2019 Annual Operating Plan
Fire Weather Forecasts and Services
NWS Chicago/Romeoville

Updated 1/11/19

I. INTRODUCTION

The fire weather forecast and service program provides forecast, warning, and consultation services to local, state, and federal government agencies for the prevention, suppression, and management of forest and rangeland fires. The National Weather Service (NWS) Chicago/Romeoville will issue routine fire weather forecasts during the fall and spring seasons (see section 1 "Routine Fire Weather Services" for dates of each season) to support fire and land management activities. In addition to routine fire weather forecasts, NWS Chicago/Romeoville will issue spot (site-specific) forecasts using the guidelines in Section 3, under SITE SPECIFIC WILDLAND FIRE FORECASTS.

II. SERVICE AREA AND ORGANIZATIONAL DIRECTORY

NWS Chicago/Romeoville will issue routine forecasts for all 23 counties within its County Warning Area (CWA), during the spring and fall fire weather seasons. There are three federal users within the CWA; The Indiana Dunes National Lakeshore, the Midewin National Tallgrass Prairie and FermiLab. See appendices 1a through 1d for maps. The fire weather forecast (FWF) will have 23 individual groups, one for each county.

Following is a list of important contacts:

National Weather Service Chicago/Romeoville
Casey Sullivan (Fire Weather Program Manager)
Edward Fenelon (Meteorologist In Charge)
333 W. University Drive
Romeoville IL, 60446
(815) 834-0651 (24 hour Internal)
(815) 834-0645 (Fax)

FermiLab (DOE)
Dave Shemanske
PO Box 500 MS 320
Batavia, IL 60510
(630) 840-3303
(630) 399-6167 (Cell)
(630) 840-2108 (Fax)

Indiana Dunes National Lakeshore (NPS)
Mary Lothschutz (AFMO)
(219) 395-1683 (work); (219) 331-6284 (cell)
1100 North Mineral Springs Road
Porter, IN 46304
(219) 395-1588 (Fax)

Midewin National Tallgrass Prairie
Chris Lundgren (FFMO)
(815) 423-2142 (work)
(815) 922-2502 (cell)
30239 South State Route 53
Wilmington, IL 60481
(815) 423-6370/2136 (Office)
(815) 423-6376 (Fax)

Forest Preserves of Cook County
John McCabe (Director of Resource Management)
(708) 771-1180
536 N Harlem Ave, River Forecast, IL 60305

Eastern Area Fire Weather Program Manager -EACC
Stephen Marien, (651) 293-8446 (Office); (402) 250-7844 (Cell); (651) 290-3815 (Fax)
Mississippi National River and Recreation Area
111 East Kellogg Blvd, Suite 105
St Paul, MN 55101

III. SERVICES PROVIDED BY THE NATIONAL WEATHER SERVICE

1) ROUTINE FIRE WEATHER SERVICES

Routine fire weather forecasts will be issued daily during the spring and fall fire seasons. The narrative fire weather forecast will be issued by 6 am, 1030 am and 4 pm central time and issued under the product ID CHIFWFLOT and updated as necessary. A National Fire Danger Rating System (NFDRS) forecast will be issued for the Bailley station (RAWS site) at the Indiana Dunes around 230 pm local time daily during the fire seasons under the product ID CHIFWMLOT.

The spring fire season will begin around March 1st and end around May 15th while the fall fire weather season will begin around October 1st and end around December 15th. **These dates are flexible based on the needs of the fire agencies and current weather conditions.** Outside of the Fall & Spring fire seasons, fire weather forecasts will be issued once a day by 6am central time with no scheduled updates until the next forecast, 24 hours later.

The fire weather forecasts are issued using GFE, after creating grids for the fire weather forecasts. Instructions to create these grids can be found in Appendix 3. See Appendix 5 for a detailed listing of the forecast elements in the NFDRS forecast. Fire and land managers can access the fire weather forecasts from the NWS Chicago/Romeoville internet site: https://www.weather.gov/lot/fire

The narrative fire weather forecast (FWFLOT) will include a discussion of storm systems, fronts, etc. with a focus on the first two days but including systems through day five of the forecast. Discussion of fire weather elements as well as forecast confidence is encouraged. An example of the FWF forecast can be found in Appendix 2 along with a list of fire weather parameters available in the FWF.

Fire weather elements/grids will be created through the first 84 hours of the forecast period and will be available on the point and click hourly weather forecasts. Specific fire weather elements will be available through the first 48 hours on the FWF forecast product.

Certain headlines which are important for fire weather are included in the FWF. They include any heat advisories, watches or warnings; high wind watches or warnings or wind advisories as well as fire weather watches and red flag warnings. No other headlines are included in the FWF.

The Ventilation Rate ("VENT RATE" in the FWF) is a dispersion variable that fire and land managers use to determine how well the atmosphere will carry away smoke. It is a simple multiplication of the transport wind speed times the mixing height (same as the inversion). For example, if the transport wind speed is 20 mph and the mixing height is 1,000 feet, the ventilation rate is 20,000 mph/ft. In the FWF, only the vent rate max (highest value for the 12 hour period) is included. Specific vent rate changes can be found on the hourly weather forecasts on our webpage.

