FRIENDS OF
NACHUSA
GRASSLANDS

February 2026

Dear Friend,

Today, prescribed burns are a fairly well-known phenomenon. But are you aware of the preparation and skill needed in using the variety of equipment used for the burns? Paul Mellen, a long-time veteran of prescribed burns, is an excellent authority to enlighten you.

Paul details the equipment utilized at all stages of a burn. Safety is, of course, one of the main considerations when dealing with fire. An experienced and skilled team, paired with the proper equipment, creates a safe and successful combination for a burn.

I learned a lot in reading Paul's narrative and was surprised at how complex this endeavor can be. I hope you will likewise be as interested in reading about the equipment used in prescribed burns in this issue.

With warm regards from Nachusa Grasslands,

Charles Larry

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A Prairie Calling
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FRIENDS OF NACHUSA GRASSLANDS

Equipment Used During Prescribed Burns

By Paul Mellen

Prescribed fire helps restore the land to its "native" state by clearing out invasive species that have been crowding out natives and recycling nutrients to the soil. Though it takes more than fire to restore prairies, savannas, and woodlands, burning revitalizes natural fire-adapted ecosystems and improves wildlife habitat. Effectively and safely executing a prescribed fire requires knowledge and the right equipment. The following is a description of tools and equipment used for prescribed burns at Nachusa Grasslands.

Equipment Used During Prescribed Burns

Nomex Suits are made of synthetic fabric used in protective apparel for firefighters, military personnel, and race car drivers. Flame, tear, and abrasion resistant, the fabric is a durable material that can expand to close small gaps when exposed to heat, providing a thermal barrier, though it may not be as breathable as cotton

Leather Gloves and **Leather Boots** with Rubber Soles are resistant to fire and heat compared to fabric that can easily melt or catch fire, burning the wearer.

A Helmet protects the head from falling limbs and materials and is equipped with a Nomex Face and Neck Drape shielding from intense, radiant heat.

Safety Glasses offer eye protection.

Photo: Dee Hudson

Goggles offer the added benefit of smoke protection, as they seal out eye-irritating smoke.

Cell Phones can prove useful when a private conversation shouldn't be broadcast over the radio.

Two-Way Radios are a very important tool to communicate with the burn boss, line bosses, and crew members. Generally, in a prescribed burn, two fires are lit, one on each side of the designated burn area. The first lit is called the back burn, and when it is deep enough into the area, the head fire can be lit. You must know where the "other" team is located. Radios are also used to announce spot fires and how much additional help is needed to extinguish that blaze.

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Tractors with Mower, Rake, and Blower. In preparation for a prescribed burn, the area to be burned has fire breaks mowed around the perimeter. After mowing, the chaff is raked to the side of the fire break and then a blower further disperses the chaff away from the area to be burned. The mower, rake, and blower are all mounted on different tractors so the fire breaks can be prepped rather quickly.

Photo: Bill Kleiman

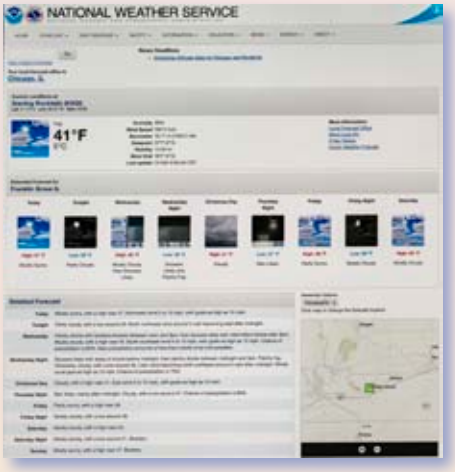

Photo: Joe Richardson

Consulting a **Weather Monitor**, the burn boss broadcasts weather conditions during a prescribed burn as to wind direction, wind speed, relative humidity, and the amount of lift that helps smoke rise.

Typical **Signage** reads, "Prescribed Fire—Do Not Report," "Slow Down –Smoke Ahead," or in the preserve: "Prescribed Fire Preserve Closed." These signs are posted along roads that are next to the area to be burned.

Traffic Cones are used to warn traffic and to keep traffic from entering areas where they don't belong.

A **Drip Torch** is used to ignite the fire with a burning stream of fuel. Nachusa mixes its fuel with 3 parts diesel fuel to 1 part gasoline. There is a control valve that helps adjust the flow of fuel to the igniter assembly. The igniter assembly contains a steel mesh which holds enough fuel to remain lit. The drip torch is tipped, and drops of fuel from the reservoir are ignited as they pass over the burning igniter assembly and the prescribed fire begins.

Backpack Leaf Blowers are used as an assist if chaff needs to be further removed from the fire breaks. They work well for short fire breaks or blowing leaves from around small flammable things like sheds and wood piles. They can also be used to blow out dry grasses that collect in in the belly pans of the UTVs.

Rakes have metal tines so they can be used on burning material and to disperse chaff, grasses, leaves, twigs, and sticks so it burns better or is moved away from the fire.

Chain Saws are used to cut down snags, overhead limbs that can catch fire and possibly fall onto a crew member. They are also used to cut obstructions along a fire break so vehicles can easily pass by.

Paul Mellen

Paul has been a Nachusa volunteer for nine years. He began by helping stewards in their units and doing maintenance on anything that needed repair or adjustment. Paul does minor work on UTVs, trucks, tractors, trailers, buildings, fences, signs, sprayers, pumps, etc. He also hauls equipment to service and repair facilities and is certified to work prescribed burns and help with the annual bison roundup.

A Flapper is used to swat out small fires and hot spots.

A flapper looks like a small truck mud flap attached to a long handle.

An **Air Pressure Tank** is used to inflate a flat tire so the vehicle can be moved and doesn't become trapped by an approaching fire.

A **First Aid Kit** is readily available for emergencies. It contains everything needed, such as a tourniquet, band aids, scissors, etc.

A **Defibrillator** is used for sudden cardiac arrests, delivering an electric shock to the heart, allowing it to re-establish a normal heart rhythm.

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Photo: Dee Hudson

Our **UTVs** and **Pickups** have **Pumper Units** mounted in the back bed. The unit is powered by a 5-6 HP gasoline engine, has a tank that holds about 50 gallons of water (UTVs) or 80 gallons (pickups), and either a piston pump or a centrifugal pump to spray the water. Pumper units are used for wet lining and fire suppression. Piston pumps, requiring clean water, offer less volume with more pressure, while centrifugal pumps provide more volume with less pressure but can draw water from creeks and ponds.

Photo: Bill Kleiman

Foam Additive for Water Reservoirs helps the water give better coverage on burning material.

Because of how remote a UTV or pick-up-mounted pumper unit can be from a water source, a **Tender Truck** with a 350 gallon water tank, engine, and pump is parked "in the black," an area already burned and therefore safe and in proximity to the prescribed burn. Pumper units can be refilled rather quickly. The tender also carries other tools and equipment so it is available in a nearby location.

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