

Engaging Communities: Air Quality Partnerships on the Nez Perce Reservation



Johna Boulafentis
Exceptional Events Workshop
February 29, 2024

BUILD A MODEL LUNG



MAKE & TAKE KIT!

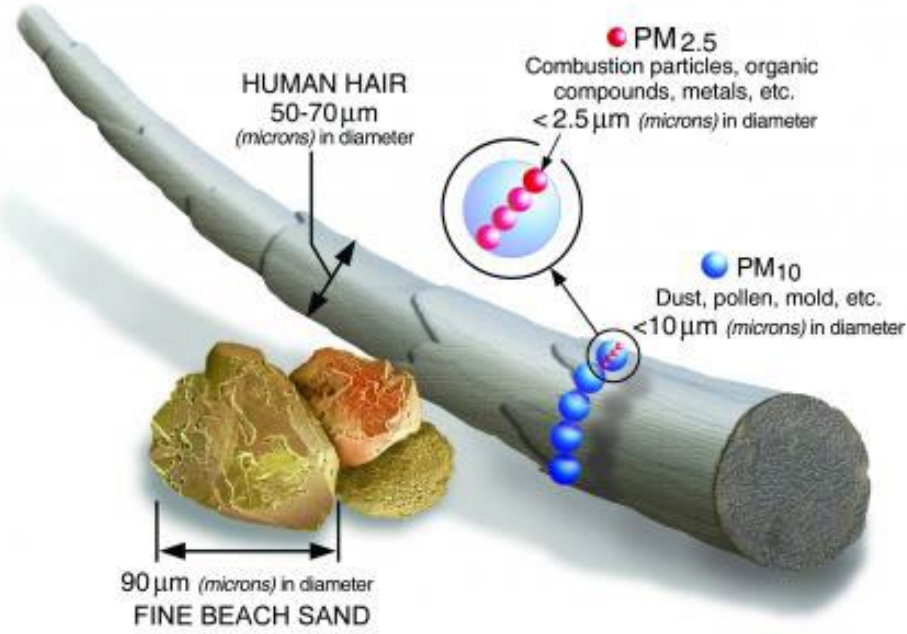
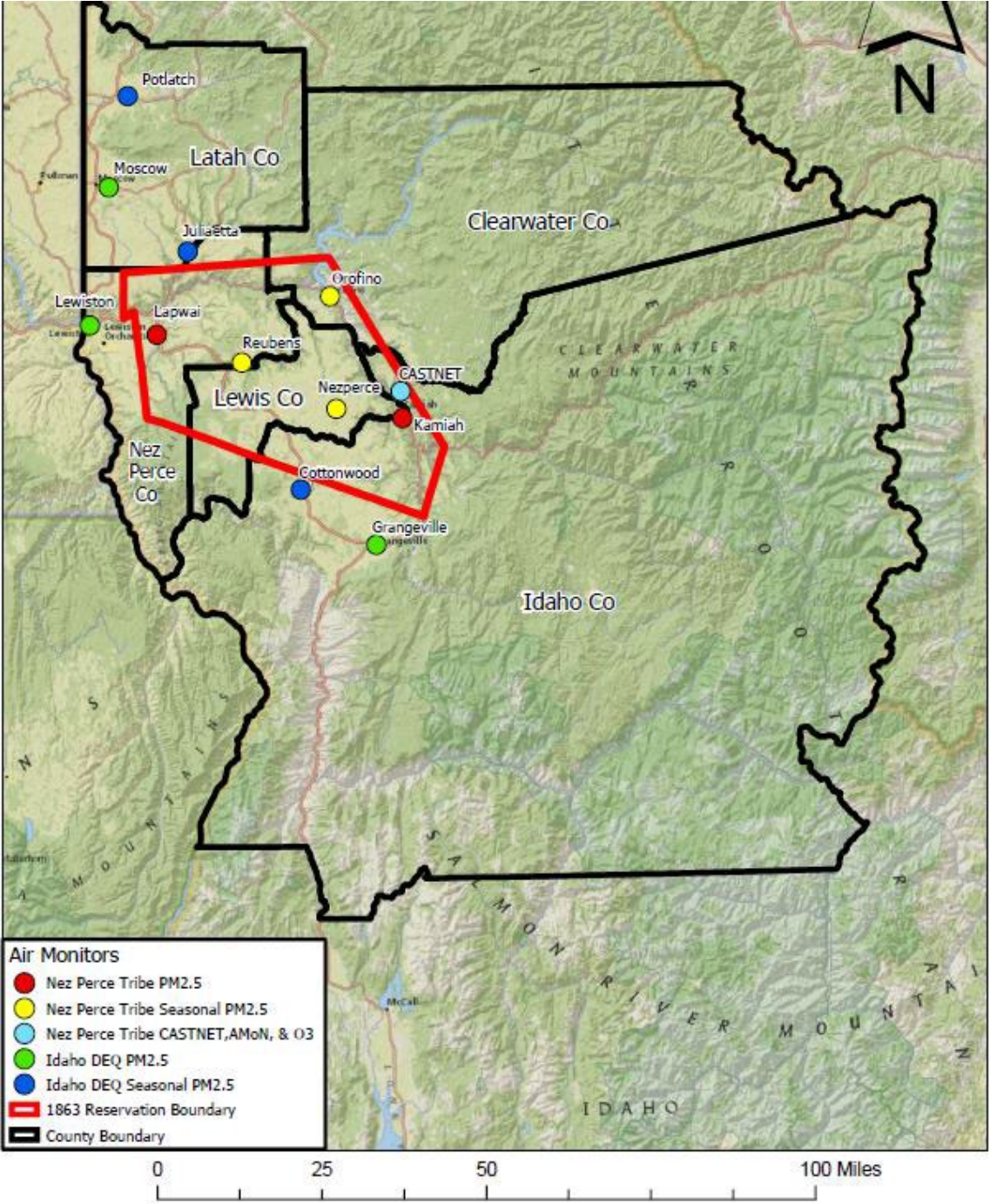
AVAILABLE AT YOUR LOCAL LIBRARY