The scale for the ventilation rate and the corresponding descriptor (or category) is listed below. In the FWF, only the highest category (for the 12 hour period) is included with units of mph/feet. Mph can be converted to knots by multiplying by approximately 0.85.

Less than 46,000 mph/feet	Poor
46,000 to 69,000	Fair
69,000 to 115,000	Good
115,000 to 172,500	Very Good
172,500 or greater	Excellent

The 1700 foot mixing temp ("1700 FT MIXING TEMP" in the FWF) is the surface temperature needed to be reached for the mixing height to reach 1700 feet. For example, if the forecast 1700 foot mixing temperature is 70 degrees and the high temperature is expected to reach 80 degrees, the mixing height is expected to be near or passing through (rising) 1700 feet when the surface temperature reaches 70 degrees.

Conversely, if the 1700 foot mixing temperature is 70 degrees and the high temperature is only expected to reach 65 degrees, than the mixing height is not expected to reach 1700 feet and will be below 1700 feet for the entire day. It should be noted that these parameters are forecasts and may become unrepresentative if conditions change from the forecast(s).

2) SITE SPECIFIC WILDLAND FIRE FORECASTS

Spot (site-specific) forecasts will be issued under the following criteria:

A) To any agency for an ongoing wildfire.

B) Upon request of any federal official who represents that the spot forecast is required under the terms of the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

C) Upon request of any state, tribal, or local official who represents that the spot forecast is required to carry out their wildland fire management responsibilities in coordination with any federal land management agency participating in the Interagency Agreement for Meteorological Services (NWS Instruction 10-406).

D) Upon request of any public safety official who represents that the spot forecast is essential to public safety. A "public safety official" is an employee or contract agent of a government agency at any level (federal, state, local, tribal, etc.) charged with protecting the public from hazards including wildland fires of whatever origin and/or other hazards influenced by weather conditions such as hazardous material releases.

A spot forecast can be issued to any federal agency for a prescribed burn. However, spot forecasts can only be issued to non-federal agencies when the prescribed burn is essential to public safety or when federal resources are involved with the non-federal agency.

The requesting agency will provide a current weather observation at or near the location of the fire (an AWOS or ASOS can be used if representative). Spot forecasts should contain the same elements included in the routine narrative forecast as well as any additional elements needed by the requesting agency.

The requesting agency will submit a spot forecast request from the national spot forecast webpage at the link below. The forecaster will complete the spot forecast request using GFE and should check the webpage after transmitting to make sure the forecast has updated. Instructions for completing the spot forecast can be found in Appendix 4.

https://www.weather.gov/spot/

If the webpage is not available and a spot forecast is still needed, a spot forecast can be requested using WS FORM D-1 (see last appendix). Once the requesting agency has filled out this form, they can fax a copy to our office and should call us to make sure we have received it. The forecaster can then use the local spot forecast form (Appendix 6) to complete the spot forecast. This form can be faxed back to the requesting agency or the forecast can be given over the phone.

During service backup (primary for NWS Lincoln, secondary for NWS Milwaukee), NWS Chicago/Romeoville will complete spot forecasts requests using GFE. Alerts for spot forecast requests will need to be added to the AWIPS workstation's alarms (CHISTQILX for Lincoln and MKESTQMKX for Milwaukee).

3) FIRE WEATHER WATCHES, RED FLAG WARNINGS

In coordination/collaboration with local, state, and federal fire managers, fire weather watches and red flag warnings will be issued for any or all counties within NWS Chicago/Romeoville CWA based on the following local criteria:

1) Sustained 20 foot winds of 20 mph or higher.

2) Afternoon relative humidity less than 25%.

3) 10 hour fuel moisture at 8% or less for one day.

All three criteria must be met (or expected to be met) for the issuance of a fire weather watch or red flag warning. Both products are issued under the same product ID, CHIRFWLOT. Fire weather watches and red flag warnings are issued year-round, not just during the fire seasons. They also are to be mentioned in the hazardous weather outlook.

Forecasters should contact fire managers before issuing a fire weather watch or red flag warning for two important reasons; first, to gain knowledge of current fuel moisture levels and second, a watch or warning places restrictions on fire management programs. Coordination should be two way and fire managers should also contact NWS Chicago/Romeoville when conditions are critically dry.

