

Glossary

Aerial Fuels—Standing and supported live and dead forest combustibles not in direct contact with the ground consisting mainly of foliage, twigs, branches, cones, bark, stems, and vines (See Draped Fuels, Ladder Fuels).

Aerial Ignition—Ignition of fuels by dropping incendiary devices or materials from aircraft.

Age of Rough—Time in years since the forest floor was last reduced by fire.

Air Stagnation Advisory (ASA) — A statement issued by a National Weather Service office when atmospheric conditions are stable enough that the *potential* exists for pollutants to accumulate in a given area.

Anemometer—General name for instruments designed to measure windspeed.

Area Ignition—Igniting, throughout an area to be burned, a number of individual fires either simultaneously or in rapid succession and so spaced that they soon influence and support each other to produce a hot, fast-spreading fire throughout the area.

Aspect—Direction toward which a slope faces.

Atmospheric Stability—A measure of the degree to which the atmosphere resists turbulence and vertical motion. In prescribed fire activities the atmosphere is usually described as stable, neutral, or unstable.

Available Fuel—That portion of the total fuel that would actually be consumed under a specific set of burning conditions.

Backing Fire—A fire spreading or set to spread into (against) the wind, or downhill. (See Flanking Fire, Heading Fire).

BEHAVE —A system of interactive computer programs for modeling fuel and fire behavior comprised of two subsystems: BURN and FUEL.

Belt Weather Kit—Belt mounted canvas case with fitted pockets for anemometer, compass, sling psychrometer, slide rule, water bottle, pencils, and book of weather report forms.

Blackline—Preburning of fuels, either adjacent to a control line before igniting the main prescribed fire, or along a roadway as a deterrent to human-caused fires. Blackline denotes a condition in which there is no unburned fine fuel.

Broadcast Burn—Prescribed fire that burns over a designated area, generally in the absence of a merchantable overstory, to consume debris that has not been piled or windrowed.

Brown & Burn—Application of herbicide to desiccate living vegetation prior to burning.

Brownspot Control—A prescribed burn to control a fungal infection (brownspot disease) of longleaf pine in the “grass” (small seedling) stage.

Buildup—Cumulative effects of long-term drying on current fire danger.

Buildup Index (BUI)—A relative number expressing the cumulative effect of daily drying factors and precipitation on fuels with a 10-day timelag constant.

Burning Boss—Person responsible for managing a prescribed fire from ignition through mopup.

Burning Index (BI)—A relative number related to the contribution fire behavior makes to the amount of effort needed to contain a fire within a given fuel type. A doubling of the BI indicates twice the effort will be needed to contain a fire in that fuel type as was previously required.

Category Day—A numerical index related to the ability of the atmosphere to disperse smoke. For example, in South Carolina the current scale, based on Ventilation Factor, ranges from 1 (poor) to 5 (excellent).

Catface—Defect on the surface of a tree resulting from a wound where healing has not re-established the normal cross-section.

Center Firing—A method of broadcast burning in which fire(s) are set in the center of the area to create a convection column with strong surface indrafts. Usually additional fires are then set progressively nearer the outer control lines as the indraft builds up, to draw the flames and smoke toward the center of the burn.

Chain —Unit of measure in land survey equal to 66 feet; 80 chains equal 1 mile.

Clearcutting—Removal of the entire standing, merchantable timber crop.

Cold Front—The leading edge of a mass of air that is colder and drier than the air mass being replaced.

Control Line—Comprehensive term for all constructed or natural fire barriers and treated fire edges used to control a fire.

Convection Column—The rising column of gases, smoke and debris produced by a fire. The column has a strong vertical component indicating that buoyant forces override the ambient surface wind (See Smoke Plume).

Convergence Zone—The area of increased flame heights and fire intensity produced when two or more flame fronts burn together.

Crown Scorch—Browning of needles or leaves in the crown of a tree or shrub caused by heat from a fire.

Cured—Debris or herbaceous vegetation that has dried and lost its green color.

DAID (Delayed Aerial Ignition Device)— See Ping-pong Ball System.

