

The Community Engagement Process in Studying the Use of Low-Cost Air Sensors in a Highly Impacted, Multi-Cultural Rural Setting

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Partnerships for reducing rural wood smoke

August 2016-July 2019

- Interest in how communities use air sensors
- School setting through EnvironMentors
- Rural lower Yakima Valley
 - Home to the Yakama Nation and communities who are predominantly Latinx and Native American
 - Episodic poor air quality
 - Previous community-engaged environmental health research



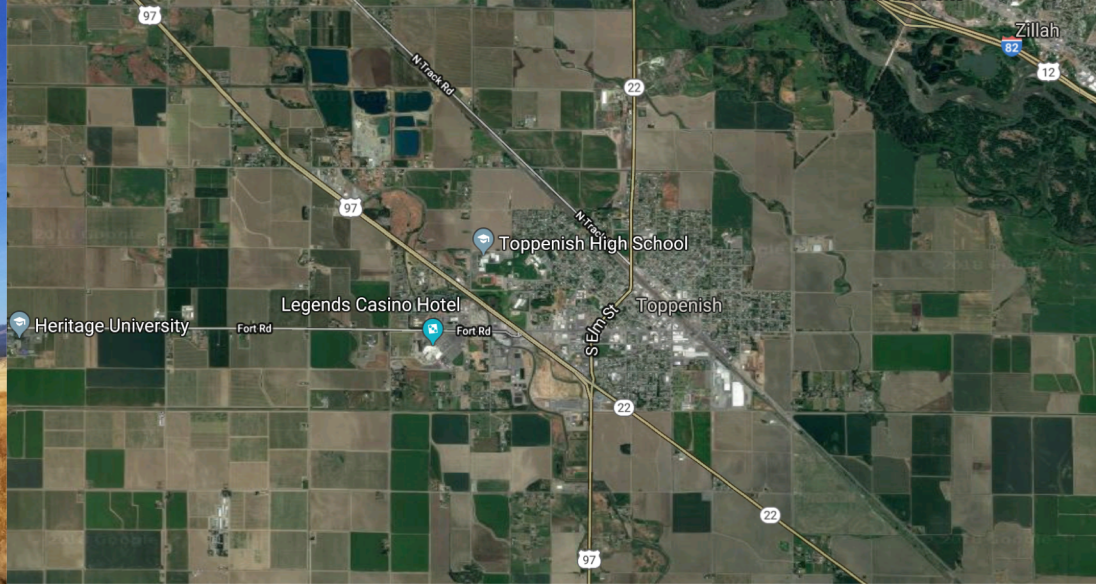
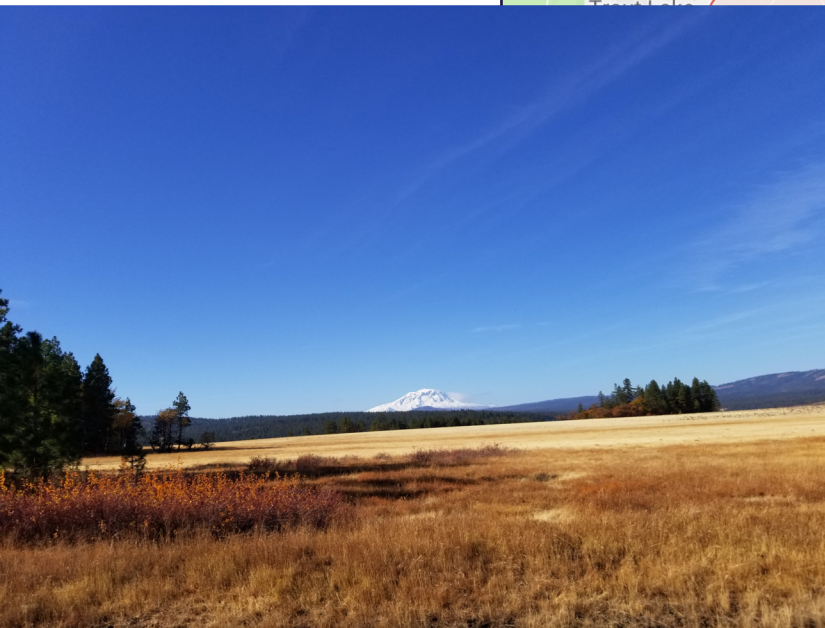
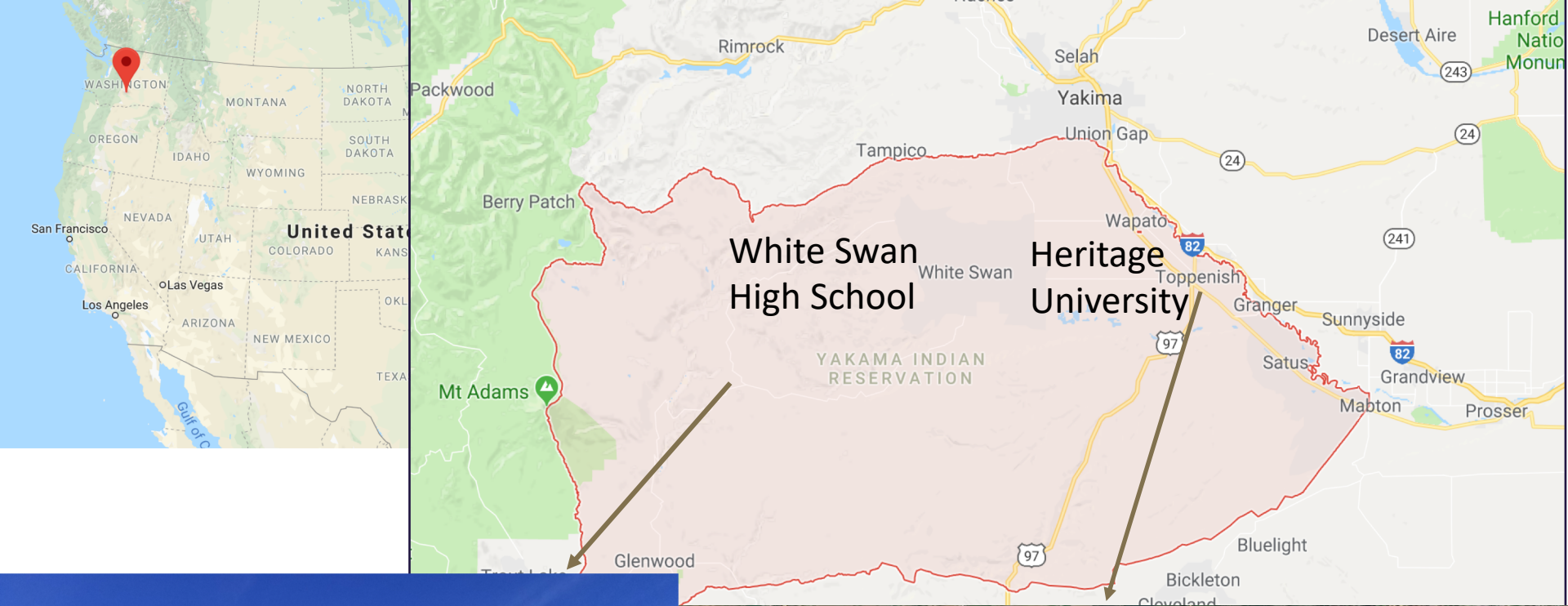
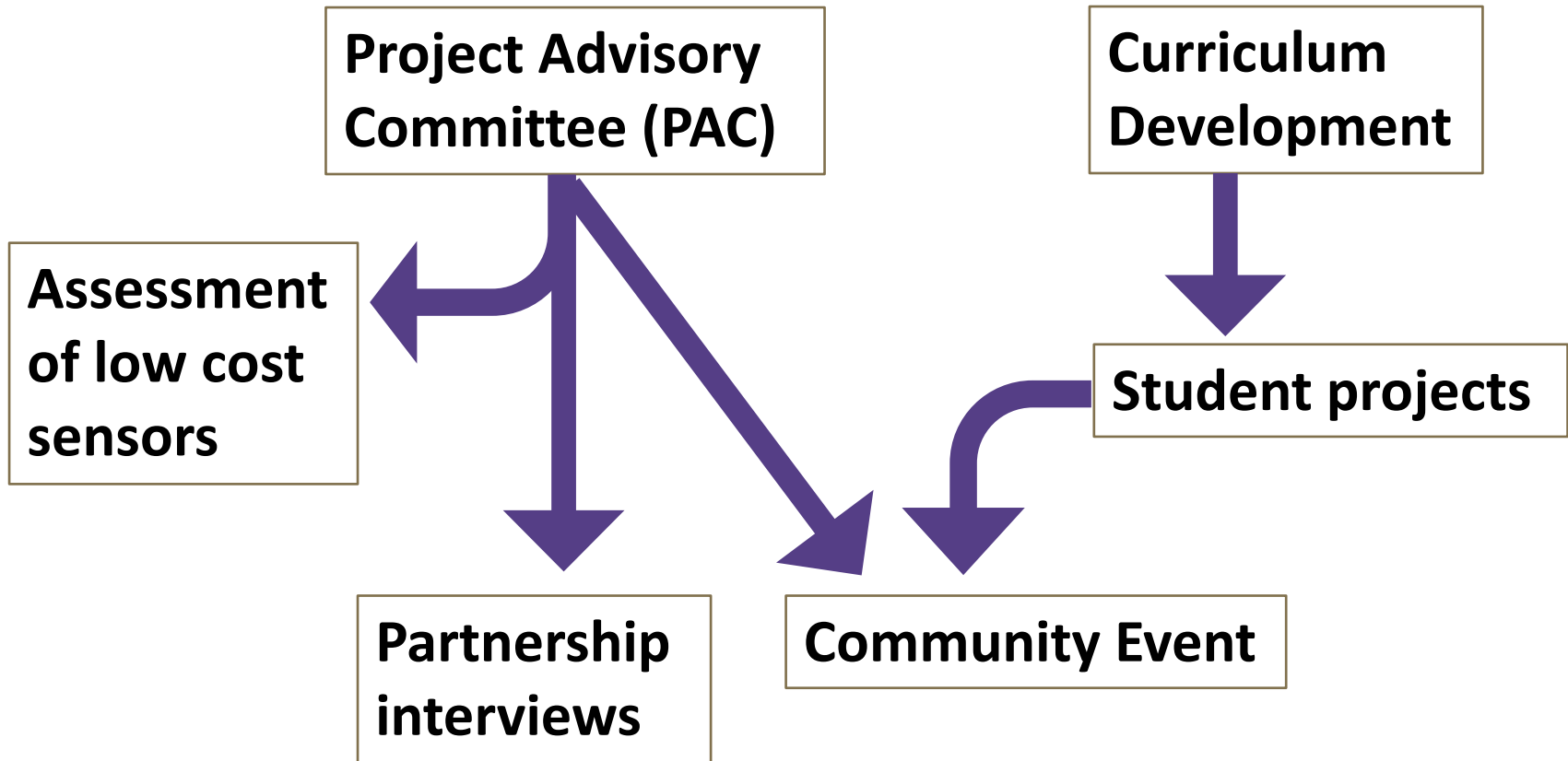


