

Instruction Guide for Completing the Arizona Department of Environmental Quality Daily Burn Accomplishment Form

The Interagency Smoke Management Program was created in 1991 to support the Arizona Department of Environmental Quality (ADEQ) in the management of emissions from federal and state forest and range management burns. Information provided on the ADEQ Daily Burn Accomplishment Form will be used to inventory air pollution emissions from federal and state prescribed burning activities.

Pursuant to [Arizona Revised Statute \(ARS18-2-15\)](#) governing smoke emissions from forest and range management burns, federal and state land managers must submit a [Daily Burn Accomplishment Form](#) to ADEQ by 2:00 pm of the business day following the date of an approved ignition. Please submit one Daily Burn Accomplishment Form for each approved ignition date. A Daily Burn Accomplishment Form is not required if a burn is not approved. Individual accomplishment reports must be submitted for projects that involve broadcast burning and piled activity fuels.

Information submitted on the ADEQ Burn Plan and Daily Burn Accomplishment Forms will be used to satisfy the input requirements of the fuel consumption model Consume. The ADEQ Burn Plan provides the model with the “default” fuel loading and fuel composition information, while the Daily Burn Accomplishment form provides the model with the acreage burned and fuel moisture information. The “supplemental” fuels information on the Daily Burn Accomplishment Form should be completed if there is any deviation from the fuels information submitted on the ADEQ Burn Plan Form. Examples include: a secondary fuel type within the project area becoming the primary fuel type burned on a particular date, or a unit within the project area changing from a first-entry burn to a maintenance burn.

FORM INSTRUCTIONS

Contact Number: The telephone number of the individual who may be contacted for clarification or questions with the information submitted on the Daily Burn Accomplishment Form.

Contact Name: The name of the individual who may be contacted for clarification or questions with the information submitted on the Daily Burn Accomplishment Form.

Burn Name: The name of the burn project as it appears on the Prescribed Fire Burn Plan Form.

Burn Number: The number of the burn project as it appears on the ADEQ Burn Plan Form. Please use the complete burn number (including the Agency unit designator).

Note: Projects that involve both broadcast burning and piled activity fuels must specify between burn types on the Daily Burn Accomplishment Form by including a “B” for broadcast, and “P” for piles at the end of the burn number. For simultaneous broadcast and piled activity fuel burns, please submit two Daily Burn Accomplishment Forms using the “B” and “P” designations.

Ignition Date: The month, day, and year of the approved ignition (mm/dd/yy).

Acreage Treated: Provide the number of whole acres within the project area that were treated with fire on the ignition date specified on the Daily Burn Accomplishment Form. This typically includes all acres within a burn block in which land management objectives were met, as well as those acres that were actually blackened by fire. For natural or activity broadcast burns, indicate the number of acres treated by broadcast burning. For piled activity fuels, indicate the number of acres comprising the pile area that were treated, not the sum of the area burned by each pile. Please round up to the nearest whole acre.

Note: Separate Daily Burn Accomplishment Forms are required for projects involving “B” and “P” designations. If only the broadcast portion was burned, please submit one Form with the “B” designation and indicate the acreage treated by broadcast burning. If only piles were burned, please submit one Form with the “P” designation and indicate the acreage treated by pile burning. If piled activity fuels were burned simultaneously during a broadcast burn, please submit one Form with a “B” designation and one Form with a “P” designation, and indicate the acreage treated for each burn type. Acres treated will be the same on both Forms if the treatment areas are identical (i.e. the piles are scattered throughout the entire area treated).

Acreage Burned: Provide only the number of acres within the project area that were actually blackened by fire on the ignition date specified on the Daily Burn Accomplishment Form. Provide the acreage burned for only “broadcast” burn type projects. Acreage burned does not apply to pile burns. Please round up to the nearest whole acre.

Burn Location: Provide the complete legal location where burning occurred. Please enter all legal locations where burning occurred on the planned ignition date using either of the following formats: (TT/RR/SS; TT/RR/SS) or (TT/RR/SS-SS).

Burn Duration: The entire length of time, in hours, the fire was capable of producing *significant* emissions over a *substantial* portion of the site. This includes both flaming and smoldering emissions.

Ignition Duration: The amount of time, in minutes, that it took to ignite the area that was burned. For example, if it took three hours to complete ignition of the area, enter 180 minutes. The ignition duration must be provided only if non-piled activity fuels were burned.

Dead Fuel Moisture 10 Hour: The moisture content of 10-hour fuels (0.26 – 1-inch diameter round-wood fuels). 10-hour fuel moisture is expressed as a percentage of the oven-dry weight of the fuel.

