**Past Trainings:** [**https://apps.cce.csus.edu/sites/arb/pqao/index.cfm?pid=1184**](https://apps.cce.csus.edu/sites/arb/pqao/index.cfm?pid=1184)

**Modules 1-3 and PQAO Training 2017**

**Keynote Addresses**

* Module 1 Keynote – Debbie Jordan
	+ Purpose of air monitoring is to protect public health
	+ Why good quality air monitoring data is important
	+ Consequences of poor quality data
* Module 2 Keynote – Phillip Fine
	+ Importance of QA/QC in “the big picture” (data quality, allocation of resources)
	+ QA/QC in relation to sensors
* Module 3 Keynote – Alberto Ayala
	+ Progress made in air monitoring over the years
	+ Ozone attainment success, PM2.5 challenges
	+ Future of air monitoring – tech advancements, near roadway monitoring
* PQAO Training 2017 – Amy Zimpfer
	+ Air Quality Challenges in Region 9: The Importance of Accurate, Reliable Data
	+ Reliable, accurate data are the foundation of the air quality management program
	+ California monitoring network is unparalleled
	+ Fundamental to key policy decisions to clean air

**Module 1**

**PQAO**

* Comparing Apples to Apples: Importance of a PQAO from EPA’s Perspective
	+ High level perspective of PQAO from EPA
	+ Why PQAO structure was put in place
	+ Different types of PQAOs
* Getting to Know the Air Resources Board’s PQAO
	+ Description of ARB’s PQAO structure
	+ Challenges ARB’s PQAO faces
	+ Benefits of the PQAO – shared resources
* PQAO from Mojave Desert Air Quality Management District’s Perspective
	+ Benefits of the PQAO structure for Districts
	+ District responsibilities as part of PQAO

**Key Documents**

* Introduction to QA Laws, Regulations, and Key Documents
	+ Overview of all documents used by PQAO
* Key QA Documents
	+ More detail on key documents used by EPA, ARB, and Districts
		- QA Handbooks (EPA)
		- QMP, QAPPs, SOPs, R&Rs, ANP (ARB)
		- District QMP/QAPPs/SOPs, addendums
* Tour of ARB’s QA Web Page
	+ Document repository
	+ Resources for site operators
	+ Contact information

**Network Design**

* Monitoring Goals
	+ Minimum monitoring requirements
	+ How data are used (regulatory and non-regulatory)
	+ Consequences of poor quality data (PM example)
* Network Design: Networking the Networks
	+ Overview of air monitoring networks
	+ How networks connect/overlap with one another
	+ Sharing resources within networks
* Monitoring Requirements and You
	+ Monitoring network design objectives
	+ Network requirements
	+ Network design considerations (i.e. future development trends, research)
* Annual Network Plans
	+ History of ANP
	+ Content of ANP
	+ Current ANP process
* Air Monitoring Annual Network Plan: A District’s Perspective
	+ Scope of ANP
	+ Process for completing ANP on District end
	+ 5 years network assessment
* What to do When Making Changes to Your Network
	+ Types of network changes (i.e. shut downs, relocations)
	+ Notification process

**Station Operations**

* Consequences of Not Following Proper Air Monitoring Station Operational Procedures
	+ Lower data reliability/defensibility
	+ Delays in decision making/regulations
	+ Case studies – PM2.5 FEM BAM issue at S. Coast
* It All Starts With You!
	+ Overview of data uses
	+ Owens lake case study
* Station Set Up: Location, Location, Location and Much More
	+ Site selection/siting requirements
	+ Building a station
	+ Station set-up/instrument selection
* Residence Time: It’s About Time!! (and Pressure)
	+ Residence time criteria
	+ How to calculate residence time
* Station Operations: It’s On You
	+ Site operator review of data in office
	+ Routine site checks/ operations/ maintenance (focus on PM)
	+ Calibrations – gaseous and PM
* Importance of Good Station Operation Documentation from an End User Point of View
	+ Importance of documentation
	+ Types of documentation
	+ Requirements for documentation
* Stations: The Good, the Bad and the Ugly
	+ Most common issues at stations found in audits (siting, documentation)
	+ Examples of good and bad stations

