

FIREWATCH- A 3 TIERED APPROCH TO FIRE/AQI & RISK MIDIGATION

Moleek Busby

[Washington Trails Association's](#)

Field Operations Senior Manager

mbusby@wta.org

(206)715-0010

The purpose and goals of this session are for Moleek to share the work he has done at Washington Trails Association as the safety and risk management field operations senior manager. WTA is the largest state-led trail maintenance volunteer organization in the USA. The volunteer trails department of WTA got its start in 1993 and has worked closely with all land managers across the state, including but not limited to city, county, and federal entities. Working in the rugged terrains and wilderness of Washington State can add environmental risks like avalanches, high winds, severe wet saturation, heat, and, as climate change is a variable, especially wildfires. The main focus will be on showing WTA's 3-tiered system of training, AQI field devices, 24/7 MOC effective transparency, and consistent communication.

Action step synopses

Participants will be aware of some support tools to help effectively communicate with their field staff/volunteers/members. Participants will feel motivated to bring a systems/training/ and equipment approach to their organizations regarding wildfire and AQI hazards. Through this session, participants will be able to grade their own environmental hazards protocol and be motivated to leverage pre-existing systems or create some new ones for their respective organizations.

Three action steps:

- Create Manager on Call system to relegate information and support in field decision making
- Design and implement annual trainings for field staff to make executive safety decisions
- R&D in field equipment to better inform Filed Staff of real time AQI data

Resource Presentation & Reference Materials

[L&I Wildfire smoke training resources](#)

[WS L&I Rules](#)

[WA State AQI](#)

[Purple Air](#)

[Air Quality Index](#)

[Watch duty](#)

[Hike Finder Map — Washington Trails Association \(Click wildfire button left\)](#)

<https://fortress.wa.gov/dnr/protection/ifpl/>

[Monitoring v4.1.1AirNow Interactive Map](#)

FIREWATCH: A 3 TIERED SYSTEMS/TRAINING/FILED AUTHORITY APPROACH



INTRODUCTION:

Moleek Busby - (he/him) Field Operations Senior Manager

Moleek Busby is originally from the San Francisco Bay Area. His career in trail work started with the California Conservation Corps. After college and music projects in Chico, CA, Moleek returned to conservation, working nine years for the Student Conservation Association and moving up the ranks. As the Field Operations Senior Manager for the Washington Trails Association, he has oversight of the trail maintenance risk management information system. Moleek is also on the Wilderness Risk Management steering committee, and an ambassador for the Mountain Mind Project. When he is not helping create safe space on public lands for Washingtonians, Moleek enjoys creating music, hiking, backpacking, kayaking, archery, car "glamping" and getting some trail work in. He is a lifelong advocate for marginalized people to have ownership in their space and to feel safe volunteering and recreating on public lands.

Email: mbusby@wta.org

California Conservation Corps

1993-1994

Associated Arborist

1998-2000

Line cook

2000-2003

Grocery buyer at a co-op

2003-2006

Hardwood floor apprentice

2006-2008

Bouncer/security

2005-2015

Student Conservation Association

2009-20018

Bay area expeditions (Backpack guide)

2013-2016

WTA Field Operations Senior Manager

2019-Present





GOALS & TAKEAWAYS



- 1. Gain some knowledge of Fire & Air Quality Index Risks**
 - a. WTA In field training and informations transparency
 - b. WTA systems for religating support
 - c. Creating a culture of supported decision making for field staff
- 2. Learn about In Field devices & tips during fire season**
 - a. Information from WTA Manager on call staff (Report as well)
 - b. Tallying landmarks for visual AQI ques
 - c. In field Air Quality Monitor tool
- 3. Talk Story**
 - a. Share some incidents that have informed our PPP
 - b. Answer 1-3 Questions



LANGUAGE & ACRONYMS



Disclaimer:

I am not the expert in the room, collectively we all are together so thank you for giving me this time and space. I will also be using discursive language so please give yourself and me some grace, but below are some names and Acronym definitions

MOC- Manager on Call 24/7 support staff member

PPP- Policy Procedure & Practice

AQI- Air Quality Index

IFPL- Industrial Fire Precaution Levels

L&I- Washington State Liability & Insurance

KN-95 Masks. Used for protection around hazard substances

PM 2.5 Fine Particulate Matter

InReach/Garmin- Satellite communications device used by Field leaders to communicate information

WTA- Statewide Volunteer Trail Maintenance



Report: Trail Segments with WP Trail Segments and Work Parties
Annual Work Parties-Trip Type last year

Total Records
1,437

Total Work Party: Total Hours Wo...
158,413.78

Total Work Party: Total Volunteer ...
126,945.97

☐ Work Party: Work Party Type ↑ ▾	Sum of Work Party: Total Hours Worked	Sum of Work Party: Total Volunteer Hours	Record Count
☐ Backcountry Response Team	35,142.76	19,154.91	134
☐ Day Work Party	97,390.50	87,042.10	1100
☐ Outreach Event	10.00	3.00	16
☐ Packing Facility	7.00	7.00	5
☐ Training	8,675.50	5,801.00	78
☐ Volunteer Vacation	6,610.50	6,264.00	29
☐ Weekend Work Party	1,504.75	1,342.50	9
☐ Youth Day Work Party	4,579.89	3,980.55	57
☐ Youth Volunteer Vacation	4,492.88	3,350.91	9
Total	158,413.78	126,945.97	1437