Build with Josette, AQ Intern
<https://youtu.be/MOIZIZA+Hh4>



Presented by
Nez Perce Tribe ERWM Air Quality Program
Find us on Facebook & Instagram

Ambient Air Monitoring Network



AirNow Fire & Smoke Map: fire.airnow.gov

Federal Air Rules for Reservations (FARR)

- Federal Implementation Plan (FIP)
- Nez Perce Tribe's Delegation Agreement effective June 27, 2005
- The Nez Perce Tribe administers specific provisions of the FARR, including
 - Open Burning Rule
 - Burn Permitting Programs (Agricultural, Forestry, Large Open, Small Open)
 - Air Quality Advisories (Burn Bans) & Air Pollution Episodes
- Delegates day-to-day FARR activities, including smoke management program
 - Issue burn permits for agricultural, forestry, open burning
 - Daily burn decisions for agricultural, forestry and open burning
 - Authorize ignition of fires under permit
 - Shut down burns when necessary
 - Coordinate with other jurisdictions
 - Compliance assistance and outreach
 - Complaint response and investigations
 - Operate monitoring network



Air Quality Advisories

August 12, 2014
PM_{2.5} = 200 ug/m³
AQI: Very Unhealthy



September 4, 2014
PM_{2.5} = 4 ug/m³
AQI: Good



Picture: 2014 Johnson Bar Fire: Overlooking Kamiah Valley from Highway 64

#SmokeReady



#SmokeReady2021

QÍITINKIN'IX 'IMÁAHINAQ'I

GET YOURSELF READY FOR THE SMOKE

WÉETMET HÉESNU' QÍITIN
DON'T BREATHE SMOKE

IF FITTED AND WORN CORRECTLY, THE N95 MASK FILTERS OUT 95 PERCENT OF PARTICLES LARGER THAN 0.3 MICRONS, SO THEY'RE VERY EFFICIENT WITH KEEPING OUT THE 2.5-MICRON PARTICLES WILDFIRE SMOKE CONTAINS.

LEARN MORE AT airnow.gov

**SUMMER IS HERE!
PREPARE FOR WILDFIRE SMOKE**

QÍITINKIN'IX 'IMÁAHINAQ'I
GET YOURSELF READY FOR THE SMOKE

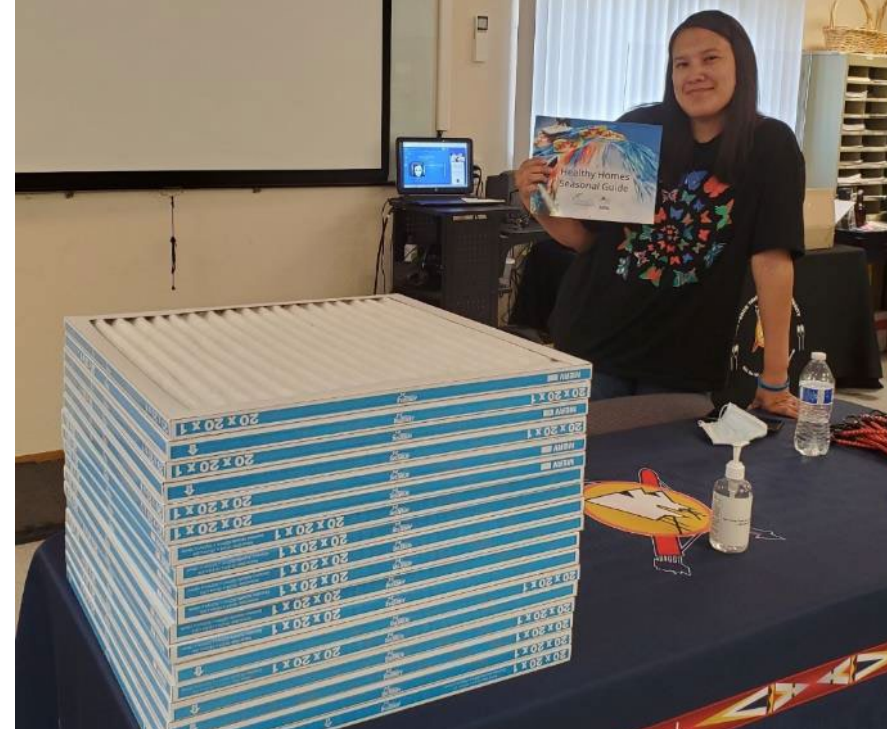
Join the Nez Perce Tribe ERWM Air Quality Program and Housing Authority for a **DIY Box Fan Filter Class!** Filter fans are low cost, simple to make, and help keep the air inside your home clean and healthy.