Fire weather watches and red flag warnings, when in effect, can be found at this link,

https://forecast.weather.gov/product.php?issuedby=LOT&product=FWF&site=lot

IV. WILDLAND FIRE AGENCY RESPONSIBILITIES

The Indiana Dunes will maintain the Bailley weather station (a RAWS site). Without access to a current weather observation for the Bailley station, NWS Chicago/Romeoville can suspend issuance of the NDFRS forecast (FWMLOT). Real-time data from the Bailley Station can be found at this link,

https://mesowest.utah.edu/cgi-bin/droman/meso_base.cgi?stn=TS480

All fire agencies are required to provide a current weather observation for spot forecasts for both prescribed burns and ongoing wildland fires. They should provide as much information about the fire and location as possible. Fire agencies should provide feedback to NWS Chicago/Romeoville about positive and negative aspects of the fire weather forecasts and services. Fire and land managers should call NWS Chicago/Romeoville when fuels start or are expected to become critically dry. This information is very important when deciding to issue a fire weather watch or red flag warning.

V. JOINT RESPONSIBILITIES

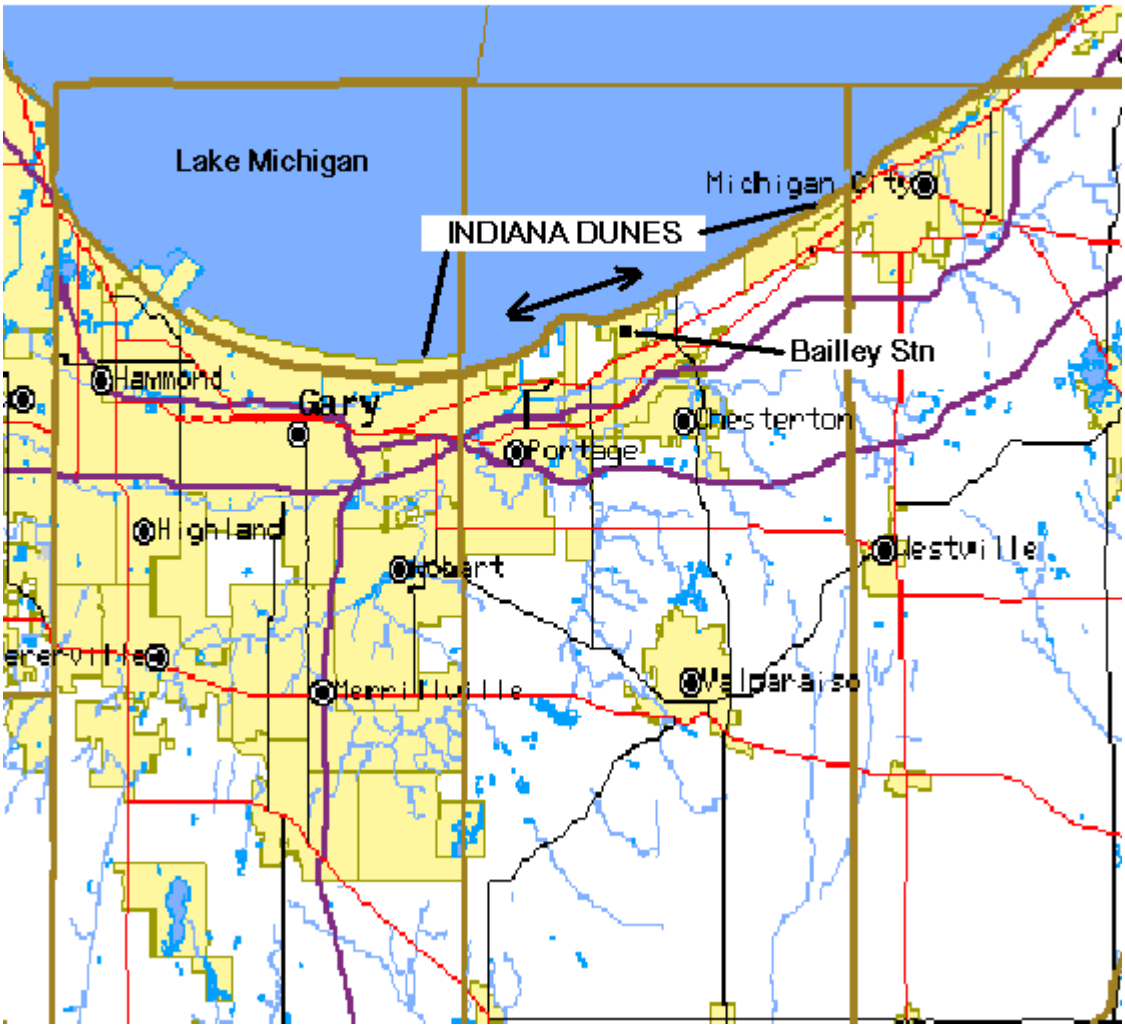
NWS Chicago/Romeoville will have sole fire weather forecast and service responsibility for its 23 county warning area (CWA). NWS ILX (Lincoln) will provide fire weather backup services if NWS Chicago/Romeoville cannot issue forecasts or other services.