WTA snapshot:

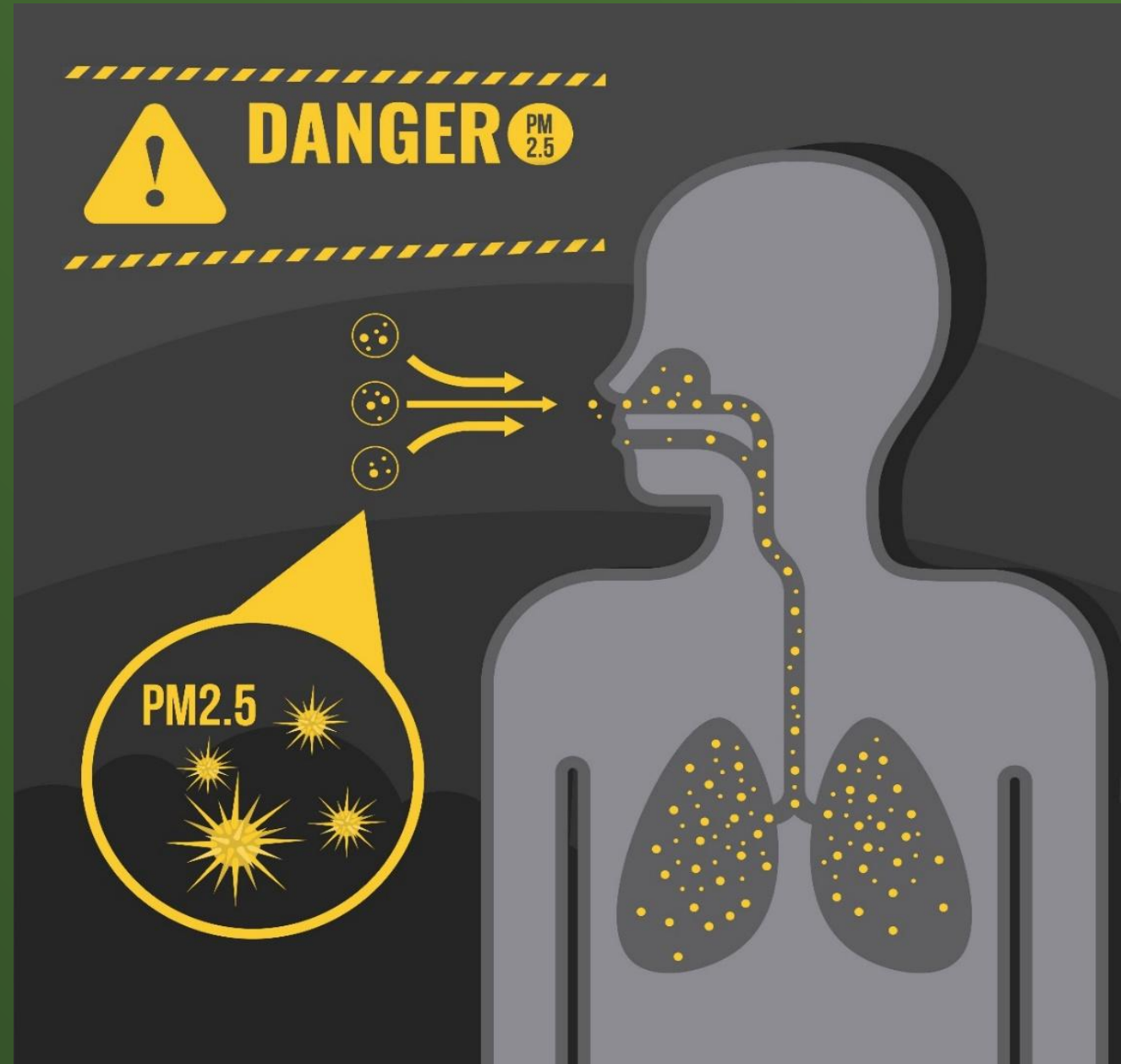
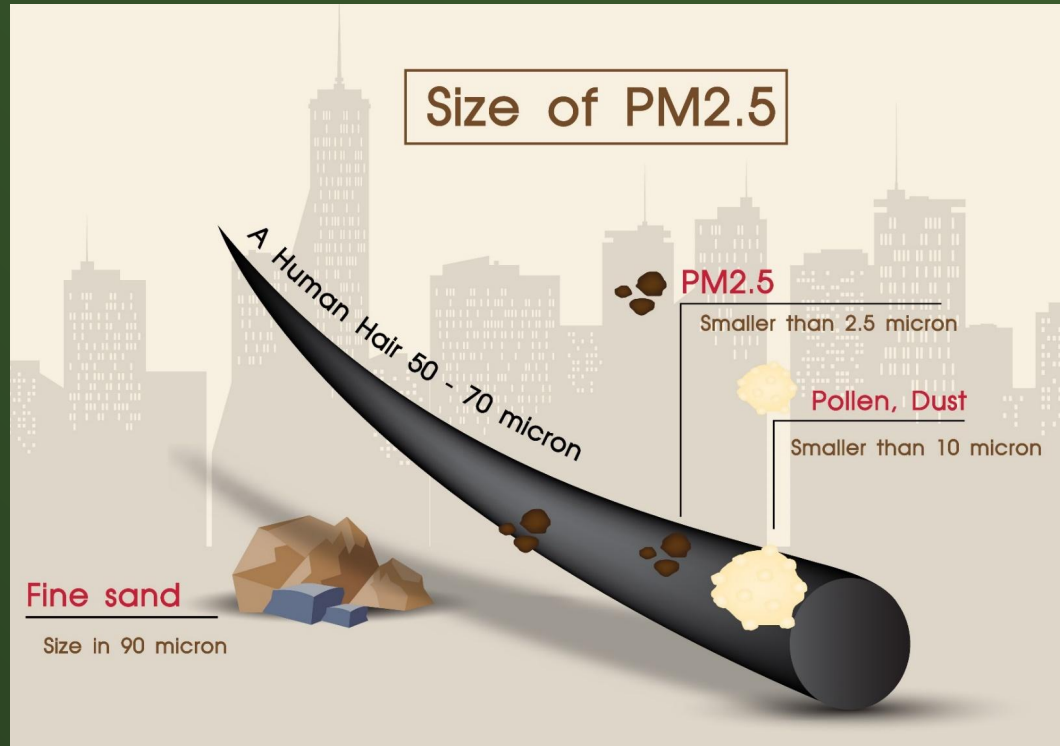
- *Trailwork: volunteer, youth and professional crews*
- *Average 160,000 hours of trailwork on public lands across Washington state annually*
- *Average 300 trails worked on annually*
- *Average 3,500 volunteers engaged annually*



