead of where the fire is going.
4. Employ LCES and ensure all members are on the same page.
5. Lay out enough hose to cover the structure, including the roof, park apparatus in a safe location (headed out), leave the engine running.
6. Preventive actions to protect the structure include, but are not limited to; close all doors, drapes, curtains, and garage door. Connect garden hose to engine, ladders to the roof away from the fire. Remove combustible outside objects away from the structure. Leave lights on inside the structure.

Water Usage

1. Utilize class "A" foam, Compressed Air Foam (CAFS) or gels if possible.
2. Let fire burn to the structure that is being protected; apply water to the structure as needed while letting the brush burn itself out.
3. Let fire burn to the control line, utilizing water to prevent the torching of trees and tall brush. Torching can produce large amounts of heat and fire brands, which can hamper fire extinguishment and increase the potential for the fire to spot.
4. Letting the fire burn out at the structure or control line will reduce the amount of mop-up required. A clean burn requires minimal mop-up and less water.

REMEMBER, THERE IS NO VALUE IN WETTING DOWN BRUSH, TREES, AND FIRE RESISTIVE ROOFS AHEAD OF THE FIRE.

The Fire Environment

The Wildland fire environment consists of three major components: Weather, Topography, and Fuels.

1. WEATHER has been described as the most variable of the three.
   - Most severe winds are caused by dry foehn winds (Santa Ana)
   - Thunderheads have the potential to develop strong and erratic winds
   - Temperature has a direct impact on humidity and air movement, and pre-heating of fuels
   - Stable air discourages vertical movement and decreases fire activity
   - Unstable air encourages vertical movement of the air and increases fire activity
   - Perform hourly weather calculations in your assigned operational area

2. TOPOGRAPHY is the most constant of the three major components.
   - Steepness of the slope is the most important factor
   - South and West facing slopes generally have the greatest number of trees, while North slopes typically have heaver fuels, higher fuel moisture, lower fire spread, and fewer fire starts

3. FUELS are the part of the environment that actually carries the fire.
   - Light fuels consist of grasses and weeds
   - Moderate fuels consist of coastal sage scrub
   - Heavy fuels are mixed chaparral
   - Know what the Fine Dead Fuel moisture content is in your assigned operational area

Fuel Moisture is generally considered the most important influence on the flammability of fuels. Live Fuel Moisture content is considered critical at levels of 60 % or below. Fine Dead Fuel Moisture content is considered critical at levels of 6 % or less.

Mop Up

The principles of mop up follow:

1. Start work on each position of line just as soon as possible after line construction and burning out are completed. Treat most threatening situations first.

2. Allow fuel to burn completely if it will do so promptly and safely.

3. On small fires, all fires should be extinguished in the mop up, where quantities of burning material are not so large as to make this impractical.

4. On large fires, completely mop up enough of the area adjacent to the line to be certain no fire can blow, spot, or roll over the fire line under the worst possible conditions.

5. Search for smoldering spot fires.

6. All smoldering material that is not put out with water or dirt should be spread well inside of lines.

7. Eliminate or put into a safe area all less flammable fuels, such as rotten logs and snags that are outside but near the control line.

8. Eliminate all burned trees inside of line that could throw sparks over line or fall over the line. Only qualified personnel shall fell trees.

9. Put all rolling material in a position that it cannot possibly roll across the line.

10. Look for indications of hot spots; swarming gnats, white ash, ground which shows pin holes, and wood boring insects.

11. Use water sparingly, but use enough to do the job. Match the amount of water to the job.
12. Adding Class A foam to water will greatly increase effectiveness in mop up of deep-burning fuels.

Firefighter Safety

Annually and while en-route, review the **TEN STANDARD FIREFIGHTING ORDERS.**

Annually and while en-route, review the **18 WATCH-OUT SITUATIONS.**

Remember that heat is a major safety problem and all personnel should be kept well hydrated. Personnel should have access to drinking water and carry canteens or similar water containers. Sterile water bottles can be cleaned, filled with drinking water, and carried in the brush web gear. Wildland firefighting is a physically demanding operation and members should be fit and prepared mentally for a very hot, fast moving, and dangerous environment.