Incident Summary Page for the 100 Fires Project

Incident Name: Peshtigo Fire	**Incident Date & Time:** 10/08/1871
Incident Location: Peshtigo and the greater Green Bay region of Wisconsin	**Incident Size:** 1,500,000 acres (estimated)
Type of resources involved: Civilians	**# of Fatalities/injuries:** 1200-2400 fatalities / Many unknown injuries

Reasons this fire was selected for the 100 Fires list:

- Fire is historically significant
- Civilian mass casualty event

Conditions leading up to the event:

The Peshtigo Fire was one of the most devastating fires in American history. The primary factor that made this fire so deadly was mass agricultural clearing known as slash-and-burn. This involves cutting down vegetation for farming purposes and railroad construction, followed by aggressive slash burning of the remaining non-merchantable debris. Once timber was harvested, the slashed vegetation would be left on the surface to dry out. This slash would usually be burned before any precipitation could move in, which provided nutritional value to the soil making it more fertile, as well as temporarily eliminating unwanted vegetation. These fires would be left untended to go out by themselves with normal fall moisture, however in 1871 many fires were still smoldering into October. Another key factor leading up to the Peshtigo Fire was the weather pattern, a significant drying trend had been in place for many months. Due to the drought conditions during the summer and fall of 1871, the fuels on the surface had become extremely volatile by October.

The following weather observations were taken a couple weeks prior at Fort Embarrass, approximately 60 miles southwest of Peshtigo.

- September 13th - Dense smoke, air full & sky obscured.
- September 20th - Killing Frost. All tender vegetation, potato vines…dead.

In the days prior to the fire and on the day of the fire, high temperature readings remained steady around 75 degrees. Eyewitnesses said that the air was hot and dry, directly showing evidence of low relative humidity. With the help of all the weather reports and additional data that was written down at the time, the US Army Signal Service and the Smithsonian Institution were able to reconstruct a weather map (see attachments below) that showed a dry cold front moving in with strong, erratic winds (Haines and Kuehnast, 1970).

Given these factors, on the evening of October 8, 1871, fires spread rapidly through the dry fuels and, with the help of the strong winds and receptive vegetation quickly became a firestorm.

Brief description of the event:

The Peshtigo Fire burned between 1.2 and 1.5 million acres during the night of October 8 and into the next day on October 9. Eye witnesses in the Peshtigo area pointed to a fire that started in a railroad construction site at approximately 18:00 and grew quickly. It is widely thought that other smoldering industrial fires in the surrounding area also quickly came to life and the ensuing conflagration began consuming everything in its path. Sixteen communities were affected but Peshtigo was impacted the worst, with the fire consuming the whole community in two hours. Fire activity was so extreme and deadly that when it swept through, some people would jump in a river, well, or any body of water that was available for them. In addition to the use of water features for refuge, the first anecdotal examples of something being used as a "fire shelter" are associated with this fire. There are a number of stories about survivors using wet blankets or buffalo robes to protect themselves during the event. Many others went to extreme measures to make the pain quick. A quote from a survivor, *"Peshtigo was a tornado of fire."* While the fire itself only lasted from the evening of the 8th into the morning of the 9th, it still caused massive destruction, property loss, damage to the landscape, and a major death toll. The number of fatalities was estimated to have been between 1200-2400 lives lost and many others injured.

When the fire came to its end, trees burned to their core leaving nothing behind but huge holes in the ground. In some places the sand would be turned into glass from the tremendous heat. The property value damage, in Peshtigo alone, was estimated to be 5 million dollars in 1871, equaling 113 million dollars today. The closest town, Marinette, did not suffer as much of a blow as Peshtigo; the town sent food and supplies. Because of the fire burning down all forms of communication, word didn't get out to the Governor Lucius Fairchild until two days later. By then more food and supplies were sent and his wife Frances helped organize a blanket drive in Madison to be sent to Peshtigo. The town of Peshtigo was rebuilt and is still standing today.

The Great Chicago Fire, which occurred the same day, claimed 300 lives. And just across Lake Michigan, the Great Michigan Fire burned nearly one million acres during this same time period and caused an estimated 500 or more fatalities and unknown number of injuries. Together these are sometimes referred to as the Great Midwest Fires of 1871 and one of the greatest disasters in the history of this country.

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There are many individual stories of tragedy and heroism that unfolded from these events, it would be difficult to do them justice in this brief summary. However, there is a wealth of references available to follow-up on these stories…several are listed below.

Fire behavior factors that were present during the event:

The conditions prior to the Peshtigo Fire were what made the fire behavior so extreme; dry fuels, heavy fuel loading, adverse weather conditions, prolonged drought and the human factor set this fire up to be explosive. The evidence from research of weather reports and reconstructed weather maps showed a steep pressure gradient and an associated strong low level jet that generated winds up to 110 mph. There are accounts of the fierce winds tossing over railroad cars.