**JULY 13, 2021 TUESDAY
12PM - 1PM AT LAPWAI HOUSING CLASSROOM**

LUNCH & MATERIALS WILL BE PROVIDED

DIY BOX FAN FILTER CLASS!

To Register Contact at 208.843.2229 or Anna Lawrence annal@nezperce.org



#SmokeReady2021

QÍITINKIN'IX 'IMÁAHINAQ'I

GET YOURSELF READY FOR THE SMOKE

QÍITINWEC'ET 'INÁAHINAQ'IS
I AM READY FOR THE SMOKE

BEING PREPARED FOR FIRE SEASON IS ESPECIALLY IMPORTANT FOR SENSITIVE GROUPS. CHECK WITH YOUR HEALTHCARE PROVIDER ABOUT WHAT YOU SHOULD DO DURING SMOKE EVENTS. HAVE A PLAN TO MANAGE YOUR CONDITION.

LEARN MORE AT airnow.gov

Wildfire Smoke

Be Ready.
Protect yourself.

Idaho Smoke Info Blog
idsmoke.blogspot.com

#SmokeReady2021

QÍITINKIN'IX 'IMÁAHINAQ'I

GET YOURSELF READY FOR THE SMOKE

QÍITNE 'ATAMOLÁAMI
AVOID FIRE SMOKE

KEEP YOUR AIR CLEAN BY PURCHASING AN AIR CLEANER OR BUILDING YOUR OWN.

COLVILLE BOX FAN FILTER PROJECT:
[HTTPS://WWW.YOUTUBE.COM/WATCH?V=UKYF2XM8CWS](https://www.youtube.com/watch?v=UKYF2XM8CWS)

LEARN MORE AT airnow.gov

AIR QUALITY INDEX NIMIIPUUTIMTKI

0-50	ta'c héesn'es	xéxus
51-100	náako' ta'c	maqsmáqs
101-150	ayyi'c kóomayni's'ayn	mímqas
151-200	wéet'u ta'c	'ilp'ilp
201-300	q'o' wéet'u ta'c	cícyele
301-500	ayyi'snix 'oykaloo'ayn	lucéelucel

QÍITINKIN'IX 'IMÁAHINAQ'I
GET YOURSELF READY FOR THE SMOKE

LEARN MORE AT airnow.gov

Over a Decade of Collaboration!

2012 - Summer Reading Programs with ITEP Summer Interns

2021 - PurpleAir Sensors, Air Quality Flags, DIY Filter Fan Demonstration

2022 - Moisture Meter Loan Program Pilot

2024 - Radon Test Kit Distribution; Wildfire Smoke Preparedness in Community Buildings Grant Program



Library Summer Reading Program – Story Time & AQ STEM Activity



Regional/State/Tribal Innovation Project (RSTIP)

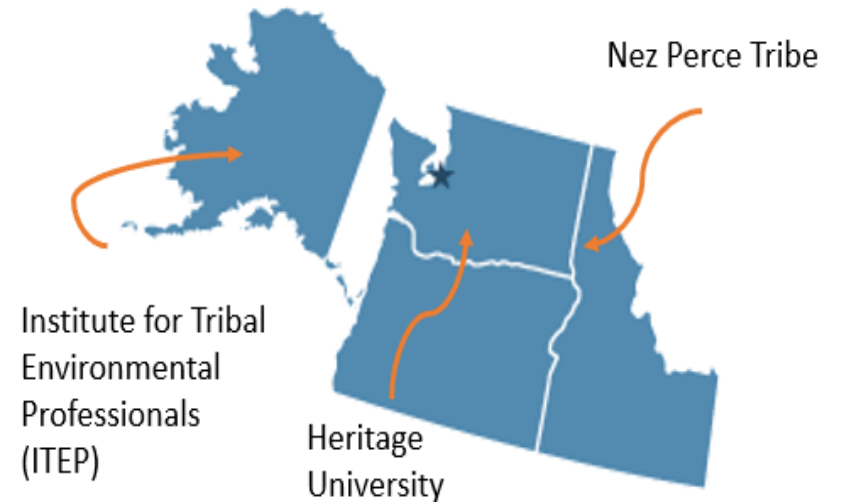
Focus: increasing low-cost air sensors for tribal community monitoring

Support to Tribal Communities to increase understanding of:

- air quality science
- PM pollution and health risks
- interpret air quality data