DANGERS OF FINE PARTICULATE MATTER or PM2.5

This can be a hazard or danger to Unhealthy or sensitive groups or individuals. (Heart or Lung issues)

There is a likelihood that WTA will have one if not more folks volunteering under this group of people



AQI IMPACT: NIGHT TIME EVACUATION

Circumstances Multi day backpacking trail crew

Prior to the trip, two individuals informed CL that they had asthma and were worried about the possibility of smoke on the trip.

- KN95 grade masks for the crew were distributed
- At 1:11am CL woke Assistant CL and told him that the smoke conditions had gotten bad and asked if he would come out and look around with them.
- They spent 10 minutes watching the ridge line of the bowl toward where the wind was blowing in from,
 - approximately from the N and E (the direction of the Downey Lake fire).
 - The stars were still visible if you looked straight up, but the bowl the crew were camped in was very smoky and difficult to see across.

Actions taken:

The crew only had one exit trail off the mountain, and only one exit road out. The Leaders decided to wake up the crew at about 1:20am.

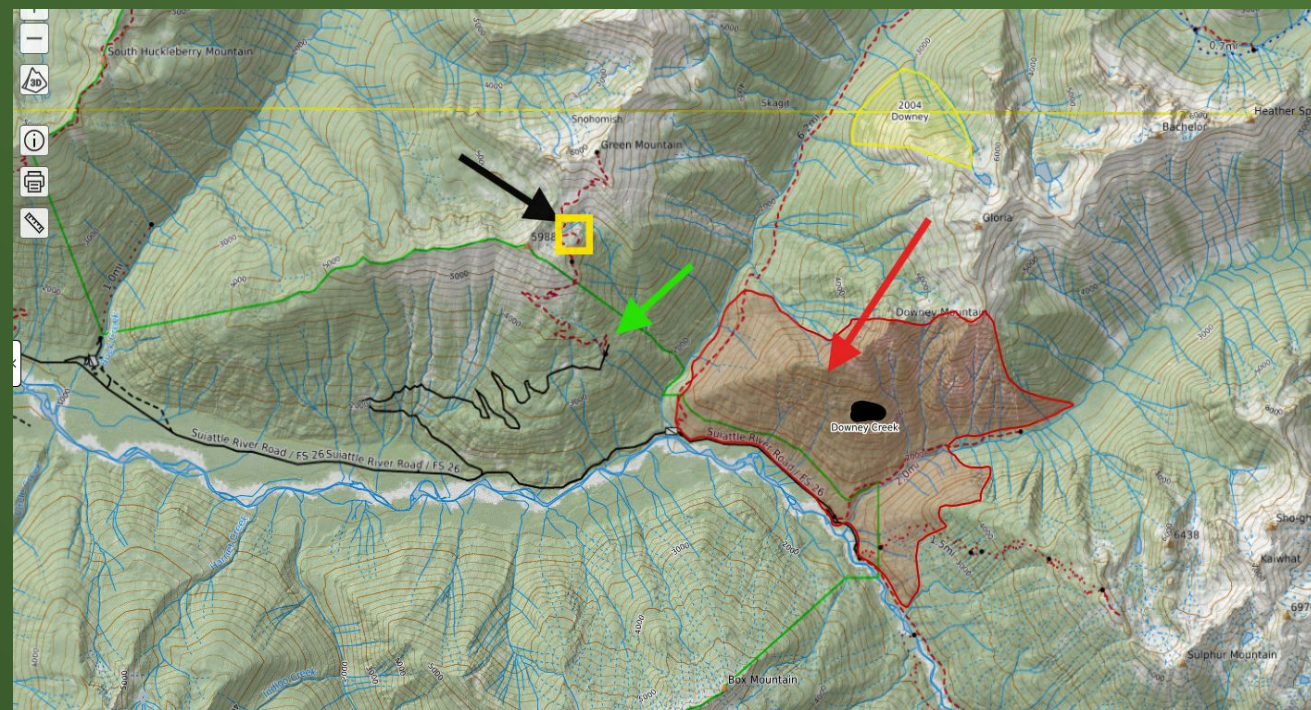
CL contacted MOC on their InReach to alert them to their situation and let them know they were evacuating