Authors Denise Gess and William Lutz, theorized the fire burned at nearly 2,000 degrees Fahrenheit (the average wildfire burns at around 1,500 degrees). With the general elevation being around 600 feet, the topography in the area did not change much. However, the landscape was continuous timber and brush. The fire became a firestorm that produced fire whirls and possibly a fire tornado. Not too much scientific data can be found on the fire behavior due to the age of the event, but plenty of eyewitness survivors spoke and wrote about the horrors of the incident. Wesley Dukret said *"When balls of fire started coming down from the sky, my mother and father took us to the spring and wrapped us in wet quilts."*

One speculation, first suggested in 1883, is that the simultaneous fires across the Midwest were caused by the impact of fragments from Comet Biela. Others dispute this theory, arguing that meteorites are cold to the touch when they reach the Earth's surface, and there are no credible reports of any fire anywhere having been started by a meteorite.

Operational lessons available for learning from this incident:

Not applicable

Notable impact or historical significance for the wildland fire service from this incident:

The Peshtigo Fire of 1871 was the largest fatality fire in history of the United States and as such a seminal event in the history of wildland fire. It was an early pre-cursor to a sequence of deadly mega-fires that occurred in the late 1800s and early 1900s.

Agencies, groups and associations have come a long way in establishing techniques, skill sets, and knowledge for the wildland fire service since 1871. An interesting note regarding the National Weather Service…it was established in 1870, only one year prior to the Peshtigo Fire. The new National Weather Service was born within the US Army Signal Service's Division of Telegrams and Reports for the Benefit of Commerce. The data collected by this agency was the basis for recreating the weather pattern for research purposes of this event. However, it would still be another 40 years before they began to issue fire weather forecasts.

Links to more information on this incident:

https://www.weather.gov/grb/peshtigofire
https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev2_019070.pdf
https://doorcountypulse.com/fire-took-williamsonville/
https://content.wisconsinhistory.org/digital/collection/wmh/id/46360
https://wildfiretoday.com/2008/10/08/peshtigo-fire-137-years-ago-today/
https://wlfalwaysremember.net/1871/10/08/peshtigo/
https://www.usdeadlyevents.com/1871-oct-8-9-wildfires-both-sides-bay-of-green-bay-esp-peshtigo-birch-creek-mi-1228-2400/#_ftnref41

Museum:

- http://www.peshtigofiremuseum.com/

Books:

- *Firestorm at Peshtigo: A Town, Its People, and the Deadliest Fire in American History* ~ by Denise Gess and William Lutz

This summary page was proudly provided by:
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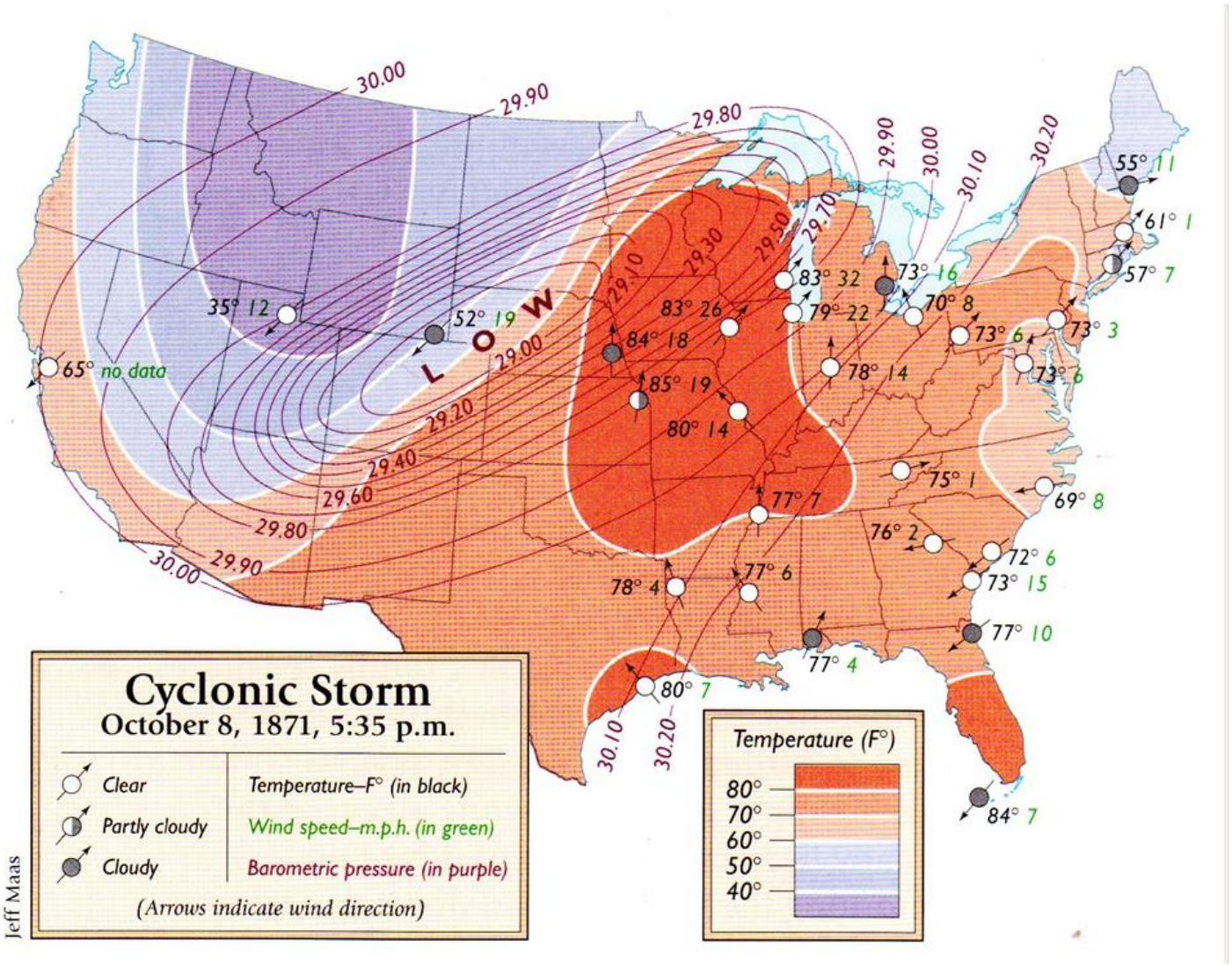