NWS Chicago/Romeoville provides primary service backup for NWS Lincoln (ILX) and secondary service backup for NWS Milwaukee (MKX). NWS Green Bay (GRB) provides primary service backup for NWS Milwaukee (MKX). See Service Backup Manual for more information. Contacts for these offices:

National Weather Service Lincoln Illinois (ILX)
Daryl Onton (Fire Weather Program Manager)
24 hour phone (to reach a forecaster) (217) 732-7489

National Weather Service Milwaukee/Sullivan (MKX)
Mark Gehring (Fire Weather Program Manager)
24 hour phone (to reach a forecaster) (262) 965-5063

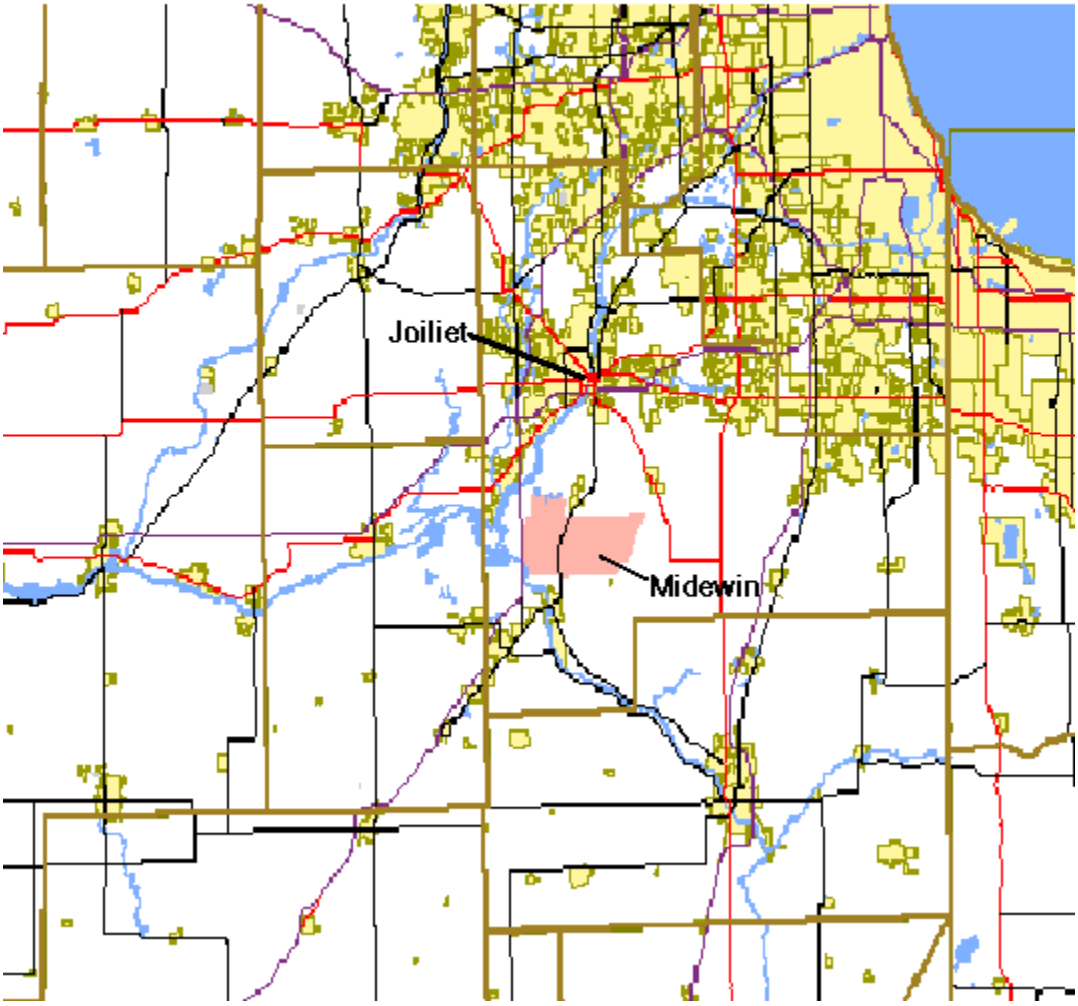
INDIANA DUNES NATIONAL LAKESHORE



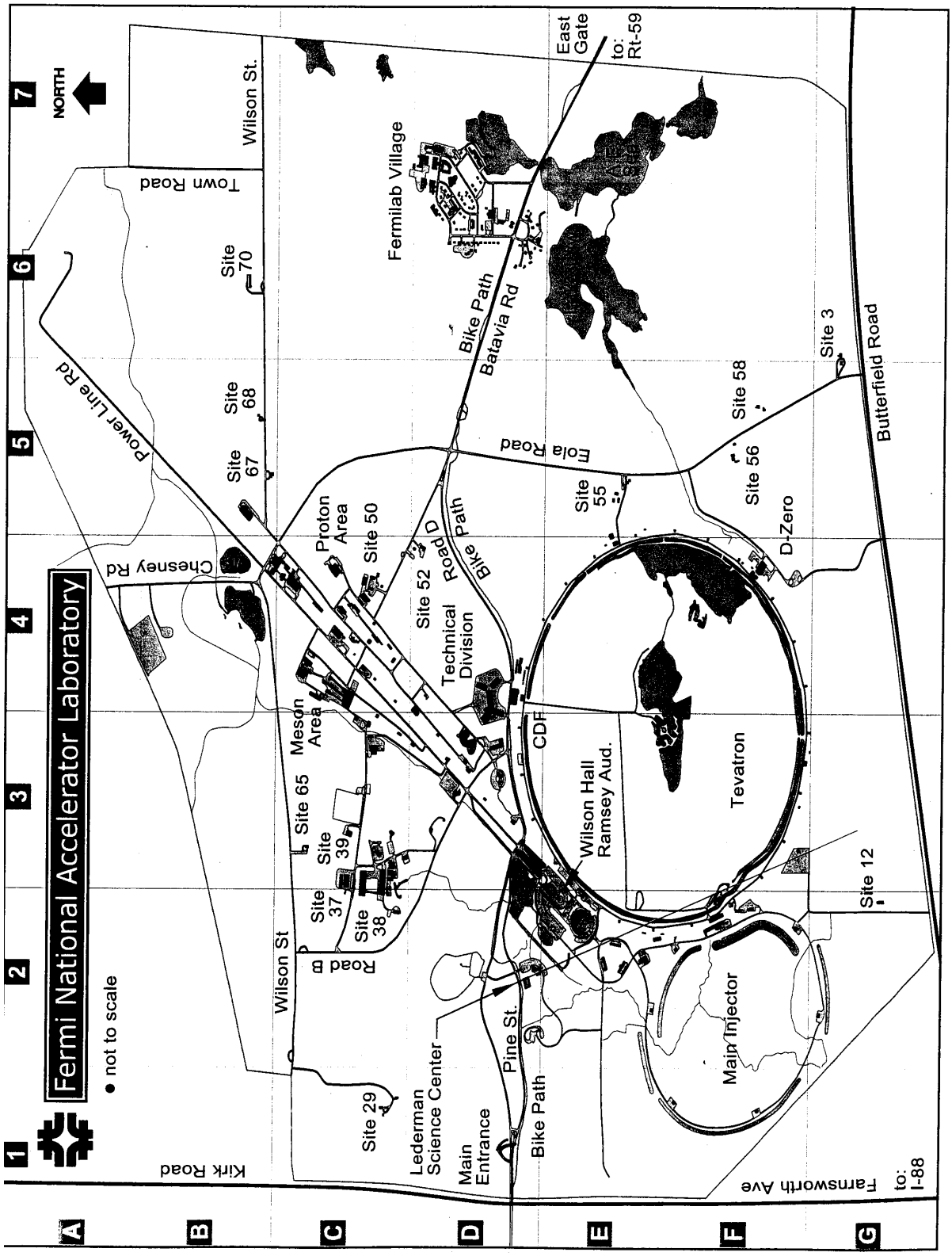
Appendix 1a

WFO Chicago Fire Weather Spot Forecast area..