**Module 2**

**Quality Control**

* Where Did All This QC Stuff Come From Anyway
	+ History of QC in PM2.5 program
	+ Data Quality Objectives
	+ Method Quality Objectives (PARCCS)
* Field QC and Log Books
	+ Review of field QC for PM2.5 BAMs and Ozone
	+ Examples of good/bad documentation
	+ SLO’s electronic logbooks
* The Need for SOPs
	+ Why having SOPs is important
	+ SOP development
	+ Exercise
* Life and Times of a PM2.5 Filter
	+ PM2.5 mass program overview
	+ Life of a filter – lab QC for PM2.5
	+ Ways to improve filter handling

**Calibrations/Certification**

* Building a Bigger Better Zero Air Generator Certification Process
	+ Need for zero air certification process
	+ San Diego’s zero air certification procedure
* Field Calibrations
	+ Types of calibrations
	+ When/how to calibrate
	+ Documenting calibrations
* Standards Laboratory
	+ NIST traceability
	+ ARB’s standards lab services

**Quality Assessment**

* Quality Assessment and Corrective Action
	+ Purpose of quality assessment
	+ Types of assessments
* TSAs – The Mother of All Audits
	+ What is a TSA
	+ Why TSAs are performed
	+ TSA process
* Behind the Clipboard - Performance Evaluation
	+ P.E. from a state perspective (scheduling, what is evaluated)
	+ P.E. from a District perspective (how to prepare)
* Using a Corrective Action Process
	+ Importance of having a corrective action process
	+ ARB’s CAN process
	+ Examples of when to use a CAN
* Air Quality Data Action
	+ Criteria used to determine validity of P.E. data
	+ Most common issues leading to AQDAs
	+ How to resolve AQDAs

**Data Management**

* Data Management
	+ Data acquisition
	+ Data management systems used in CA
	+ Data management system functions (automated tasks, data review)
* All Data Considered Valid
	+ Defines data review, verification, and validation
	+ EPA QA handbook, Appendix D – critical, operational, and systematic criteria
	+ Overview of multi-level data review and AQS upload
* Data Validation Exercise
	+ Data matrix- one month, hourly PM2.5
	+ Validation level I
	+ Validation level 2
	+ Validation level 3
* Introduction to Databases
	+ Real-time databases (AirNow, AQMIS)
	+ Data for record (AQS, iADAM)
	+ Misc. databases – QA air monitoring site information, CAMNAT
* Breakout sessions
	+ CAMNAT
	+ AirNow
	+ iADAM & AQMIS
* AQS Summary
	+ AQS metadata
	+ AQS reports
	+ Null codes, QA qualifier codes
* Data Certification Presentation A, Presentation B
	+ Data submittal requirements
	+ Certification reports
	+ Why data certification is important (District perspective)
* Data Quality Report
	+ Background on data quality report
	+ Data quality results from 2013
	+ Challenges with data quality for ARB’s PQAO
* Data Analysis for Regulatory Purposes
	+ NAAQS
	+ High-level data analyses performed (design values, trend analyses)
	+ Design value calculation exercise

**Module 3**

**ARB Laboratory Programs**

* Laboratory Analyses: Beyond the Masses
	+ ARB’s analytical services
	+ Clients
	+ Data quality and how data are used
* ARB Filter Handling Presentation/ Demonstration
	+ PM 2.5 filter preparation – before the field
	+ Filter handling in the field
	+ Filters – after the field
* ARB Toxics/GHG Analyses
	+ Overview of ARB’s toxic/GHG monitoring
	+ Laboratory QC (canister cleaning, etc.)
	+ Overview of analyses performed

**Emerging Technologies**

* Air Monitoring and New Technology
	+ New technologies used by ARB – auto calibration systems, direct NO2 measurements, black carbon, etc.
* Air Quality Sensor Performance Evaluation
	+ Overview of sensor performance study by South Coast

**Project Updates**

* Performance Evaluation of a Condensation Particle Counter
	+ Study of near-roadway monitoring using three different CPC instruments at one site
	+ Comparison of instrument performance
* Great Basin APCD - Lakebed Update
	+ History of PM10 monitoring at Owen’s lake
	+ Dust control methods – raspberry pi, sharp dust sensor
* ARB Emergency Response Monitoring
	+ Overview of ARB’s OER program
	+ Monitoring capabilities
	+ Examples of emergency responses

**Database Demos**

* AQMIS/iADAM Demo
	+ Overview of two ARB databases
* AQS Demo – U.S. EPA
	+ Data certification using AQS and AMP 600
	+ Registering and accessing AQS

