Air Monitoring – An Everchanging Landscape

Air Monitoring ● Tech&Ops ● Challenges

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TDEnviro

About TD Enviro

TD Enviro specializes in collecting and analyzing data using new technologies to provide insights about the air we breathe. Our focus on innovative solutions helps you effectively address air quality challenges.

We provide comprehensive and cost-effective services grounded in decades of experience, sound science, and using new technologies to meet your environmental needs.

Where Air Monitoring Fits In

| 6 months | 1-3 years | 1 year | months-years | months-years |
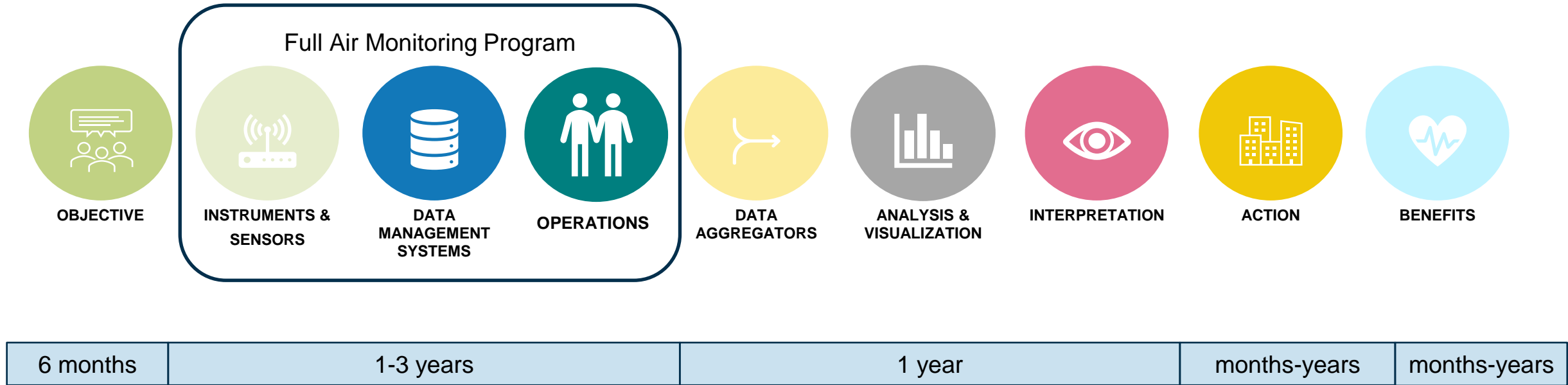
Latinos United for a New America
Bay Air Center (BAAQMD)

Equipment   +   Operations

What equipment will you use?

- Certified
- Accurate
- Reliable
- Sensitive
- Durable
- Suitable

How are you operating it?

- Location
- Maintenance
- Quality Assurance
- Data handling & security
- Independent verification
- Quality control
- Data reporting

Equipment + Operations

Less than 20% of time & budget

More than 80% of time & budget

Equipment

	Research Instruments	Remote Sensing Instruments	Reference Instruments	Portable Instruments	Air Sensors
Cost	$500,000 +	$200,000 +	$20,000 +	$5,000 - 15,000	$200 – 3,000
Ease of use	Expert	Expert	Expert	Expert	Anyone
Accuracy	Very Specific, Accurate	Specific, Accurate	Very accurate	Accurate	Varies
Data produced	Moderate	Moderate	Little	Moderate	Lots

Aspects of Monitoring

Type	Coverage	Location

Fixed

Mobile Platforms

Area

Personal

Indoor

Outdoor

Operations

1 Develop monitoring objective

2 Set up data management

3 Select equipment

4 Develop QAPP/monitoring plan

5 Determine sites

6 Install and operate/maintain

7 Analyze and communicate data
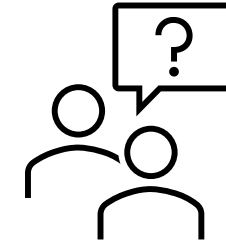
Challenges – Air Quality is Complex

Air quality is complex because

- Diverse pollutants affected by the weather

- Variable sources controlled by different jurisdictions

- Regulation and policy challenges

Major demographic changes to "Air Quality Ecosystem"

- Retirements and hiring (a changing workforce)

- Increased funding brings in new organizations and people to air quality

Need for fundamental information

All About Air Quality Bootcamp
Coalition for Clean Air (CARB)

Challenges – Objectives for Monitoring

Start with the end in mind

- Monitoring objectives describe why you are monitoring or the purpose for your air monitoring.

- Determining an objective involves asking many questions and considering what you hope to achieve with your project.

- All subsequent decisions and planning must be driven by your air monitoring objective.

