

# Fire Environment Committee Meeting

January 22, 2024

virtual via Teams

## Welcome and Introduction (Jamie Dunbar)

- Reviewed current FEC representatives
  - Josh Bell now representing NCFS Region 1 on the FEC
  - NCFS Region 3 has a vacancy (Chris Sharpton looking to find a replacement)
  - From Chris Jordan: going forward, Casey Phillips will be the NC Wildlife representative
  - From Tammy Manning: note that ncdenr.gov email addresses (such as Randy Strait's) have changed to deq.nc.gov

## Review and Discussion of Minutes from Spring 2023 Meeting (Jamie Dunbar)

- Review of the 2019 fall flash drought was timely leading into the 2023 fall flash drought
- DAQ shared some information about proposed changes to EPA's PM2.5 standards
- Since last spring, have had 3 meetings with interagency folks about FDOP revisions
- Have made edits to SMP document and are moving forward with BlueSky, including in the RX-410 course that Jamie was recently in
- No corrections offered to the minutes; they are approved
- Note: a Teams channel is now set up for the FEC, so information and larger files can be posted and shared there

## NC DAQ Updates and Notes (Tammy Manning)

- Air Emissions Reporting Requirement (AERR)
  - Proposed updates came out in August 2023
  - Requires DAQ to submit criteria air pollutants (PMs, ozone, NOx, lead, etc.) based on thresholds for facilities
  - On a triennial basis, must submit fire data for the National Emissions Inventory
  - Also want to collect data for prescribed burns, among other things
  - Comment period was extended to November 17
  - NC DAQ submitted comments after reviewing prescribed burn data with Jamie
  - On the docket, there were about 200 comments, mostly from state agencies or trade organizations
- EPA is working to create a modeling platform based on the 2022 National Emissions Inventory (NEI)
  - DAQ has collected fire data from various sources and submitted it to EPA
  - Will inform State Implementation Plans (SIPs) for ozone and regional haze
- Update on PM2.5 National Ambient Air Quality Standard (NAAQS)
  - EPA is expected to complete their consideration of the PM2.5 standard recommendations by Jan 30, 2024
  - Current standards are 12  $\mu\text{g}/\text{m}^3$ , but this could be lowered to 9 or 10  $\mu\text{g}/\text{m}^3$
  - NC has 3 monitors with daily PM2.5 readings between 9 and 10  $\mu\text{g}/\text{m}^3$ , which could be above the new standard if they opt for the lower end: Millbrook in Wake

County, Lexington in Davidson County, and Remount Road in Mecklenburg County

- DAQ has looked at the highest daily PM<sub>2.5</sub> values from those sites, and they could invoke the exceptional events rule for 15 of those daily events, mostly due to Canadian wildfires between 2021 and 2023
- Note that some states, including CA and GA, have looked at invoking exceptional events rule for prescribed burns as well
- If the final rule is 9 µg/m<sup>3</sup>, DAQ will have to go through a designation process to identify exceptional events and submit a designation recommendation to EPA
  - Can designate specific boundaries (counties, townships, or other geographic areas) but EPA gets the final say on those
  - NC has not had to do an exceptional events demonstration in recent memory, so we'd look at what other states have done, including using a tool developed by western states
  - Within 2 years, EPA must designate those areas as in attainment, unclassifiable, or nonattainment based on NAAQS
  - Within 3 years, would need to submit an infrastructure SIP to EPA

#### **USFS Regional Air Program** (Melanie Pitrolo, Air Program Manager with US Forest Service)

- What are the top three impediments for prescribed fire implementation? Per survey results, it's weather, capacity, and air quality/smoke management
- Fires release not just CO<sub>2</sub> and water vapor, but also carbon monoxide, particulate matter (especially PM<sub>2.5</sub>s), volatile organic compounds (VOCs), nitrogen oxides (NO<sub>x</sub>), sulfur dioxide, methane, and other air toxics
  - From a public health standpoint, PM<sub>2.5</sub> is the most important pollutant released by prescribed fires
- Smoke management objectives
  - Minimize the amount and concentration of smoke entering populated areas
  - Prevent and minimize public health and safety hazards, including impacts to sensitive sites and visual impairment on roadways
  - Avoid exceeding NAAQS
- Basic Smoke Management Practices (BSMPs)
  - Evaluate smoke dispersion conditions (could be done by modeling such as VSMOKE, PC HYSPLIT, or BlueSky)
    - USFS has been using PB-Piedmont a lot, especially since it can output the risk of superfog incidence
  - Monitor effects on air quality
    - Can be done via e-samplers or E-BAMs (need electricity but not WiFi; data transmitted via satellite)
      - These are expensive (~\$20k) but are available via loan via the NWCG cache; USFS office in Asheville has 5 available for loan to partners
    - Air quality sensors include Purple Air, which are inexpensive, small, and need electricity and WiFi