The smoke got worse as they descended.

- The crew also turned our headlamps off at each water break to have a better look around and to make sure They weren't seeing any flames or glow from the fire.
- They could see thick smoke across the Suiattle River valley, but the stars were still visible above them. The hot winds continued to gust and ash was blowing all around them as they hiked out.

They arrived at the cars at 4am.

- Pro tip They used the same line order to drive out. ICL led with a radio on and ACL swept with thier radio on.
- They stayed within sight of each other's headlights until they all rendezvoused at the Darrington Ranger Station. They arrived safely back at the Ranger Station at 5:30am.



AQI- False Call

IR-0444

Near Miss AQI Support and decision tools

TH3 LTF @ Nile Ridge Trail 8/20/23

Evacuation two days early due to poor AQI. In this case, the MOC AQI resources was indicating it to be worse than it was.

1. The Moc resources did not have accurate information due to
 2. Wind and topographical factors
- out-of-field support for decision process. This process is slow clunky and antiquated.

Lessons & outcome:

Because of this incident, more refined resource for MOC and Field-based folks was audited and added to the field manual. The goal being MOC able to give more real-time accurate data, informing field staff and volunteers, as well as the training for said field perspective to make those decisions to evacuate due to poor AQI ahead of a risky outcome.

A representation of what AQI scale may look like below

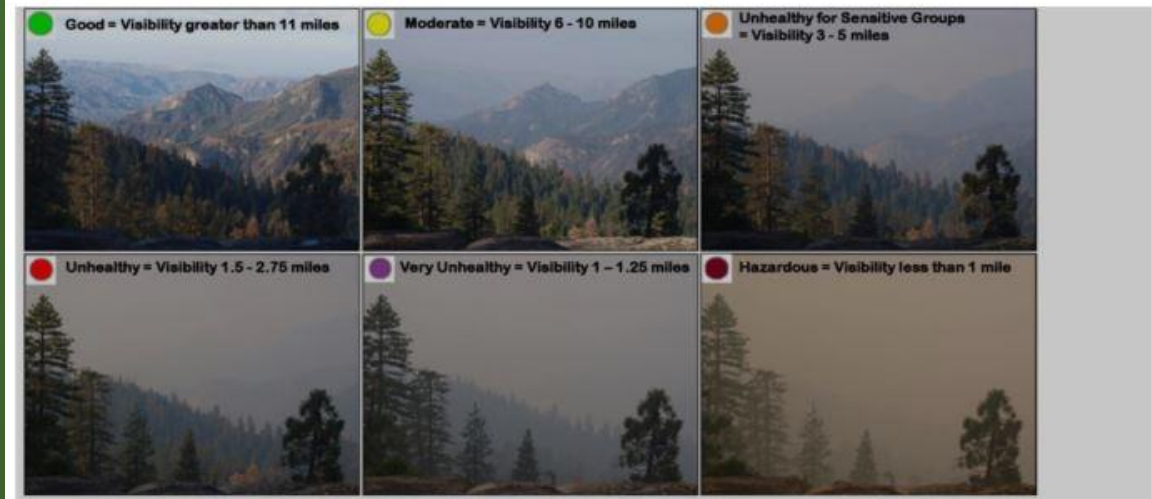
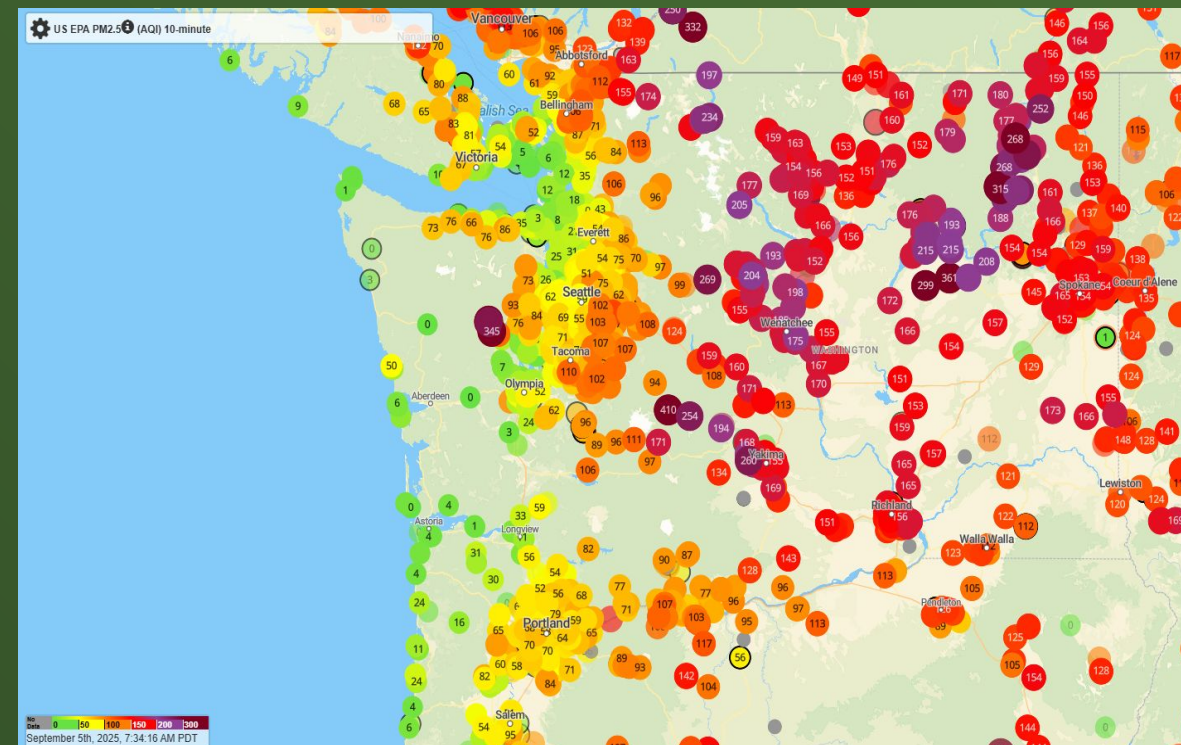