The TriChapter Council of the Navajo Nation
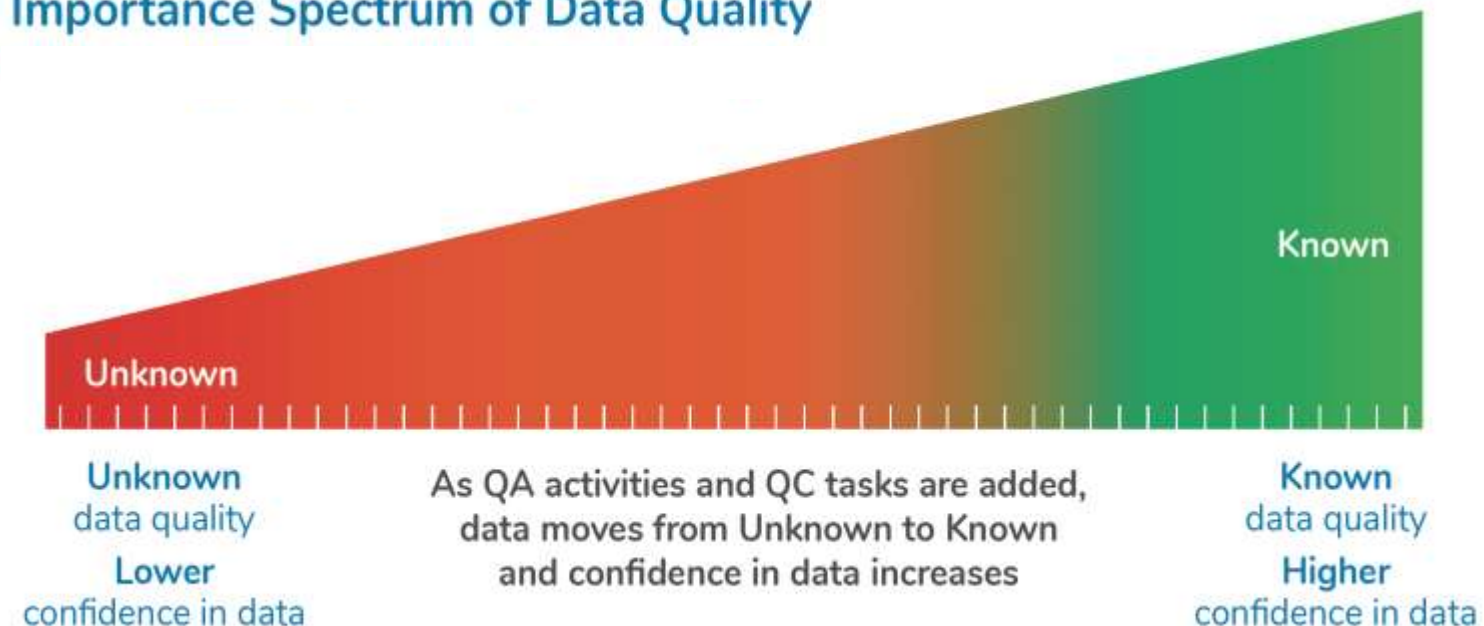AQEarth Project (NIEHS)

Challenges – Data Quality

Quality Assurance and Quality Control (QA/QC) activities ensure you are collecting high-quality data that can reliably be used to meet project goals.

QA/QC steps include:

- Planning
- Documenting activities
- Performing regular maintenance
- Checking and reviewing data
- Comparing data to standards
- Validating data
- Reporting data
- ...and more

Importance Spectrum of Data Quality

Known

Unknown

Unknown data quality

Lower confidence in data

As QA activities and QC tasks are added, data moves from Unknown to Known and confidence in data increases