- USFS has tentative approval to place these at some of their sites; trying to deploy about 50 around the region
  - Another option is Clarity Nodes, which sense PM2.5 plus other pollutants
    - More expensive and use a subscription service
    - Communicate via cellular data
    - Eastern Band of the Cherokee Indians is working to purchase these, and are partnering with USFS to evaluate them
- Keep good records and maintain and burn/smoke journal, since even one event could cause an exceedance of NAAQS that may not be clear until ~3 years later
- Communicate to the public
- Consider emission reduction techniques while still achieving burn objectives
- Share the airshed – coordinate burning across an area

### **State Climate Office Updates** (Corey Davis)

- Seasonal climate update
  - 2023 was tied for the 7th-warmest year on record in NC, with the warmest weather (relative to normal) in our coolest months: January, February, and December
  - Also was the 61st-driest year on record, with one notable dry stretch in the fall
    - Fall drought saw precipitation deficits of more than 6 inches across western NC, very dry soils, and Extreme Drought (D3) for the first time since 2016-17
    - An active fall fire season in the Mountains, and the DENSCA Index did a good job of identifying the days with fire activity
  - An El Niño pattern also emerged in the fall and has brought wetter weather in December and January, consistent with historical events
    - Drought is almost gone from NC as of January 16, with only a few areas along the TN and GA borders classified as Abnormally Dry (D0) or in Moderate Drought (D1)
  - Expecting a warm-up later this week and rain on either end of the weekend
  - February is the most likely to month to be wetter than average in past moderate to strong El Niño events (10/12 cases), but the odds decrease by March (5/12)
  - Climate Prediction Center does expect a lingering El Niño influence (with wetter weather) into at least the early spring
  - Past springs after an El Niño winter have ranged from wet to near normal to dry, and sometimes have less severe weather activity, but that is also quite variable historically in NC
  - After that, ENSO likely to return to a neutral state by the summer, but too early to tell what might happen this fall (other than that a back-to-back El Niño is unlikely)
- Fire Weather Portal renovations
  - Last year marked 10 years since the FWIP's initial release for NC, so between its age, its old code that makes implementing new features difficult, and new funding and regional interest, have started working on renovations to the tool

- Interface looks similar, but with some changes to make finding, exploring, and exporting data easier
- Other changes include adding fire and smoke reference layers, calculated datasets such as Fosberg fine dead fuel moisture and vapor pressure deficit, summary tables for FDRA-averaged data, graphs for forecast gridded data (i.e., showing forecasted hourly mixing heights), and re-calculated gridded KBDI
- Feedback from the FEC included:
  - Showing solar radiation as a percentage of the clear-sky value is good
  - Keep BI/SC/IC non-color-coded since the interpretation of those values can vary by region
  - Having a tooltip or explanation of the difference between the Fosberg and Nelson fuel moisture datasets would be helpful
  - Would also like a gridded Fosberg fine dead fuel moisture product
  - Could we show the snow flag from WIMS?
    - Corey will check whether that is available in WXML output
- Timeline is currently to finish and roll out the updates by late spring or early summer, with at least one webinar for USFS Region 8, and others possible in NC

**NWS Updates** (Jimmy Taeger, NWS Raleigh; Scott Kennedy, NWS Morehead City; Mike Rehnberg, NWS Greenville-Spartanburg)

- AOP changes for 2024
  - NWS GSP fire weather program leader changed to Mike Rehnberg
  - For NWS GSP, the PFW is updated regularly (rather than only twice daily)
  - Update the NFDRS forecast update time to 4 pm (NWS GSP will send by 3 pm)
  - Current AOP includes maps of observing stations
    - Could those be updated? Jimmy and Corey will work on this
  - Some changes to station details, including adding a few missing ECONet stations
  - Should portable RAWs stations be included?
    - Remove them since their locations are not permanent
- Spot forecasts
  - NWS Spot Forecast page is moving from the NIDS web farm to the IDP farm, which should make it more reliable, more mobile-friendly, fix a few bugs, and add some enhancements such as adding a burn end time and multiple request scheduling
- From Melissa at NWCG: they may get rid of lightning activity level and Haines Index (likely a few years down the road)
- South Carolina asked if NWS would be transitioning to using ERC as criteria for Red Flag Warning issuance
  - NWS Columbia already uses ERC percentiles (93rd percentile?) as one criteria
    - Jamie: Concern with some issues in fuel models, so NCFS will review this over the next few weeks (has been followed-up on)
- Request from Jamie: for the ops offices, could we get a list of phone numbers for each NWS office to call for internal coordination, such as if a fire occurs?