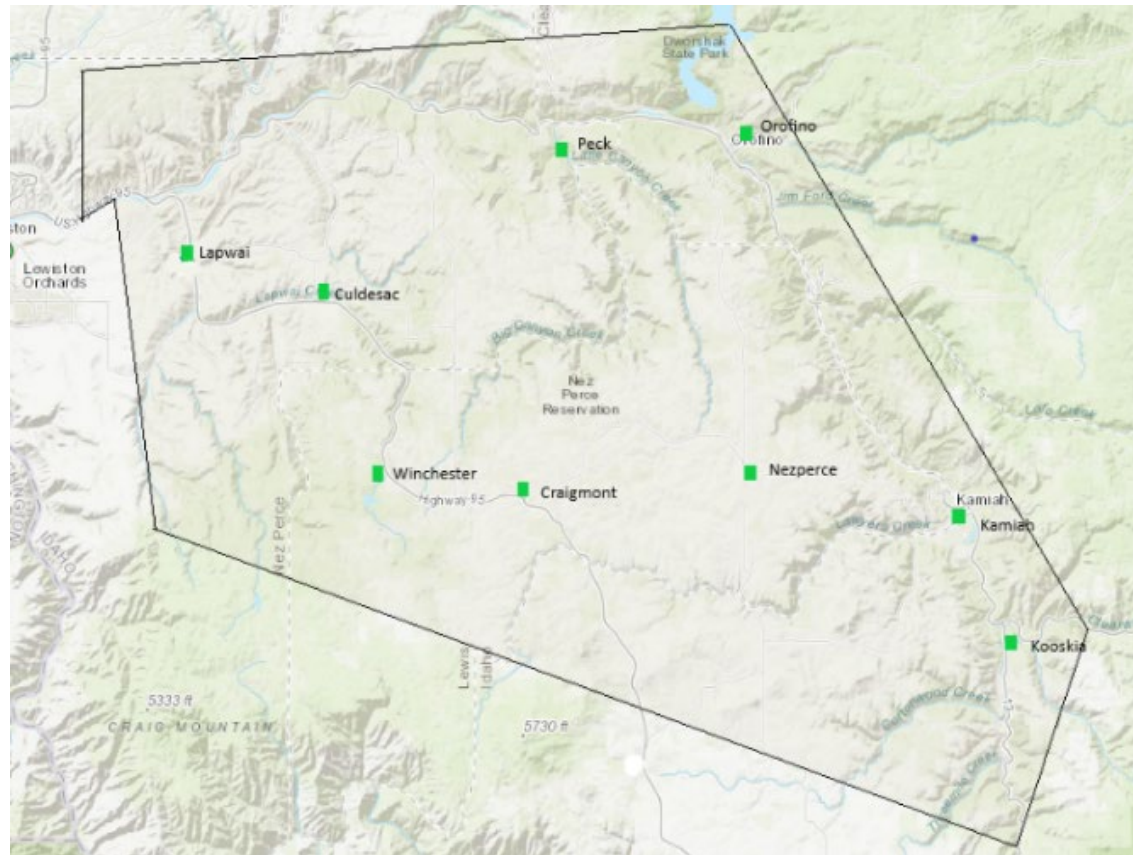
EPA in partnership with:

- Nez Perce Tribe
- Heritage University on the Yakama Reservation
- Institute for Tribal Environmental Professionals (ITEP)



PurpleAir Sensors at Public Libraries

EPA R10 - RSTIP

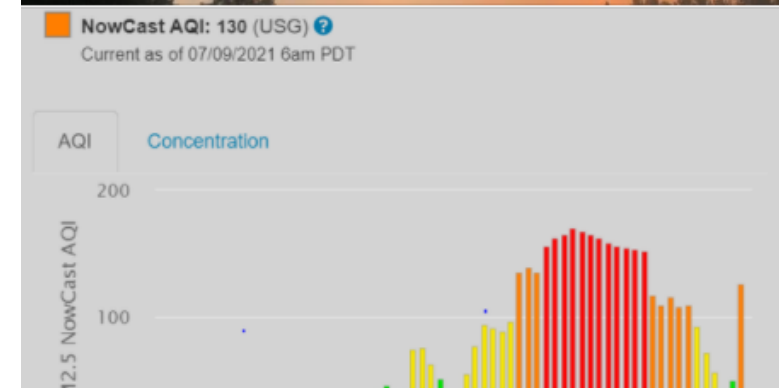
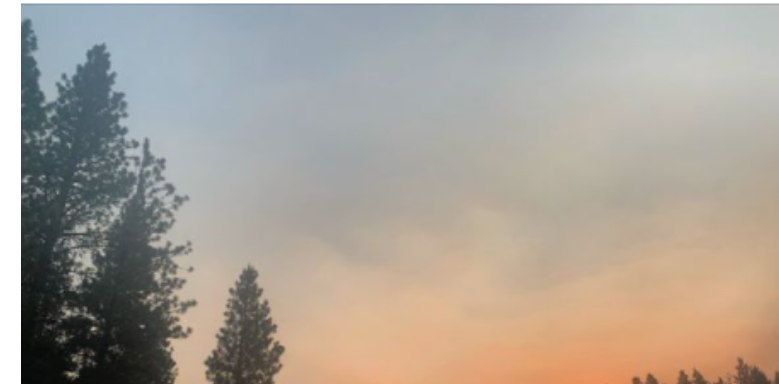