Photo taken from Renzo gazette journal:

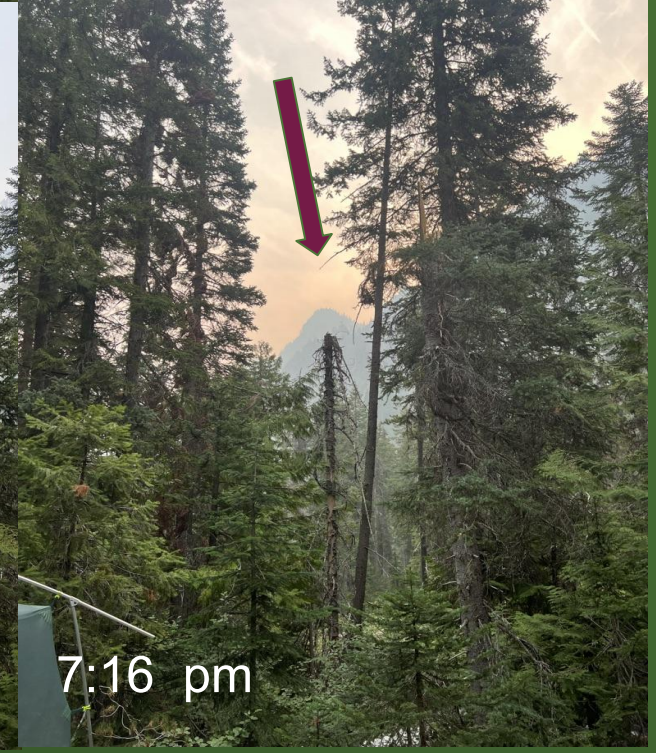
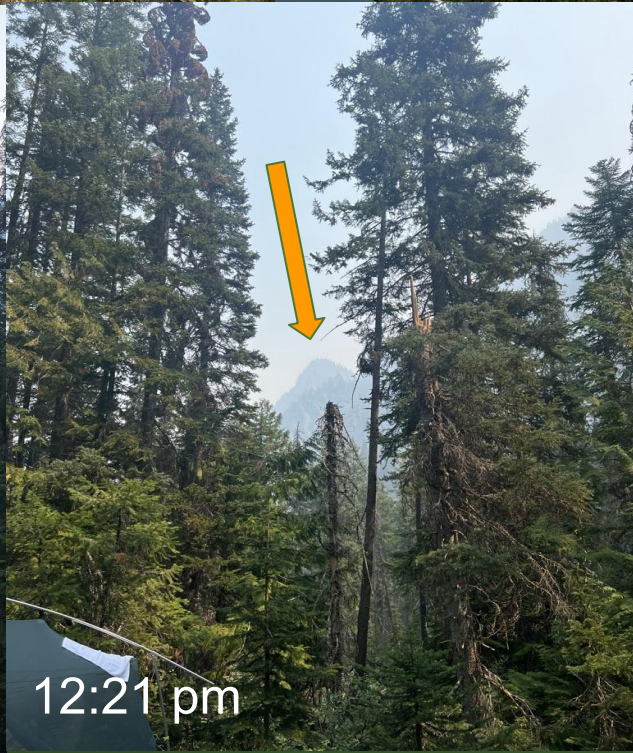
<https://data.rgj.com/fires/incident/photograph/6891/69/100329/>



Saturday -Sunday

Crew lead used there cell phone

- By using landmarks every morning of AAQI impact they made an informed decision
- MOC supported corroborating the AQI impact to the resources they were seeing



RESOURCES FOR ENVIRONMENTAL MITIGATION

2024 HEAT: WTA- OSHA and L&I PPP Policy Procedure and Practice

Employees/volunteers showing signs or demonstrating symptoms of heat-related illness must be relieved from duty and provided with sufficient means to reduce body temperature.