Dead Fuel Moisture 1000 Hour: The measured or estimated 1000-hour fuel moisture for the unit. 1000-hour fuel moisture is the moisture content of sound, woody material 3-8 inches in diameter and can be estimated, directly measured, or taken from available NFDRS data for the area treated.

Duff Fuel Moisture: The duff fuel moisture of the area that was treated. This field is optional. Please provide the duff fuel moisture only for broadcasted natural fuels if known.

Fuel Moisture Method: The source of the 1000-hour fuel moisture data for the unit, either directly measured, or estimated using the NFDRS fuel moisture model. If both methods were utilized, select the “both” option on the Daily Burn Accomplishment Form.

Days Since Last Rainfall: The number of day since significant rainfall. Significant rainfall is considered to be at least one-quarter inch. The ignition duration need only be provided for burn projects that contain non-piled activity fuels.

Snow Off Date: The approximate month and year that snow melted from the project area. If there was no snow between the harvest date and burn date, then enter a date with the year 9999. The snow off date need only be provided for burn projects that contain non-piled activity fuels.

BMP's (Best Management Practices): To reduce smoke emissions or minimize smoke impacts, land managers are required to implement as many BMP's as are feasible for their burn projects. Please document all of the BMP's that were utilized prior to, during, or after ignition.

- ✓ Permanent Fuel Exclusion: Some or all of the fuel within a project can be permanently removed from the site. Methods for permanently excluding fuels include mechanical removal, mechanical processing, firewood sales, the use of biomass for electrical generation and any other biomass utilization.
- ✓ Temporary Fuel Exclusion: Some or all of the fuel may also be temporarily excluded from burning. Methods include burning with high moisture in large diameter fuels, with moist litter and duff, before precipitation, and before large fuels cure.

- ✓ **Increasing Combustion Efficiency:** Increasing combustion efficiency, or shifting the majority of consumption away from the smoldering phase and into the more efficient flaming phase, reduces particulate emissions. Methods of increasing efficiency include pile and windrow burning, the chunking of piles, the use of backing fires, burning during dry conditions, initiating rapid mop-up, the use of aerial or mass ignition techniques, and the use of air curtain destructors.
- ✓ Spring and summer months between March 15 and September 15 are generally characterized as having meteorological conditions that allow for excellent smoke dispersion.
- ✓ Burning during optimum mid-day dispersion hours, with all ignitions in a burn unit complete by 3:00 pm helps to prevent the trapping of smoke in inversions or diurnal windflow patterns.
- ✓ **Reducing Fuel Production:** Sometimes fuels can be prevented from being produced. Methods of preventing fuel production include chemical treatments, such as herbicides, and site conversion, such as forest to farmland.
- ✓ Implementing maintenance burning in a periodic rotation that mimics natural fire cycles reduces excessive fuel accumulations and subsequent excessive smoke production through smoldering or wildfire.
- ✓ When possible, prescribed burns should only be ignited under good to excellent ventilation conditions. Operations should be suspended under poor smoke dispersion conditions.
- ✓ **Reducing the Area Burned:** Reducing the area burned can be accomplished by concentration burning, Jackpot burning, burning isolating fuels, and mosaic burning. This best management practice should only be selected if emissions will be reduced over time, and not just deferred to a later date.
- ✓ **Igniting Before New Fuels Appear:** Burning can sometimes be scheduled for times of the year before new fuels appear. Includes underburning before litter fall during the summer months and before green-up in the spring.

Daytime Smoke Behavior: Describe the smoke transport from the project the day of the burn. Include any other pertinent dispersion characteristics, or column height information, distance from the project smoke began to disperse, etc., as available.

Diurnal Smoke Behavior: If known, describe the movement of smoke away from the project during the evening of the approved ignition date, and the during the morning hours the day following the burn. Identify any drainage where smoke accumulated.

Remarks: Describe fuel consumption, the severity of smoke impacts on sensitive areas during the day or at night, whether management objectives were met, pibal observations, or any other information that would be useful to the Program in its daily decision making process.

Fuels Information - (Broadcast Burning): The supplemental fuels information provided in this section will be used to calculate fuel consumption and emission production.

Note: This section should ONLY be completed to capture any deviation from the fuels information submitted on the ADEQ Burn Plan Form.

- **Primary Fuel Type:** Choose only one fuel category as the primary fuel type. The primary fuel type is identified as having the greatest estimated fuel loading burned within the project area, not necessarily as the fuel type burned that covered the greatest acreage.
- **Primary NFDRS Fuel Model:** Select only one fuel model, A-U, as described below.