Debris Burning—In this publication, defined as any prescribed fire used to dispose of scattered, piled, or windrowed dead woody fuel in the absence of an overstory. Such a burn often accomplishes the objectives of a Site Prep Burn as well.

Dew Point—Temperature to which air must be cooled to reach saturation at a constant atmospheric pressure. The dew point is always lower than the wet-bulb temperature, which in turn is always lower than the dry-bulb temperature. The only exception to this is when the air is saturated (i.e., relative humidity is 100 percent), in which case all three values are equal.

Dispersion—The decrease in concentration of airborne pollutants as they spread throughout an increasing volume of atmosphere.

Dispersion Index—As used in this manual, a numerical index developed by Lee Lavdas (Southern Forest Fire Laboratory). This index is an estimate of the atmosphere's capacity to disperse smoke from prescribed burns over a 1,000-square-mile area. It is related to the Ventilation Factor, but also considers the rate of pollutant dispersion.

Draped Fuels—Needles, leaves, twigs, etc., that have fallen from above and have lodged on lower branches and brush. Part of aerial fuels.

Drift Smoke—Smoke that has been transported from its point of origin and in which convective motion no longer dominates.

Drip Torch—Hand-held apparatus used to ignite fires by dripping flaming liquid fuel, at an adjustable rate, on the materials to be burned. The fuel is generally a mixture of 65 to 80 percent diesel and 20 to 35 percent gasoline.

Drought Index (Keetch-Byram Drought Index)—A numerical rating of the net effect of evapotranspiration and precipitation in producing cumulative moisture depletion in deep duff or upper soil layers.

Dry-bulb Temperature—The temperature of the air.

Duff—The layer of decomposing organic materials lying below the litter layer and immediately above the mineral soil. It is comprised of the Fermentation (F) and Humus (H) layers of the forest floor.

Edge—As used in this manual, the boundary between two fairly distinct fuel types.

Emission Factor—The amount of pollution (pounds per ton) released to the atmosphere per unit weight of dry fuel consumed during combustion.

Emission Rate—The quantity of pollutant released to the atmosphere per unit length of fire front per unit time.

Equilibrium Moisture Content (EMC)—The moisture content that a fuel would eventually attain if exposed for an infinite period to specified constant values of Dry-bulb Temperature and Relative Humidity.

Fine Fuels (Flash fuels)—Fast-drying, dead fuels which have a Timelag constant of 1 hour or less. These fuels ignite readily and are consumed rapidly when dry. Included are grass, leaves, draped pine needles, and small twigs.

Fire Behavior—A general term that refers to the combined effect of fuel, weather and topography on a fire.

Firebrand—Any flaming or smoldering material such as leaves, pine cones, or glowing charcoal that could start another fire.

Firebreak—Any natural or constructed discontinuity in a fuelbed used to segregate, stop, or control the spread of fire or to provide a control line from which to suppress a fire.

Fire Effects—Physical, biological and ecological impacts of fire on the environment.

Fire Front—The strip within which continuous flaming occurs along the fire perimeter (See Flame Depth).

Fireline Intensity (Byram's Intensity)—The rate of heat release per unit time per unit length of fire front. Numerically, it is the product of the heat yield, the quantity of fuel consumed in the Fire Front, and the rate of spread.

Fire Plow—Heavy-duty share or disk plow designed to be pulled by a tractor to construct Firebreaks.

Fire Rake—A long-handled combination rake and cutting tool, the blade of which is usually constructed of a single row of 4 sharpened teeth.

Firing Technique—The type(s) of fire resulting from one or more ignition(s), e.g., backing fire, flanking fire, heading fire, (See Grid Ignition, Ignition Pattern).

Flame Depth—The depth of the Fire Front at the fuel surface.

Flame Length—The distance between the flame tip and the midpoint of the Flame Depth at the base of the flame (generally at the ground surface).

Flanking Fire—A Fire Front spreading, or set to spread at roughly right angles to the prevailing wind.

Flash Fuels—See Fine Fuels.

Flying Drip Torch—See Helitorch.