Winchester Lake State Park
July 9 · 🌐

Wildfires in North and North Central Idaho this week have resulted in deteriorating air quality in Winchester and surrounding areas. There is no active fire risk to Winchester or the state park from ongoing fire incidents, but before you make the trip here - or anywhere - this weekend you should:

1. Be aware of current fires and restrictions and how to stay up to date. (<http://www.idahofireinfo.com/> is a great resource. The fires nearest to Winchester are under the management of Idaho Department of Lands, you can also check their communication pages for up-to-date information on the Craig Mountain fires and closure areas).
2. Be aware of the Air Quality Index (AQI) and your health. As of 6 am on Friday, AQI at Winchester is in the "Unhealthy for Sensitive Groups" (Orange) category. We have been moving between Red/Unhealthy and Orange for the last few days and are likely to continue to do so through the weekend. Check <https://fire.airnow.gov> for AQI readings for your area.

Responsible recreators help our fire crews and our communities! Stay safe!



👍👎👏 29 2 Comments 14 Shares

👍 Like 💬 Comment ➦ Share

[Article: EPA Partners with Tribes to Deploy Air Sensors in Communities](#)

Air Quality Flag Program



Kamiah Community Library
June 15 · 🌐

Squinty McGee here to tell you we now have an air quality indicator flag thanks to Nez Perce Tribe ERWM Air Quality Program. We are now on the #purpleair map, too. Stop by for more info! 🌍 Today's green flag means air quality is good, but we all know that will change during fire season. #airquality #nezperce #brightoutside
Image: staff takes squinty selfie outside of the library with a large green flag mounted to the exterior of the building behind staff



👍❤️ You and 11 others

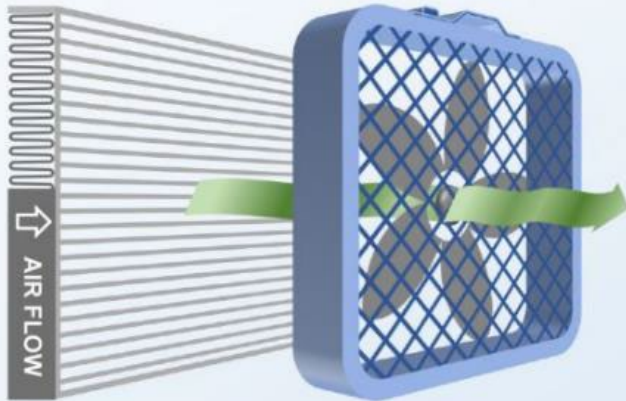
[Article: Connecting through Libraries - Nez Perce Outreach](#)



DIY Filter Fan – Demonstration

DIY Air Cleaner to Reduce Wildfire Smoke Indoors

Materials



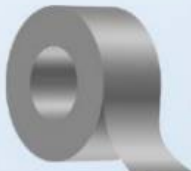
20" X 20" air filter
Suggested rating: MERV 13

20" X 20" box fan
Only use certified fans with UL or ETL marking (2012 model or newer)



Clamps

or



Duct Tape

or



Bungee Cords

Learn about box fan safety tips:

<https://www.epa.gov/air-research/research-diy-air-cleaners-reduce-wildfire-smoke-indoors#FAQ>

Assembly

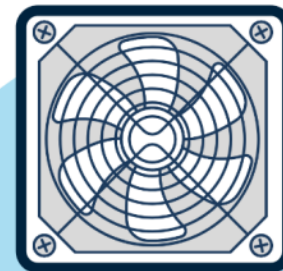
1. Attach the air filter to the back of the box fan using either clamps, duct tape or bungee cords.
2. Check the filter for the direction of the air flow (marked on the side of the filter).
3. Replace filters when dirty.