A Western annual grasslands	N Reedy marsh fuels
B Dense tall brush	K Light conifer slash/partial cuts
C Open pine perennial grass understory	L Western perennial grasslands
D Pine with Palmetto-gallberry understory	N Reedy marsh fuels
E Leaf fall from hardwood and mixed	O Southeast brush-like fuels
F Mature closed chemise and oak brush	P Closed south long-needle pine
G Dense conifer w/ heavy downed duff	Q Dense Alaskan black spruce
H Short-needle conifers with thin litter	R Hardwoods after leaf out
I Clear-cut conifer slash < 6 in	S Alaskan and alpine tundra
J Clear-cut/heavily thinned conifer <6 in	T Sagebrush-grasslands
K Light conifer slash/partial cuts	U Closed west long-needle pine
L Western perennial grasslands	

- **Harvest Date:** If applicable, provide the date that the timber within the project area was cut. If the timber was cut over an extended period of time, enter the date when 70 percent of the timber was cut. The harvest date entered must be before the date of the approved ignition.
- **Primary Duff Type:** The primary type of duff type that will be burned. Choose either red (rotten log type), or black (litter type).
- **Fuel Loading:** Provide the pre-burn loading of all types and sizes of fuels within the “Sound and Rotten”, “Sound”, “Rotten”, and “Other” categories. Do not include piled slash within any category in this section. It is also very important not to include fuel types across the categories. For example, do not include grass in both the grass/herb section of the “Other” category, and in the 0.0-2.5 inch fuels section of the “Sound and Rotten” category. Any deviation of the fuel loading provided within any category among this section on the ADEQ Burn Plan Form must be reported on the daily burn accomplishment form.

Provide all fuel types and sizes in tons per acre. Please provide the Litter and Duff Depths in inches. Conversion from tons per acre to inches for the litter and black and red duff types is provided in table below.

Inches	Litter	Black Duff	Red Duff
	T / A	T / A	T / A
0.1	00.03	01.21	01.87
0.2	00.06	02.42	03.74
0.3	00.09	03.63	05.61
0.4	00.12	04.84	07.48
0.5	00.15	06.05	09.35
0.6	00.18	07.26	11.22
0.7	00.21	08.47	13.09
0.8	00.24	09.68	14.96
0.9	00.27	10.89	16.83
1.0	03.00	12.10	18.70
2.0	06.00	24.20	37.40
3.0	09.00	36.30	56.10
4.0	12.00	48.40	74.80
5.0	15.00	60.50	93.50

Fuels Information - (Piled Slash): The supplemental fuels information provided in this section will be used to calculate fuel consumption and emission production.

Note: This section should ONLY be completed to capture any deviation from the fuels information submitted on the ADEQ Burn Plan Form.

- **Number of Piles Per Acre:** The average number of individual piles per acre that were burned on the approved ignition date.
- **Tons of Piles Per Acre:** The average fuel loading of the piles per acre were burned on the approved ignition date. The average weight of the piles is often equivalent to the fuel loading of the primary fuel component before it was cut and piled. For example, if the fuel loading of ponderosa pine was 10 tons per acre before mechanical treatment, then there are 10 tons of piles per acre.
- **Percent Soil in Piles:** The best estimate of the percent of the pile that consists of soil. Hand piles will generally contain very little soil, whereas dozer piles typically contain high soil content.
- **Primary Species:** Select the species that represents the largest percentage (greater than 50%) of the fuel in the piles.
- **Percentage of Primary Species:** The percentage of the primary species within the piles. For piles that consist of only one fuel type, this number will be 100%. For piles that consist of two or more fuel types, this percentage added to the percentage of secondary species below must total 100%.
- **Secondary Species:** For piles consisting of two or more species, identify the species that makes up the second largest percentage (less than 50%) of the piles.
- **Percentage of Secondary Species:** The percentage of the secondary species within the piles. For piles that consist of only one fuel type, this number will be 0%. For piles that consist of two or more fuel types, this percentage added to the percentage of the primary species must equal 100%.

- **Quality:** Describes piles relative to the content of combustible material. Clean piles will generally experience complete combustion, whereas piles that are really dirty may leave a large amount of soil within the ash and unconsumed pile residue.
- **Dimensions:** Provide the average width and height and length of piles throughout the project area. For piles that are essentially round, tee-pee-like, or half-spherical, provide only the average width and the height.
- **Packing Ratio:** Air comprises much of the gross volume of a pile. The ratio of wood volume to the total pile volume, the packing ratio, ranges from 6 to 26 percent.

Piles with species content dominated by ponderosa pine, with mean diameters of the large woody fuel averaging less than 10 inches, have a packing ratio of 10 percent (Select packing ratio #1).

Piles dominated by short-needled conifers have packing ratios from 15 to 20 percent (Select packing ratio #2).

Piles that are highly compacted and clean with large logs that are greater than 10 inches, especially those built with a crane or loader, can have packing ratios as high as 25 percent. (Select packing ratio #3).