Fuel Moisture Content—Water content of a fuel expressed as a percentage of the oven-dry weight of the fuel.

Fuel Moisture Indicator Sticks—A specially manufactured set of sticks of known dry weight continuously exposed to the weather and periodically weighed to determine changes in moisture content. The changes are an indication of changes in the moisture status and relative flammability of dead fuels that roughly correspond to Ten-hour Timelag Fuels.

Grid Ignitions—Method of igniting fires in which ignition points are set individually at predetermined spacing with predetermined timing throughout the area to be burned (see Ping-pong Ball System).

Hazard Reduction—Treatment of living and dead forest fuels to reduce the likelihood of a fire starting, and to lessen its damage potential and resistance to control.

Heading Fire—A Fire Front spreading or set to spread with the wind or upslope.

Helitorch (Flying Drip Torch)—A specialized drip torch hung from, or mounted on a helicopter that dispenses globs of ignited gelled gasoline.

Herbaceous Fuels—Grasses and other plants that contain little woody tissue.

Humus—The layer of decomposed organic matter on the forest floor beneath the partially decomposed litter layer (F layer) and directly above the soil.

Hygrothermograph—An instrument that continuously records Dry-bulb Temperature and Relative Humidity.

Ignition Pattern—The manner in which a Prescribed Fire is ignited. The distance between ignition lines or points and the sequence of igniting them, as determined by fuel, topography, weather, ignition system, firing technique, and other factors influencing fire behavior and the objectives of the burn (See Firing Technique).

In-stand Wind (Midflame Wind)—Windspeed within a stand at about eye level.

Inversion—In this publication, defined as a layer of the atmosphere through which the temperature increases with increasing height.

Keetch-Byram Drought Index—See Drought Index.

Ladder Fuels—Fuels that provide vertical continuity between the ground and tree crowns, thus creating a pathway for a surface fire to move into the overstory tree crowns.

Line Ignition—Setting a line of fire as opposed to individual spots.

Litter—The top layer (L layer) of the forest floor directly above the fermentation layer (F layer), composed mainly of recently fallen leaves and pine needles, but also includes dead twigs, bark fragments, etc. (See Duff).

Logging Debris—Unwanted tree parts remaining after harvest, including tree crowns, unutilized logs, and uprooted stumps.

Low-Level Jet—See Wind Profile.

Midflame Wind—See In-stand wind.

Mineral Soil—Soil layers below the predominantly organic horizons.

Mixing Height—The height to which relatively vigorous mixing of the atmosphere occurs.

Mopup—Extinguishing or removing burning material, especially near control lines after an area has burned to make it safe, or to reduce residual smoke.

Muck—See Organic Soil.

National Fire Danger Rating System (NFDRS)—The method currently used by the USDA Forest Service, and many other organizations to integrate the effects of topography, fuels, and weather into numerical indices of fire danger on a day-to-day basis.

One-Hour Timelag Fuels—Fine fuels consisting mainly of dead herbaceous plants, roundwood less than about ¼-inch in diameter, and the uppermost Litter Layer.

Organic Soil—Any soil or soil horizon containing at least 30 percent organic matter; examples are peat and muck.

Particulate (Total Suspended Particulate (TSP))—Any liquid or solid particles temporarily suspended in the atmosphere. See PM-10.

Peat—See Organic Soil.

Ping-pong Ball System—A method of igniting fires with the use of a Delayed Aerial Ignition Device (DAID). The device is a polystyrene ball, 1.25 inches in diameter that contains a combustible chemical. The balls are fed into a dispenser, generally mounted in a helicopter, where they are injected with another chemical and drop through a chute leading out of the helicopter. The chemicals react thermally and ignite in about 30 seconds. The space between ignition points on the ground is primarily a function of helicopter speed, gear ratio of the dispenser, and the number of chutes used (up to 4) (See Grid Ignition).

PM-10—Particulate with an aerodynamic diameter smaller than or equal to 10 micrometers.