- Scott: Yes, but that's not included in public-facing documents such as the AOP

#### **NFDRSv4 and RAWS (Jamie Dunbar)**

- Work on FDOP revision continues – delayed due to the active fall fire season
  - Next interagency meeting is on 1/25, then 2/7 and 2/8 (virtual)
  - Evaluating weather and fire data from 2008 to 2022
  - Southeast-wide FDOP emphasis
    - Evaluating fuel models, indices, etc.
    - GSI impacts to models with live fuels
      - Vapor Pressure Deficit, min temp, and min day length
      - Discussion nationally that v5 will include a fuel model with a mixture of live and dead fuels (all size classes), reminiscent of G
        - Rolled out within a year or two?
  - Result will be an updated FDOP
    - With new breakpoints, etc.
    - Updates to pocket cards, FWIP breakpoints for color-coding and percentiles
    - Timing contingent on analysis and editing – maybe summer 2024?
- [FEMS](#) and WIMS
  - Expecting WIMS to stay up for at least another year
  - FEMS will be able to handle hourly fire danger outputs
  - One difference from WIMS is automated snow flag
- Live fuel moisture sampling
  - Current website is outdated but should be replaced by a new interface in FEMS
  - Only sampling at Dupont state forest now
  - USFWS may start sampling at Pocosin Lakes?
- Soil moisture station at Camp Lejeune
  - Installed at the end of October
  - Continuing to evaluate output from the sensors
  - Soil profile has more mineral soils lower down
  - Hoping to get more stations installed – one at the south and one in the north – but not sure of funding for those
- RAWS stations
  - FTS annual maintenance agreement running as of November
  - Annual maintenance is still occurring
  - Looking to upgrade two stations (Whiteville and Camp Lejeune)
    - Includes new RM Young wind sensors
  - USFS has switched to using BML for maintenance, but may look at switching for sites like Croatan

#### **2023 SMP Revision Review (Jamie Dunbar)**

- Smoke Management Program
  - Latest revisions were approved on December 12, 2023
  - Updated to reflect Senate Bill 582 about immunity from liability

- Added a note about determining a 16,000-acre airshed (can be done by drawing a circle in Google Earth)
- Includes the table from the TechNote about nighttime burning
- For low complexity situations, clarifies the need to view the YouTube training video and follow the outlined steps
- For moderate and high complexity situations, includes the two-track system with PC HYSPLIT and web-based BlueSky Playground
  - We could hold a BlueSky training just for NC, covering some of the nuances
    - Maybe hold this at a PFC meeting?
- Must show that the 24-hour NAAQS will not be violated
- Clarified the definition of a smoke-sensitive area, including examples
- Appendix 5 includes the Prescribed Fire Plan (extracted from the 2020 update)
- Draft of new NCFS Prescribed Fire Plan
  - Based on input from forest management and fire environment
  - Includes entries for estimated tonnage by size class per acre
  - Gives options for either VIS or ADM burn
  - For on-site weather reading, includes area to specify the general location (e.g., on-site, open, slope position) and the fine fuel moisture (Fosberg)
  - In Part 2 (Pre-Burn Planning), fine-tune the “Fine Fuels” name to clarify that it refers to the type of fine fuels, not the fine fuel moisture content
- Hosting VSMOKE Web on NCDA site
  - Jamie has been in contact with an NCDA programmer, who has worked with Dan Chan to get the code
  - Should there be any specific language on the NC version of the tool?
    - PC version of VSMOKE creates a visibility table – could that be added? (it’s not available on the GA version)
  - Are there any other tools we might want to host for NC?
    - Such as the screening tool from FL
- Smoke database edits and finalizations
  - To fall under the Prescribed Burn Act, people have to call into their district office, and their burn info goes into the fiResponse database system
  - Probably 15% (or more) of burns are not completely populated, and many are missing the final acreage or tons per acre
    - Please stress to NCFS folks to complete all entries before closing out a burn

## Training Needs and Opportunities

- Miscellaneous Meetings/Trainings
  - RX Fire and Air Quality, Quarterly Call - Jan 24, 2024
  - FDOP Meeting - Jan 25, 2024 and Feb 7 and 8
  - SFE Webinar: Prescribed Burners Guide to the Fire and Smoke Map - Jan 31, 2024 at 1300
  - Smoke Summit VI at the Jones Center in GA - Feb 12 to 14, 2024