**Vendors**

* Thermo – Gas
* Thermo – Particulate
* Teledyne/API – Gas
* Teledyne/API – Particulate
* Met One – Particulate
* American Ecotech – Gas/Particulate/Data Management
* Alicat – Calibration
* 2B Technologies – Portable monitors
* BGI Mesa Labs – Calibration
* Sabio – Calibration
* TSI Particle Counters
* Tisch – Particulate
* Agilaire – Data Management
* Picarro – GHG
* LGR – GHG

**Parking Lot Demos**

* Through-the-probe Audits
* Air Monitoring Trailer (Thermo)

**PQAO Training 2017**

**PQAO**

* PQAO Updates and Webpage Tour (General Session)
	+ Overview/refresher of what a PQAO is
	+ Regulation updates

**Network Design**

* Network Design and Changes (Breakout Session)
	+ Overview of networks
	+ Monitoring goals
	+ Network requirements
	+ Network changes
	+ Shutdown or Relocate? group exercise

**Station Operations**

* Station Operations Overview (General Session)
	+ Broad overview of data, quality system, fundamentals, skillset, communication, documentation, and troubleshooting
* Station Operations: Discussion Q&A (Breakout Session)
	+ Open forum format

**Quality Control**

* Station Documentation and QC (Breakout Session)
	+ Importance of QC
	+ Elements of QC
	+ Types of documentation (QC sheets, calibration sheet, logbooks, etc.)
	+ Electronic documentation and advantages of a database system

**Calibrations/Certification**

* Verifying Zero Air Sources (General Session)
	+ Importance of zero air certification and verification
* Zero Air Generator Certification: Demo (Breakout Session)
* Field Calibrations: Introduction (General Session)
	+ Introduction and big picture
		- Types of calibration
		- When/how to calibrate
		- Documenting calibrations
* Field Calibrations: Demo (Breakout Session)

**Quality Assessment**

* Corrective Action: South Coast AQMD’s Process (General Session)
* Performance Evaluations (General Session)
	+ Overview of types of PEs
	+ How to prepare
	+ Common issues
* Technical System Audits (General Session)
	+ Recap of TSAs
	+ How to prepare for an audit
	+ Most common issues and corrective actions
	+ Lessons learned by EPA and CARB auditors

**Data Management**

* Data Validation (General Session)
	+ What it is and importance of data validation
	+ Overview of levels 1, 2, 3
	+ Validation to certification pathways
* Data Certification (General Session)
	+ What it is and importance of data certification
	+ What is expected of districts/CARB
* Data Validation and Certification Exercise (Breakout Session)

**ARB Laboratory Programs**

* PM2.5 Filter Handling from a Lab and Field Perspective (Breakout Session)
	+ Guiding documents, critical criteria, and sample handling from both perspectives

**Emerging Technologies**

* Emerging Technologies: Monitoring for Tomorrow (General Session)
	+ BAM 1022
	+ Carbon-SASS
	+ BC 1050
	+ Neighborhood PM2.5 Monitor
	+ Speciated PM10 SASS

**Project Updates**

* South Coast Sensor Lab (Breakout Session)
* Salton Sea Air Monitoring Project (Breakout Session)
* Refinery Project (Breakout Session)
* CA Baseline Ozone Transport Study (Breakout Session)
* Community Toxics Woodsmoke (Breakout Session)
* Ambient Pesticide Monitoring (Breakout Session)
* Aliso Canyon (General Session)

**Databases**

* AQMIS and iADAM (Breakout Session)
* AQS (Breakout Session)
	+ AQS metadata
	+ AQS reports
	+ Null codes, QA qualifier codes
* STI: AirNow (Breakout Session)

**Vendors**

* Agilaire (AirVision)
* Alicat Scientific
* American EcoTech
* APIS\*
* BGI/Mesa Labs
* Met One
* Purple Air\*
* RM Young (Cancelled)
* Sabio
* STI\*
* Teledyne/API
* Thermo

**Parking Lot Demos**

* Thermo

**Other**

* Q&A Session (General Session)
	+ Opportunity to ask questions to U.S. EPA, CARB, and South Coast AQMD
* Data from an End User Perspective (General Session)
	+ How data generated affects an air quality planner for Butte County AQMD
* STI: Sensor Studies