- Crews should take 10-minute breaks every 2 hours (candy breaks count)
- If Shade is not available (environmentally with tree cover) Create shade with tarps etc
- Ensure the amount of shade present is large enough to accommodate the number of employees/volunteers on a meal or rest period, so they can sit in a normal posture fully in the shade.
- *Breathable clothing*
- Plenty of water (preferably cold) and plenty of hydration encouragement and breaks
- General awareness of personal/group factors that may increase susceptibility to heat-related illness including
 - Recognizing signs and symptoms of said heat-related illness (*in Field manual*)
 - Preemptive announce the weather conditions as a factor in emails to crews so volunteers can self-identify and opt-out.
 - Closely observe Employees/Volunteers for signs and symptoms of heat-related illness by implementing one or more of the following:
 - (a) Regular communication with employees/volunteers working alone, such as by radio or cellular phone
 - (b) A mandatory buddy system; or other effective means of observation based on your leadership abilities

*AQI Temtop Hand helds given to Pro crews
very fragile be careful*



Fire threat and AQI:

For fire and Air quality index threat we have a three tiered system to mitigate fire danger and avoid AQI risks,

1. Every Monday and Friday morning, a bulletin report is put out regarding AQI, Road closure, weather (wind especially) on the Trail Maintenance slack channel and MOC channel.
2. MOC is tracking Fire AQI on a series of maps and ready to give real time AQI or fire danger reports. Also in contact with Agency partners for any updates that need to be relegated to cews
3. Field crew equipment & trainings : *AQI devices, Garmin Inreach, and Baofeng Radios (cell phone if service)*
 - a. *WTA will always default and support Crew leader judgement call*



Temtop P600 PM2.5 PM10 Air Quality Monitor Rechargeable

Availability: In Stock✓

\$65.99

Quantity:

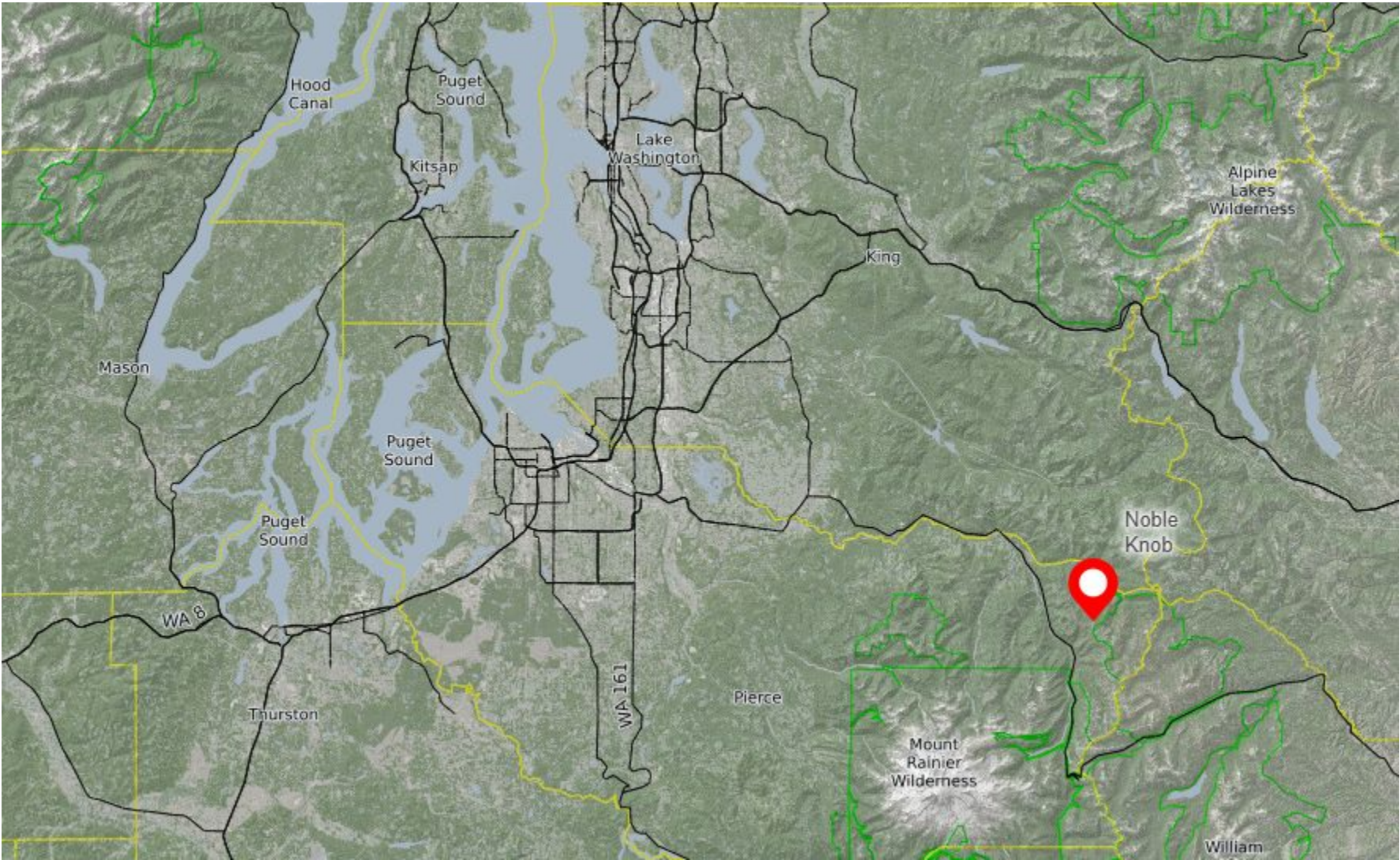


SKU: P600

Share: [f](#) [t](#) [p](#)

[VISA](#) [MasterCard](#) [PayPal](#) [G Pay](#) [Apple Pay](#) [UATP](#)

2025 PRO CREW EARLY EXIT DUE TO VERIFIED POOR AQI



Messages

Jul 10, 2024 8:39 AM

Checking out, everything OK.



Jul 14, 2024 11:40 AM

Checking in, everything OK



Jul 29, 2025 10:53 AM

Checking out, everything OK.



Aug 1, 2025 3:07 PM

Bad smoke @ Noble. Are we "Safe" From fire?



Aug 13, 2025 6:10 AM

nothing reported in the area. likely smoke from the Olympics. AQI monitor at crystal mtn 161 at summit, 33 at base - MOC Jay.

Aug 13, 2025 6:20 AM

Thanks planning to leave. Some sensitive individuals



Aug 13, 2025 6:34 AM

Copy. Make sure you send a inreach checkout when you are out.

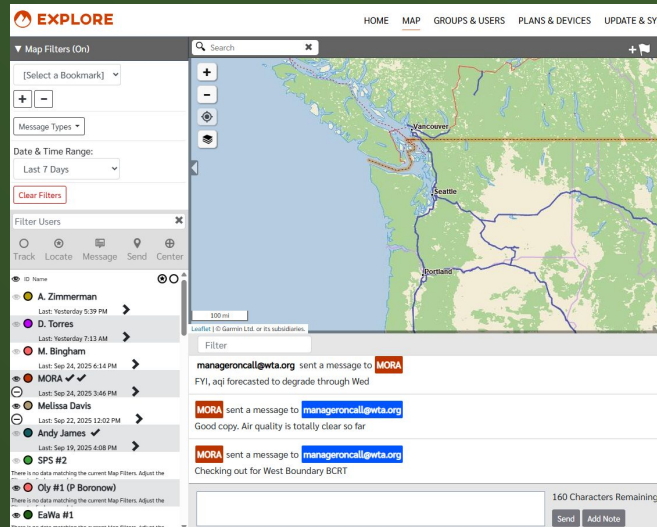
Aug 13, 2025 6:38 AM

Checking out, everything OK.