- Jamie will be attending along with other regional forestry service and air quality representatives
  - S-290 in Crossnore - Feb 19 to 22, 2024 (Terry Lebo supporting)
  - S-491 at NAFRI - Feb 26 to Mar 1, 2024
  - S-390 in Crossnore - Jun 3 to 7, 2024
  - TNC will be hosting RX-310 in Crossnore in June; registration hasn't opened yet
    - Led by Adam Warwick
  - PIC Durham Conference Center - May 19 to 22, 2024
  - Via Melanie Pitrolo: RX-410 courses coming up in Maryland in June, near Orlando this fall, at TN/KY academy next year, and maybe in Asheville (by Army Air Force Academy) next spring
  - Will there be RT-300 in NC, like the big one in Chattanooga a few years ago? No details about that yet, but Kelly Cagle will check
- Jamie is trying to collect lessons learned and best practices for fine fuel moisture sampling from other states, and for organic soil moisture stations
  - Note: USFS has started deploying soil moisture sensors at more of their RAWS stations in the Southeast, but not sure when that might happen for NC

## Agency and Program Updates

- NC Forest Service
  - Region 3 (Chris Sharpton and David Greathouse)
    - Cold in the Mountains last week with some snow, especially D9 and northern D1 (2-6 inches)
    - 3 people short of being fully staffed at BRIDGE; should be able to manage more crews this year
  - Region 2 (Keith Money)
    - Losing people as fast as they can hire them, so still a lot of vacancies
    - Down 3 burn bosses since the start of January
    - Fitting in burns when they can, but generally pretty wet
  - Region 1 (John Cook and James Caddy)
    - More positions filled now but general lack of experience among staff, and still some vacancies
    - Not much attempted burning lately due to the wet weather
      - Some smaller tracts lined up in D7
    - Getting questions about BlueSky and issues with people not filling out the smoke request forms correctly
  - Central Office (Jamie Dunbar)
    - Kevin Harvell is filling Greg Hicks' old position
- NC Wildlife Resources Commission (Casey Phillips)
  - Trying to update MOU with NCFS over the next few months
  - A few prescribed burns in recent weeks
- NC State Parks (Thomas Crate)
  - Still working on MOU with NCFS, since the last one expired over the summer

- Building a drone program in the State Parks system, and trying to get a few pilots (and even a full-time pilot position) established
- Now have an equipment manager position, which helps with new equipment including dozers, Marsh Master, engines
- Organizationally, going from 4 to 5 districts this summer and establishing 3 fire regions with a coordinator and burn crew (with permanent positions) in each
  - Have one crew online now, hoping to bring the second online this spring and the third in another year or so
- Started burning in early January, and doing some burning today in the Piedmont and Coastal Plain
- US Forest Service (Kelly Cagle)
  - In general, most every office in the state has added some capacity over the last year, with 2-4 people in the fire program at each office
  - Some issues with type 6 engines (especially newer Dodges) out of commission at the moment, so running 20-30% lower than normal
  - Uwharrie unit just added a new dozer today, and waiting on a new Mac hauling unit later this month
  - Trying to burn most any day that the weather allows
  - FMO meeting this week in Morganton (first since 2020)
- DOD/Camp Lejeune (Pete Steponkus)
  - Forest protection section at Lejeune is fully staffed at the moment, but will have one person retiring this summer
  - Done a half dozen or so prescribed burns so far this year
  - Did about 4,700 acres of prescribed burns last year, with almost 7,000 acres burned by wildfires
  - Replacing some older engines, and just added six disc mulchers
- National Weather Service (Jimmy Taeger)
  - No other reports besides AOP updates
- The Nature Conservancy (Carmella Stirrat)
  - Crews in Sandhills and Coastal Plain have completed their refresher and pack tests, and have started to burning on TNC land and in partners
  - Focusing on moving crew leader positions in the Coastal Plain to year-round, like they did in the Sandhills
  - Lots of media attention and interviews about seasonal press release for burning
  - Media day coming up in the Green Swamp talking about the Pulp Road fire a year after that burn
    - Also created a story map about that event
- State Climate Office (Corey Davis)
  - Filled three staff positions since the beginning of December, including Jared Bowden, who has moved over from NCSU to become associate director
- NC Prescribed Fire Council (Wes Sketo)
  - PFC meeting will likely be in August in western NC; save the date will go out in a couple months
    - May include a BlueSky deep dive for a session



### **Planning for Next Meeting**

- Likely mid to late May, barring spring fire season issues
- Maybe Wednesday and Thursday, May 29 to 30
- Could try for the coast/Nags Head area again? Will need to check on rates since it's right after Memorial Day