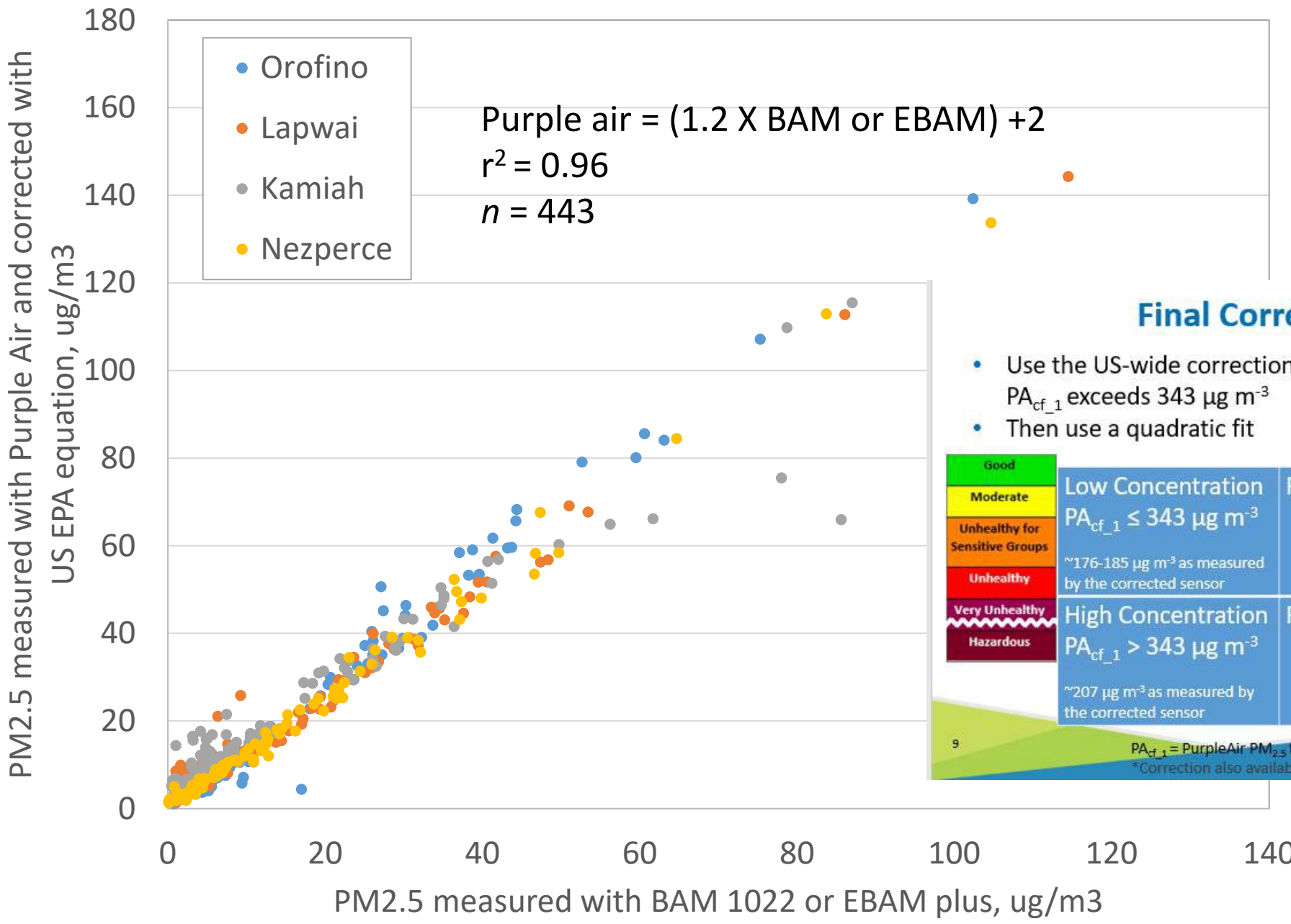
[WA Dept of Ecology - Make a Clean Air Fan](#)

#SmokeReady2021 Make your own box fan filter.

Need a low-cost way to reduce smoke in your home? Try making a box fan filter.



[Colville Tribes Air Quality Program - DIY Box Fan Filter](#)