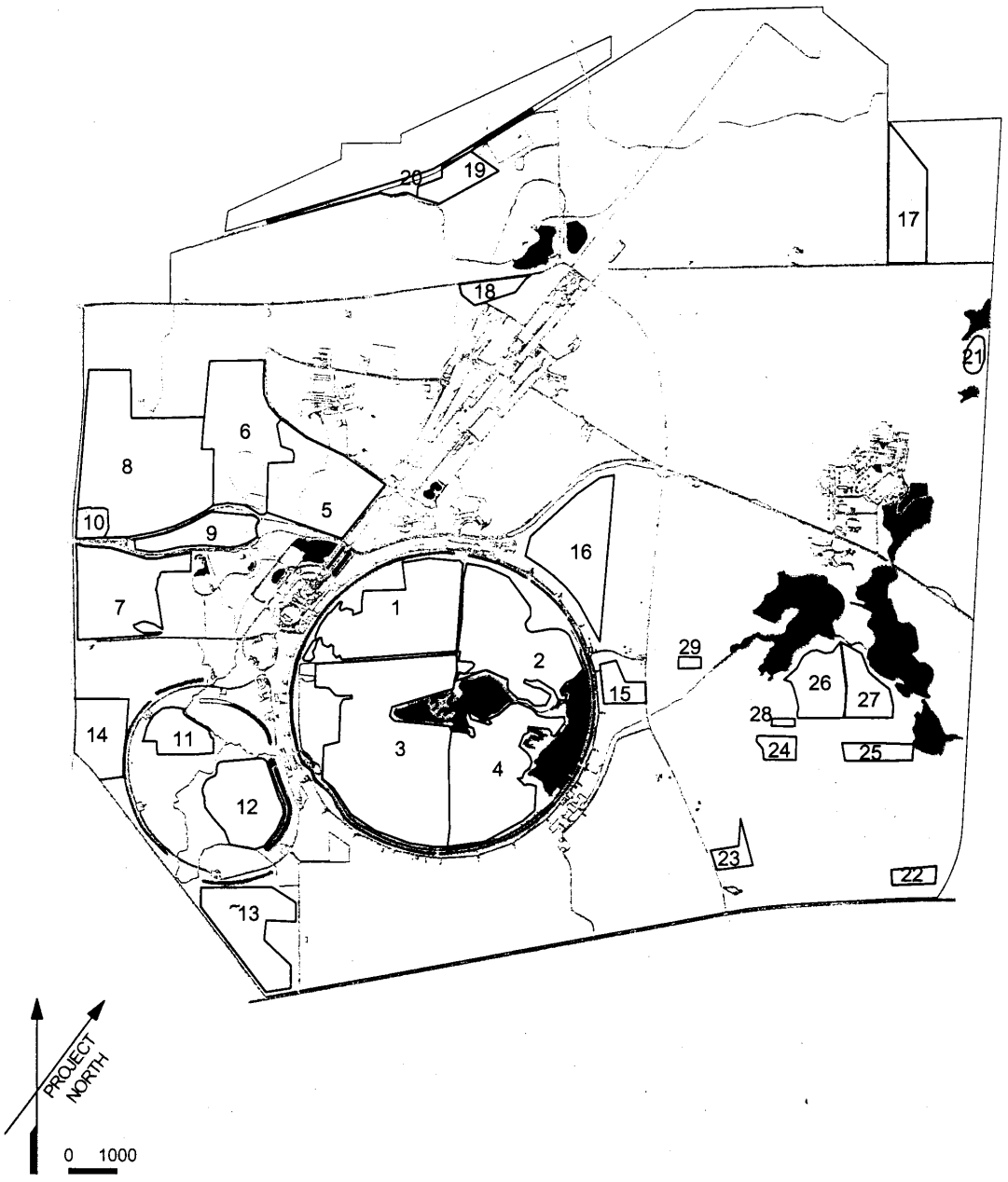
MIDEWIN NATIONAL TALL GRASS PRAIRIE



Appendix 1b


Fermi National Accelerator Laboratory
not to scale
NORTH
Kirk Road
Wilson St.
Town Road
Power Line Rd
Chesney Rd
Site 70
Site 68
Site 67
Fermilab Village
East Gate
to: Rt-59
Bike Path
Batavia Rd
Fola Road
Site 3
Site 58
Site 56
Site 55
Butterfield Road
Proton Area
Site 50
Site 52
Road D
Bike Path
Technical Division
D-Zero
Meson Area
Site 65
Site 39
Site 37
Site 38
Road B
Wilson St
CDF
Wilson Hall
Ramsey Aud.
Tevatron
Site 12
Site 29
Lederman Science Center
Main Entrance
Pine St.
Bike Path
Main Injector
Farnsworth Ave
to: I-88
1
2
3
4
5
6
7
A
B
C
D
E
F
G

Appendix 1c



Fermilab Fire Management Areas

November 5, 2002

Appendix 1d

FIRE WEATHER PLANNING FORECAST FOR NORTHERN IL AND NORTHWEST IN
NATIONAL WEATHER SERVICE CHICAGO/ROMEOVILLE IL
600 AM CST THU MAR 1 2017

...RED FLAG WARNING **OR** FIRE WEATHER WATCH HEADLINE **(LOCATION & TIME INCLUDED) (AS NEEDED)**...

.DISCUSSION... **(Manually added by forecaster)**

ILZ014-012300-
COOK-
INCLUDING THE CITIES…OF CHICAGO
600 AM CST THU MAR 1 2017

...RED FLAG WARNING **OR** FIRE WEATHER WATCH HEADLINE **(LOCATION & TIME INCLUDED) (AS NEEDED)**...

	TODAY	TONIGHT	FRI	FRI NIGHT
CLOUD COVER				
PRECIP TYPE				
CHANCE OF PRECIP (%)				
MAX TEMP (24HR TREND)				
MIN RH % (24HR TREND)				
MIN TEMP (24HR TREND)				
MAX RH % (24HR TREND)				
20 FT WIND AM (MPH)				
20 FT WIND PM (MPH)				
PEAK WIND GUSTS (MPH)				
PRECIP AMOUNT (IN)				
11 AM MIXING HGT (FT)				
MAX MIXING HGT (FT)				
1700 FT MIXING TEMP				
TRANSPORT WND (MPH)				
VENT RATE (MPH-FT)				
VENT RATE CATEGORY				
HAINES INDEX				

.FORECAST FOR DAYS 3 THOUGH 7…
(WINDS ARE 20 FT LEVEL)

$$

Creating Fire Weather Grids & Forecasts

Creating the FWF

1) Change to Fire Weather Element Group,
   Click **Weather Elements Group >> FireWx**

2) Populate FireWx Grids,
   Click **Populate >> PopulateFireWx**
   Check data to make sure it is reasonable and consistent

3) Save the Grids then Publish by **LEFT CLICKING ON GROUPS, SELECT FIREWX**

4) Create the FWF, **Products >> Formatter Launcher, then Products >> FWF** then **Run Formatter**.