Photo from the Yakama Nation Reservation
by Aiyana Holt-Zack

One study location in the lower Yakima Valley
Images from Google Maps

Outline



Project Advisory Committee (PAC)

- The Yakama Nation
- Heritage University
- A local Spanish-language radio station
- A tribal health focused non-profit
- Indian Health Service
- Mt. Adams school district

Meet about every 5 months

- Scheduling challenges
- Weather challenges in the winter
- Newsletter?
- Smaller meetings in between



Photo from Mountains to Sound Greenway



Assessment of Low-Cost Sensors

Partnership with the Yakama Nation Air Quality Section:
siting, data collection, data sharing

Yakama Nation
Environmental
Management
Program BAM



Photo from Envilyse

5-wavelength
aethalometer:
microAeth[®] MA200



UW low-cost laser-
based 5-bin particle
counter

Partnership interviews

12 interviews about perspectives on the community-academic partnership, especially trust building

Major themes:

- Sustainability
- Academic presence in the community
- Strengths recognition
- Community context

Curriculum Development

- Short set of slides
- Activity
- Review and feedback
- Mentors teach high school students



Mentors learning how to use the UW low-cost air sensors.

Photos by Orly Stampfer

Student Projects

- Classrooms
- Outdoors
- In homes
- 4 students travel to DC each year for EnvironMentors poster competition



Mentors showing students how to download data from the air monitor SD card.

Photo by Aiyana Holt-Zack.

Community Event

University of Washington and Heritage University
Wood Smoke Research in Our Community

Monday, April 23rd
5:00-7:00pm
White Swan High School

- Hear from WSHS students and their Heritage University mentors about their EnvironMentors research projects on air quality
- Learn about the Yakama Nation Air Quality Program from Terry Ganuelas
- Learn from University of Washington scientists about ways to measure wood smoke in the air
- Share your interests and concerns about air quality

Sandwiches and snacks provided! Family friendly!
Raffle prizes! Support WSHS students!



EnvironMentors program participants with their posters at a community event.

Photo by Maria Tchong-French



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Questions? Contact Jessica Black at 509-840-3847

THANK YOU!

Questions?

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Additional slides



Student Project examples

- Comparing ambient PM between White Swan, Harrah, and Toppenish
 - Over several weeks
 - Focusing on a 24-hr power outage in White Swan
- Compare indoors vs. outdoors in homes
 - 1 home with a wood stove
 - 1 home with a gas stove
- Compare 4 classrooms: science classroom, history classroom, woodshop, greenhouse
- Comparison of low cost sensors with regulatory monitors

Survey

- 19 PAC members, Heritage University undergrads, and White Swan High School students
- Top environmental concerns included:
 - water pollution
 - drinking water quality
 - climate change
- Top desired resources related to wood smoke included:
 - funds for replacing or repairing wood stoves
 - access to culturally relevant materials
 - funds for home ventilation
 - a wood-banking system
 - community-specific research about wood smoke and health

Implications from interviews

- 1 / Fund relationship building and dialogue. Be transparent about money.
- 2 / Discuss the sustainability of the project at the beginning and make a plan for the end of the grant.
- 3 / Have open and explicit dialogue about community partner capacity building priorities.
- 4 / Conduct a formative assessment at the beginning of the relationship.
- 5 / Choose an issue that is community driven and academically relevant.
- 6 / Learn about community strengths, and acknowledge and appreciate them. Recognize community partners as equals. Genuinely rely on community partners for project success.

Implications from interviews

- 7 / Find opportunities for academic partners to be present in the community, including at events unrelated to the research issue.
- 8 / Take the time to understand and appreciate the significance of community context. With tribal partnerships, ensure that non-tribal academic and community partners understand the implications of tribal sovereignty for the project and partnership.
- 9 / Include people in the project who represent the diversity of the community, including involving interested individuals in addition to people who represent relevant organizations.
- 10 / Be transparent about roles, goals, motivations, asks of community partners and community members, project design, data, analysis, and connections to scientific/programmatic/policy implications.