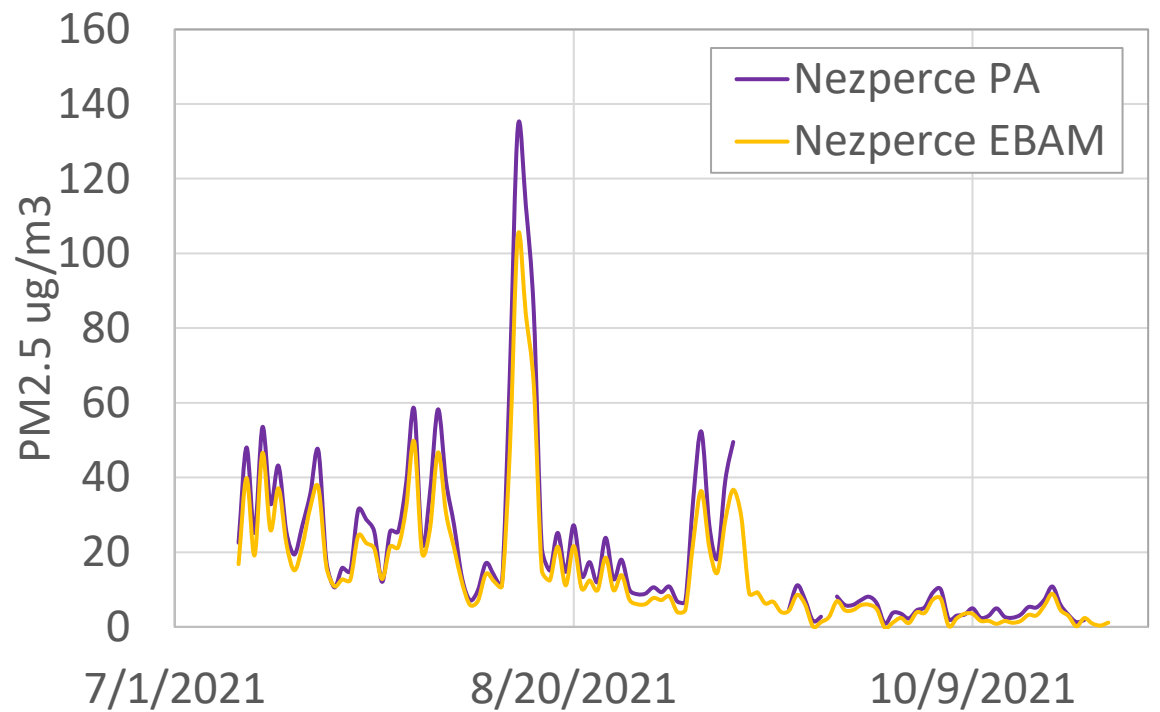
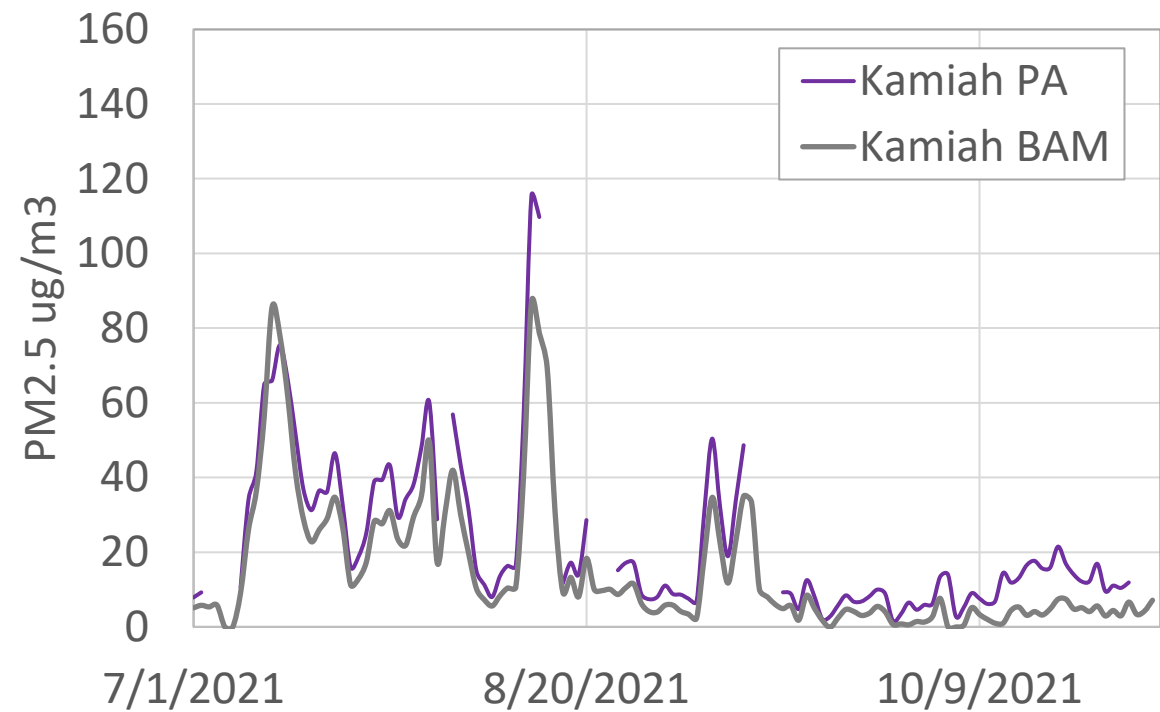
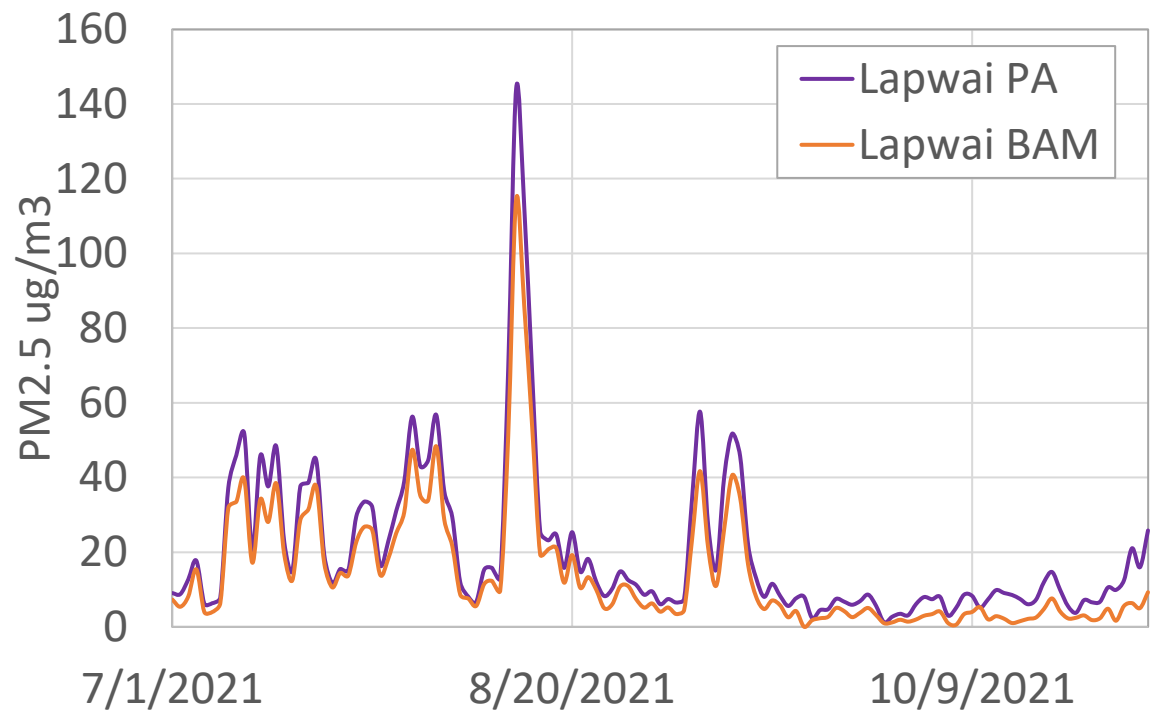
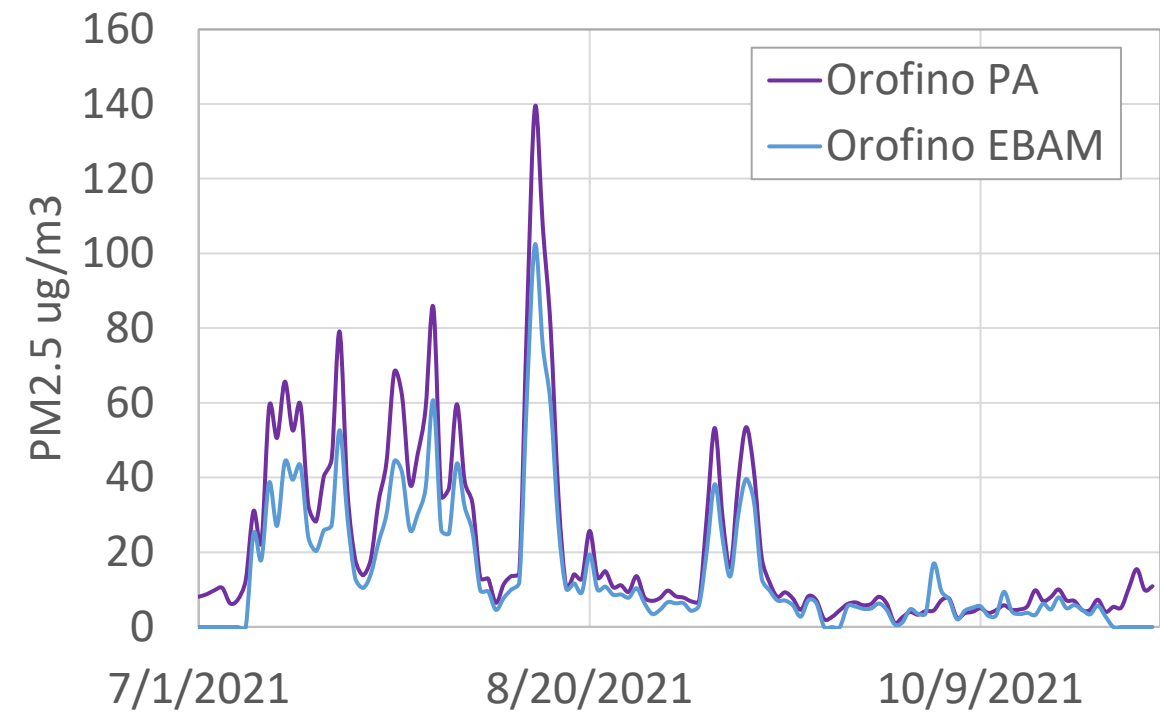
Final Correction