5) QC the data, check to make sure there is no missing data, add the Discussion, then transmit.

Creating the FWM

1) Change to Fire Weather Element Group,
   Click **Weather Elements Group >> FireWX**

2) FireWx grids should be present from morning populating, if not, complete step 2 above. QC and/or update FireWx grids. Check thunderstorm data (if any) in the LAL grids.

3) Create the FWM, **Products >> Formatter Launcher, then Products >> FWM** then **Run Formatter**.

4) QC and transmit.

If the "PopulateFireWx" procedure fails or only partially loads data, the grids can be manually populated directly from model data. Make sure to publish the grids to official before creating the FWF or FWM.

Creating Spot Forecasts

1) Spot forecast requests will alarm on the AWIPS workstations as CHISTQLOT. (Alarms for CHISTQILX for NWS Lincoln and MKESTQMKX for NWS Milwaukee will need to be added to your workstation while in service backup).

2) Create/update (as needed) the fire weather grids and publish the grids.

3) Open the GFE formatter launcher, select "SpotWeatherGov," then run formatter icon.

4) A "Select Spot Forecast Values" GUI pops up. Select the name of the spot forecast request you wish to complete. Select the product issuance time (select a time closest to the current time). Select your name, click on OK.

5) An "Input Info Values" GUI pops up. Appropriate data should be filled in and selected, but QC then click OK.

6) The spot forecast will be generated in the formatter launcher. Type a discussion at the top of the forecast. Make sure to check the remarks section of the STQ (spot forecast request) and answer/address any questions in the discussion section of the spot forecast. Click on transmit.

7) Check the spot forecast internet page (link below) and verify the forecast made it to the internet (this will take a couple of minutes). Once it's there, you are done.

https://www.weather.gov/spot/

NFDRS Code Example

FCST,120201,971127,13,1,45,65,1,1,NW,06,M,49,37,98,58,5,0,N

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

1. STATION NUMBER

2. VALID DATE AND TIME...valid date is the next day (YYMMDD) and time 1300CST/CDT

3. WEATHER....Single digit number from 0 to 9 where...

0 Clear (less than 1/10 sky cover)
1 Scattered Clouds (1/10th to 5/10ths of sky cloud covered)
2 Broken Clouds (6/10ths to 9/10ths of sky cloud covered)
3 Overcast (more than 9/10ths of sky cloud covered)
4 Foggy
5 Drizzle
6 Rain
7 Snow or Sleet
8 Showers (in sight or at station and reaching the ground)
9 Thunderstorms/Hail

4. TEMPERATURES... Temperature forecast (in Fahrenheit) for 1 pm CST/CDT the next day.

5. RELATIVE HUMIDITY... Relative Humidity forecast for 1 pm the next day.

6. LIGHTNING ACTIVITY

A. Period 1 (L1) is until midnight that night (an 11 hour period).
Period 2 (L2) is from midnight the night of the forecast until midnight the next night.

B. A single digit (1 through 6) is used. The meaning for each number is as follows:

1 No Thunderstorms
2 Few building Cumulus with isolated Thunderstorms
3 Much building Cumulus with sct Tstms, light to mod rain reaching the ground
4 Tstms common but do not obscure the sky, moderate rain reaches the ground
5 Tstms common and ocnly obscure the sky, mod to hvy rain reaching the ground
6 Same as 3 but dry, no rain

7. WIND DIRECTION AND SPEED... Wind fcst at 1 pm cst/cdt the next day (10 minute avg)

8. TEN HOUR TIME LAG FUEL MOISTURE

The gain or loss of moisture on fuels from 1/4 inch to 1 inch in diameter. Almost always will be "M" for moderate.

9. TEMPERATURE...24hr max/min temp (F) fcst fm 1pm the day of the fcst til 1pm next day

10. RELATIVE HUMIDITY...24hr max/min rh fcst fm 1pm the day of the fcst til 1pm next day

11. PRECIPITATION

The number of hours during a period when precipitation is forecast. Period 1 is from 1 pm the day of the forecast until 5 am the next day (16 hours). Period 2 runs from 5 am the next day until 1 pm that same day (8 hours).

12. WET FLAG

Wet flag is used to indicate "fuels wet". All indices will be forced to zero if "Y=yes" is used. NOTE, in most cases an "N=no" will be used unless there is snow on the ground or the ground is extremely wet.

NWS Chicago (LOT) SPOT WEATHER FORECAST

Date and Time Period of Burn _____

Location _____

Requesting Official _____

Discussion _____

_____

_____

_____

_____

	Today	Tonight	Tomorrow
Sky/Weather	_____	_____	_____
Temperature	_____	_____	_____
RH	_____	_____	_____
20FT Wind (mph)	_____	_____	_____
Chance of Precipitation	_____	_____	_____
Mixing Height (ft agl)	_____	_____	_____
Transport Winds (mph)	_____	_____	_____
1700 FT Mixing Temp	_____	_____	_____
Vent Rate (mph/ft)	_____	_____	_____

Remarks (wind shifts, fronts, lake breezes, etc.) _____

_____

_____

WS FORM D-1
(1-2005)
(Supersedes Previous Editions)

SPOT REQUEST

(See reverse for instructions)

U.S. Department of Commerce
NOAA
National Weather Service

Please call the NWS Weather Forecast Office (WFO) when submitting a request and also after you receive a forecast to ensure request and forecast were received.
Please provide feedback to WFO on forecast.