Figure 11: Reconstructed surface weather map for October 8, 1871

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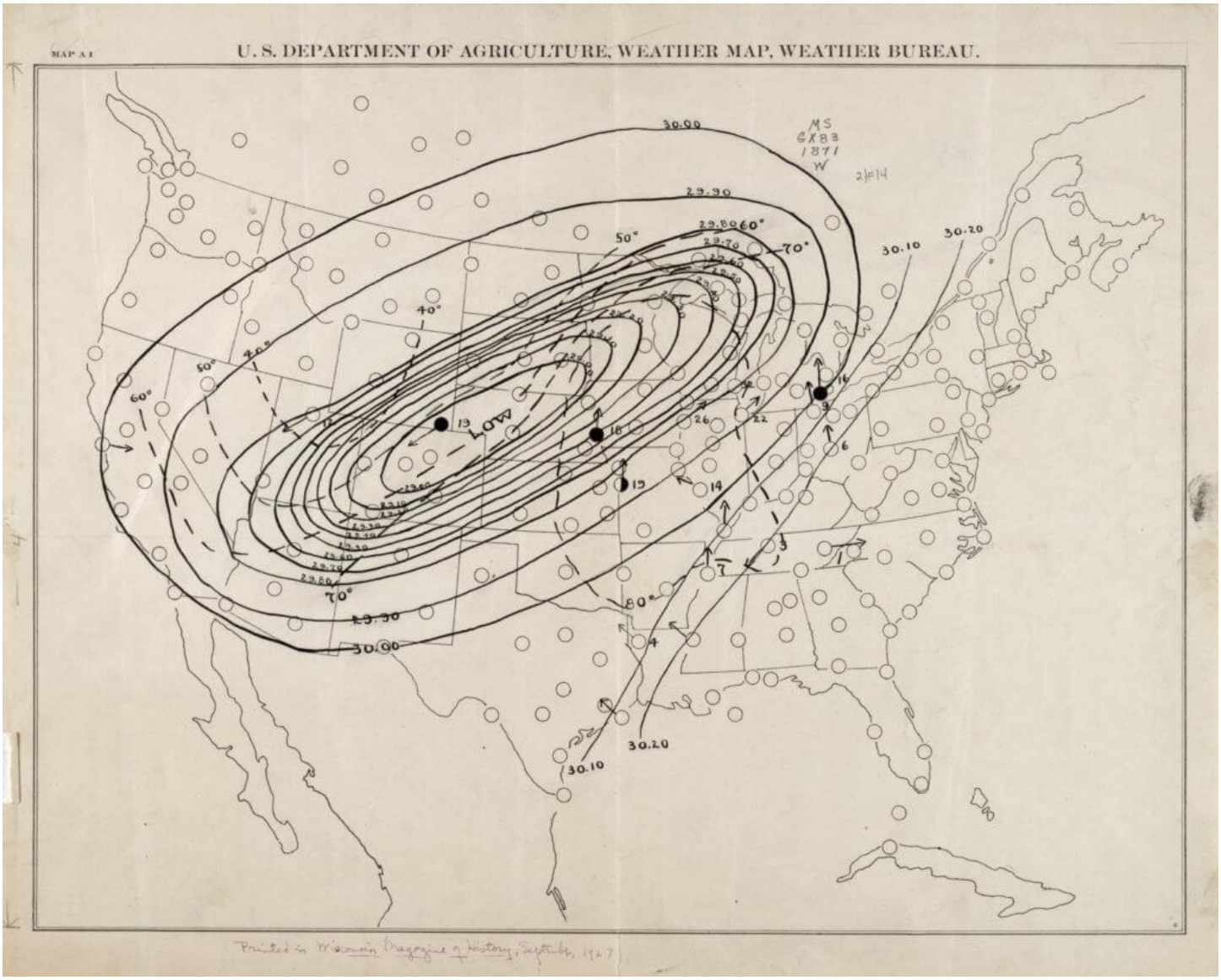

Reconstructed orginal weather map

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Magazine art, November 18, 1871 by G J Tisdale