- Use the US-wide correction until PA_{cf_1} exceeds $343 \mu\text{g m}^{-3}$
- Then use a quadratic fit

- US-wide correction best fit: $120\text{-}180 \mu\text{g m}^{-3}$
 - Breakpoint: **Unhealthy-Very Unhealthy**
- Quadratic fit simplest best fit: $200\text{-}300 \mu\text{g m}^{-3}$
 - Breakpoint: **Very Unhealthy-Hazardous**
- Equation change point selected so that it would fall between 2 bins and be less likely to influence the AQI category the data falls into

	Low Concentration $PA_{cf_1} \leq 343 \mu\text{g m}^{-3}$ <small>~176-185 $\mu\text{g m}^{-3}$ as measured by the corrected sensor</small>	$PM_{2.5} = 0.52 \times PA_{cf_1} - 0.086 \times RH + 5.75$
	High Concentration $PA_{cf_1} > 343 \mu\text{g m}^{-3}$ <small>~207 $\mu\text{g m}^{-3}$ as measured by the corrected sensor</small>	$PM_{2.5} = 0.46 \times PA_{cf_1} + 3.93 \times 10^{-4} \times PA_{cf_1}^2 + 2.97$

9 PA_{cf_1} = PurpleAir $PM_{2.5}$ from the higher of the 2 correction factors (cf) currently labeled as cf_1
 *Correction also available for PA_{cf_atm} (the other cf) - currently in use due to API limitations



Lessons Learned

- Building and sustaining relationships with community partners takes time and dedication.
- Libraries can be powerful partners for communicating AQ.
- Collaboration can bring new opportunities.

Qe'ciyew'yew!

Nez Perce Tribe Air Quality Program
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