1. Time†	2. Date	3. Name of Incident or Project	4. Requesting Agency

5. Requesting Official	6. Phone Number	7. Fax Number	8. Contact Person

9. Ignition/Incident Time and Date

10. Size (Acres)

11. Type of Incident
- ☐ Wildfire
- ☐ Prescribed Fire
- ☐ Wildland Fire Use (WFU)
- ☐ HAZMAT
- ☐ Search And Rescue (SAR)

12. Reason for Spot Request (choose one only)
- ○ **Wildfire**
- ○ **Non-Wildfire** Under the Interagency Agreement for Meteorological Services (USFS, BLM, NPS, USFWS, BIA)
- ○ **Non-Wildfire** State, tribal or local fire agency working in coordination with a federal participant in the Interagency Agreement for Meteorological Services
- ○ **Non-Wildfire** Essential to public safety, e.g. due to the proximity of population centers or critical infrastructure.

13. Latitude/Longitude:

14. Elevation (ft, Mean Sea Level)
Top: **Bottom:**

15. Drainage

16. Aspect

17. Sheltering
- ☐ Full
- ☐ Partial
- ☐ Unsheltered

18. Fuel Type: __Grass __Brush __Timber __Slash __Grass/Timber Understory __Other_____
Fuel Model: 1,2,3 4,5,6,7 8,9,10 11,12,13 2,5,8

19. Location and name of nearest weather observing station (distance & direction from project):

20. Weather Observations from project or nearby station(s): (Winds should be in compass direction e.g. N, NW, etc.)

Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks *(Relevant Weather, etc)*
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	

21. Requested Forecast Period
Date

Start _____

End _____

Forecast needed for:
- ☐ Today
- ☐ Tonight
- ☐ Day 2
- ☐ Extended

22. Primary Forecast Elements (Check all that are needed) *(for management ignited wildland fires, provide prescription parameters):*

	Needed:
Sky/Weather	☐
Temperature	☐
Humidity	☐
20 ft Wind	☐
Valley	☐
Ridge Top	☐
Other (Specify in #23)	☐

23. Remarks (other needed forecast elements, forecast needed for specific time, etc.)

24. Send Forecast to:
ATTN:

25. Location:

26. Phone Number:
Fax Number:

27. Remarks (Special requests, incident details, Smoke Dispersion elements needed, etc.):

EXPLANATION OF SYMBOLS: † Use 24-hour clock to indicate time. Example: 10:15 p.m. = 2215; 10:15 a.m. = 1015
Indicate local standard time or local daylight time

WS FORM D-1, January 2005 INSTRUCTIONS:

I. Incident Personnel:

1. Complete items 1 through 27 where applicable.
   a. Example of weather conditions on site:

13. Weather Observations from project or nearby station(s):											
Place	Elevation	†Ob Time	20 ft. Wind		Eye Level Wind.		Temp.		Moisture		Remarks *(Relevant Weather, etc.)*
			Dir	Speed	Dir	Speed	Dry	Wet	RH	DP	
Unit G-50	1530'	0830	NW	6-8	NW	3-5	32		72		Observations from unit RAWS station, 50% cloud cover.

   b. If the incident (HAZMAT, SAR) involves marine, put the wave/swell height and direction in the Remarks section.

2. Transmit in numerical sequence or fax to the appropriate Weather Forecast Office. (A weather forecaster on duty will complete the special forecast as quickly as possible and transmit the forecast and outlook to you by the method requested)
3. Retain completed copy for your records.
4. **Provide feedback to NWS utilizing separate page.** Be sure to include a copy of the spot forecast with any feedback submission including forecaster's name. Feedback to NWS personnel is imperative to assist with future forecasts. Remember, feedback on correct forecasts is equally as valuable as feedback on incorrect forecasts! If spot forecast is significantly different than conditions on site, a second forecast may be required.

II. ALL RELAY POINTS should use this form to insure completeness of date and forecast. A supply of this form should be kept by each dispatcher and all others who may be relaying requests for forecasts or relaying completed forecasts to field units.

III. Forms are available from your local National Weather Service Weather Forecast Office. They may also be reproduced by other agencies as needed, entering the phone number and radio identification if desired.

NOTICE: Information provided on this form may be used by the National Weather Service for official purposes in any way, including public release and publication in NWS products. False statements on this form may be subject to prosecution under the False Statement Accountability Act of 1996 (18 U.S.C. § 1001) or other statutes.