Known data quality

Higher confidence in data

Source: Bay Air Center
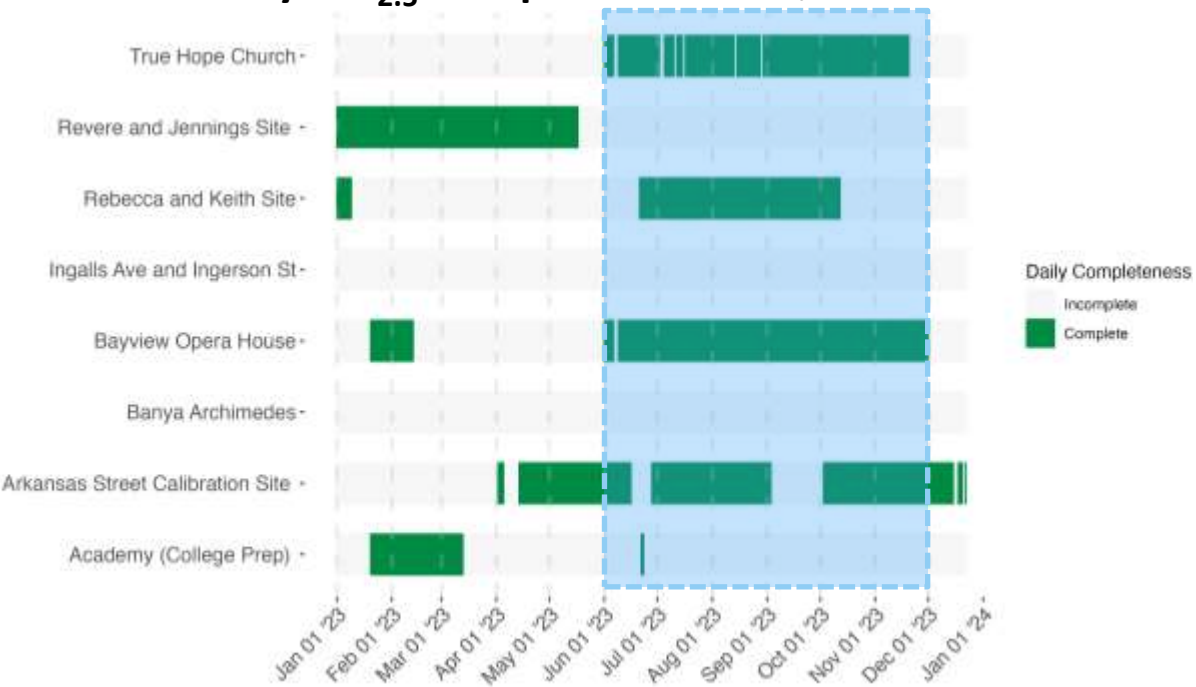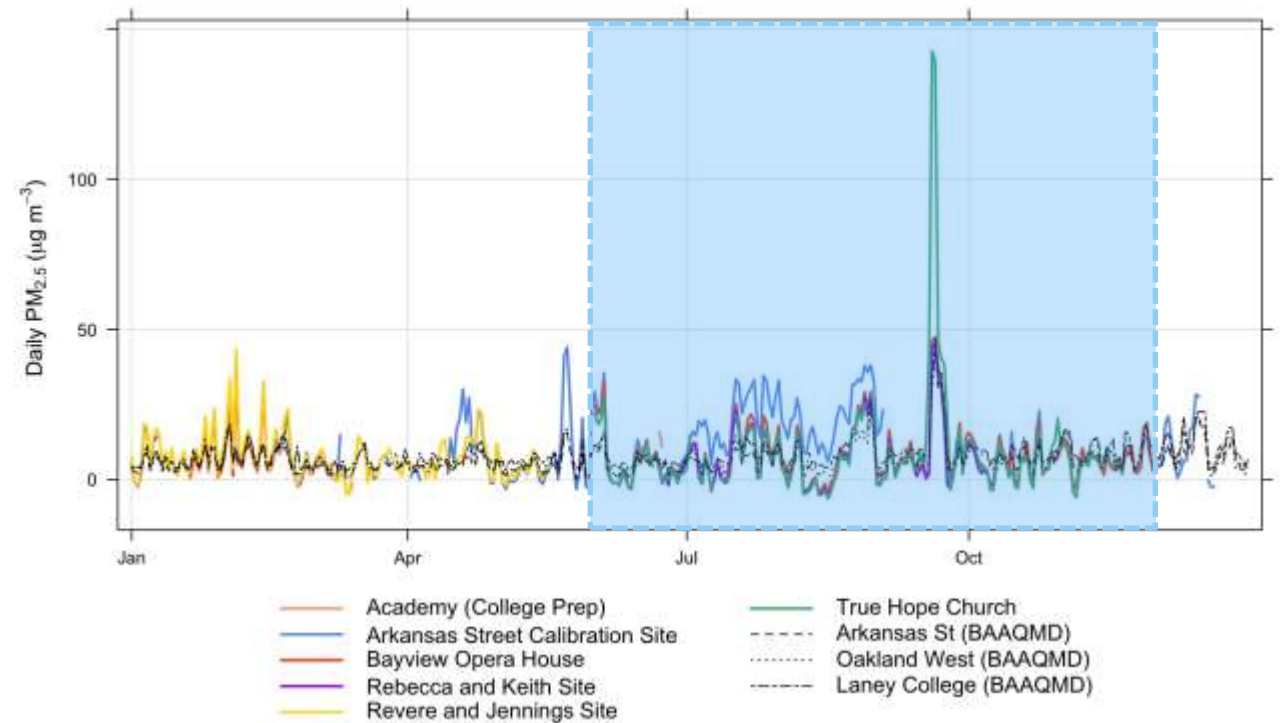
Challenges – Data Quality

Working with the Greenaction EJ Task Force to examine community-collected air monitoring data. Even though data are missing, insights can still be gleaned.

Daily PM$_{2.5}$ Completeness PM$_{2.5}$ Jan – Dec 2023

Daily PM$_{2.5}$ across BVHP IVAN network Jan – Dec 2023

Source: Bay Air Center

Challenges – Data Access & Ownership

Data Access: How can you get, download, and use data?

Data Ownership: Who owns the data and has rights to use it?

- Most data will be owned by either the air monitoring network planning team or the owner of the data collection monitors.
- Being clear about who owns the data will help prevent misuse of the data.

Increasing Community Participation in Air Pollution Mitigation in Indore, India

Let's Talk

Trusted by Community

Understand Government

Independent

Technically Rigorous

Creative

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TDEnviro

How can we help?

Reach out and we can help with any aspect of your air monitoring programs:

- Study design

- Measurements

- Data management

- Analytics

- Training & mentoring

- Community engagement

- Capacity building