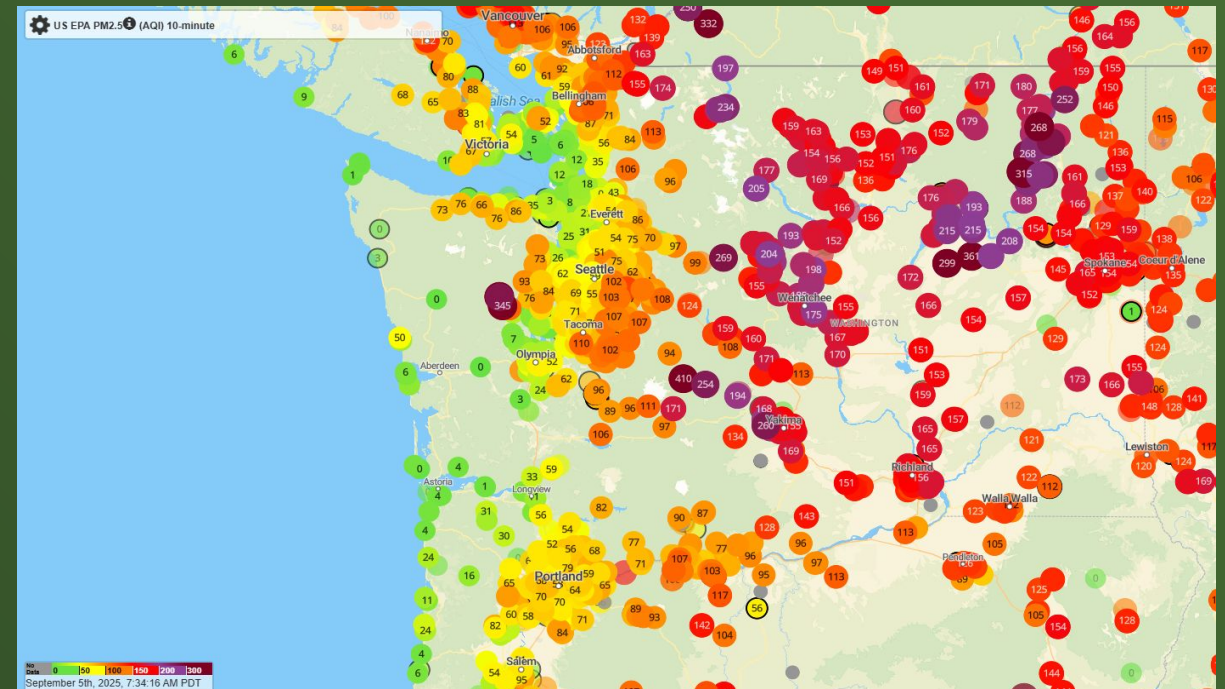
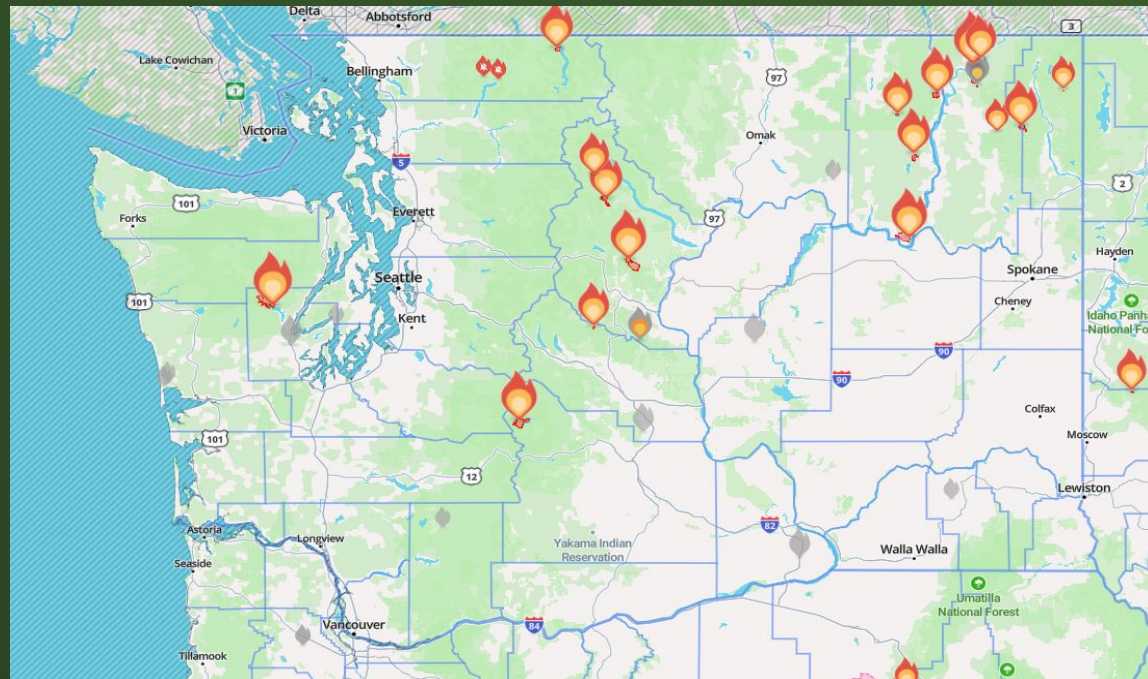


Aug 13, 2025 9:07 AM

THE MOC TOOLS AND PERSPECTIVE



- Trello board for Multi Day trips
- Garmin/Inreach website
- Fire Duty
- Purple Air & Others



CREW LEADER DECISIONS

We hired/onboarded and train our field leaders because of their experience and ability to lead. We are explicit in our trainings and onboarding process that any decision made by them on behalf of the crews safety will be backed up by management. This includes but not limited to:

- **Fire danger or bad Hazardous AQI**
- **Inclement weather** (wind,cold,Heat, lightning)
- **Other environmental hazards:** Stream crossing, wildlife, treacherous road or trail hazards
- **Human Hazards:** Belligerent member of the public, Firearms present, human waist. Needles etc.

**We trust and support them to follow their gut, intuition and experience-WTA Senior Trails Staff*



OVERVIEW OF WTA 3 TIERED APPROACH TO AQI MITIGATION

For fire and Air quality index threat we have a three tiered system to mitigate fire danger and avoid AQI risks to crews

1. Every Monday and Friday morning, a bulletin report is put out regarding AQI, Road closure, weather (*wind especially*) Internally.
2. MOC is tracking Fire/AQI on a series of maps and ready to give real time AQI or fire danger reports. Also in contact with Agency partners for any updates that need to be relegated to crews
3. Field crew equipment & trainings : *AQI handheld devices , Garmin Inreach, and Baofeng Radios (cell phone if service)*
 - a. *WTA will always default and support Crew leader judgement call*





THANK YOU ALL FOR YOUR ATTENTION

**IF TIME FOR QUESTIONS RAISE YOUR HAND?
IF NOT PLEASE FIND ME AND ASK**

mbusby@wta.org