Prescribed Burning—The controlled application of fire to wildland fuels in either a natural or modified state, under specified environmental conditions which allow the fire to be confined to a predetermined area and at the same time produce the intensity required to attain planned resource management objectives.

Psychrometer—The general name for instruments designed to determine the moisture content of air. A psychrometer consists of dry-and wet-bulb thermometers that give the Dry-and Wet-bulb Temperatures, which in turn are used to determine Relative Humidity and Dew Point.

Relative Humidity—The ratio, expressed as a percentage of the amount of moisture in the air, to the maximum amount of moisture the air is capable of holding under the same conditions.

Residence Time—The time (seconds) required for the Fire Front to pass a stationary point at the surface of the fuel. Numerically, it is the Flame Depth divided by the rate of spread.

Residual Smoke—Smoke produced by smoldering material behind the actively burning Fire Front.

Ring Fire—A fire started by igniting the perimeter of the intended burn area so that the ensuing Fire Fronts converge toward the center of the block.

Rough—The live understory and dead fuels that build up on the forest floor over time.

Scorch Height (Scorch Line)—The average height to which foliage has been browned by fire.

Site Prep Burn—A fire set to expose adequate mineral soil and control competing vegetation until seedlings of the desired species become established (See Debris Burning).

Slash—Debris resulting from such natural events as wind, fire, or snow breakage, or such human activities as logging or road construction .

Smoke Concentration—The weight of combustion products (micrograms per cubic meter) found in a given volume of air.

Smoke Management—Application of knowledge of fire behavior and meteorological processes to minimize air quality degradation during Prescribed Burning.

Smoke Plume—The gases, smoke, and debris that rise slowly from a fire while being carried along the ground because the buoyant forces are exceeded by those of the ambient surface wind (See Convection Column).

Smoke-sensitive Area (SSA)—An area in which smoke from outside sources is intolerable.

Smoldering Combustion Phase—Combustion associated with residual burning of forest fuels behind the Fire Front. Emissions are at least twice that of the Fire Front, and consist mainly of tars.

Spot Fire—Fire ignited outside the perimeter of the main fire by a Fire Brand.

Spot Weather Forecast—Special prediction of atmospheric conditions at a specific site, sometimes requested by the Burning Boss before igniting a prescribed fire.

Stagnant Conditions—Conditions under which pollutants build up faster than the atmosphere can disperse them.

Strip-Heading Fire—A series of lines of fire upwind (or downslope) of a firebreak or backing fire that will burn with the wind toward the firebreak or backing fire.

Ten-Hour Timelag Fuels—Dead roundwood $\frac{1}{4}$ to 1 inch in diameter and, to a rough approximation, the top $\frac{3}{4}$ inch of the litter layer.

Timelag—The drying time, under specified conditions, required for a dead fuel to lose about 63 percent of the difference between its initial moisture content and its Equilibrium Moisture Content. Providing conditions remain unchanged, a fuel will reach 95 percent of its EMC after four timelag periods.

Tractor-Plow—Any tracked vehicle, with a plow for exposing mineral soil, with transportation and personnel for its operation.

Transport Windspeed—A measure of the average rate of the horizontal movement of air throughout the mixing layer.

Underburning—Prescribed burning under a timber canopy.

Ventilation Factor—An indicator of the lower atmosphere's potential to diffuse and disperse smoke. Numerically, it is the product of the Mixing Height and the Transport Windspeed (See Dispersion Index).

Wet-bulb Temperature—Technically, the temperature registered by the wet-bulb thermometer of a Psychrometer. It is the lowest temperature to which air can be cooled by evaporating water into it at a constant atmospheric pressure.

Wetline—A line of water, or water and chemical retardant, sprayed along the ground and which serves as a temporary control line from which to ignite or stop a low-intensity fire.

Wind Direction—Compass direction from which the wind is blowing.

Wind Profile—A plot of windspeed over height above the earth's surface. A rapid increase with height to a maximum windspeed within 1,000 feet above ground and then a slow decrease above that peak is commonly called a low-level jet and is one of several adverse wind profiles.

Windrow—Woody debris that has been piled into a long continuous row.