AMY MARSHALL
AIR QUALITY PRACTICE DIRECTOR

CREDENTIALS	♦ *B.S., Chemical Engineering, North Carolina State University, 1994* ♦ *Licensed professional engineer: NC, SC, FL (North Carolina engineering services provided by ALL4 NC, P.C.)* ♦ *National Council for Air and Stream Improvement member* ♦ *Carolinas Air Pollution Control Association board member* *North Carolina Manufacturers Alliance member*
PROFESSIONAL *EXPERIENCE*	♦ ***2019-Present:*** *ALL4 NC, P.C., Raleigh, NC – Air Practice Director* ♦ ***2001-2019:*** *URS Corporation/AECOM, Morrisville, NC – Air Practice Director* ♦ ***1994-2001:*** *Midwest Research Institute, Cary, NC – Project Manager*

TECHNICAL *EXPERTISE*

✓ *Technical and advocacy support to industry associations;* ✓ *State and Federal air permitting including NSR, PSD, and Title V;* ✓ *Permit strategy and negotiation;* ✓ *Assisting industrial clients with obtaining streamlined or innovative air permits including Plantwide Applicability Limits (PALs);*	✓ *Air quality compliance auditing;* ✓ *Air quality training;* ✓ *Assisting industrial clients in developing compliance strategies for new and existing rules such as MACT, NSPS, Emission Guidelines, CAM, etc;* ✓ *Air pollution control technology economic and technical feasibility review.*

PROFESSIONAL *OVERVIEW*

Ms. Amy Marshall is a professional engineer with 30 years of air quality consulting experience. Her current focus is providing strategic air quality regulatory support to industrial clients. She also works with various industry associations and individual companies to evaluate impacts and provide technical comments to EPA on air quality policies, guidance documents, and regulations that impact industrial emissions sources.

Ms. Marshall's air quality experience includes advocacy support; Title V, PSD, and minor NSR permitting; regulatory applicability determinations; agency negotiations; regulatory strategy development; regulatory implementation; regulatory cost analyses; compliance reporting; training; auditing (including both air regulatory compliance auditing and EMS gap analyses); air emissions inventory preparation; and monitoring system and control technology evaluations.

Ms. Marshall has managed a number of projects for industries including wood products, power, pharmaceuticals, pulp and paper, printing and packaging, power generation, tire manufacturing, chemical manufacturing, mining, and food processing. She is ALL4's Air Quality Practice Director and also coordinates ALL4's services to the forest products sector, including work for individual companies, collaboration with NCASI, and technical support to the American Wood Council and American Forest and Paper Association

AIR QUALITY **PERMITTING EXPERIENCE**

Developed permitting strategy and prepared PSD and minor NSR construction permit applications in a number of different states for various types of projects at wood products, power, pulp and paper, printing and packaging, tire manufacturing, and various other types of industrial facilities. Evaluated source aggregation and project aggregation as necessary. Prepared regulatory analyses, emissions calculations, and control technology analyses, and managed modeling analyses. Proposed permit requirements to maximize flexibility and minimize burden. Prepared permit applications to revise BACT requirements to reduce cost and burden or accommodate changes since the original analysis. Reviewed draft permits and participated in regulatory negotiations to achieve the most favorable compliance requirements.

Title V renewal and modification applications for pharmaceutical, forest products, power, tire manufacturing, and various other types of industrial facilities. Drafted Title V permit language for various industrial facilities.

Permit streamlining and simplification for several facilities, including re-working permit conditions to provide additional flexibility. Permitted a VOC PAL at a tire manufacturing facility and eliminated several PSD avoidance conditions. Re-permitted various types of facilities from Title V to synthetic minor or small or from HAP major to area source and reduced regulatory burden and cost.

Prepared permit applications for Equivalency by Permit (EBP) approaches (alternate MACT compliance approaches) for several pulp and paper mills. Wrote draft permit language for MACT and EBP requirements.

Developed permit language to be included in a source-specific SO_2 SIP to address compliance with the 1-hour SO_2 NAAQS and avoid nonattainment designation of the area surrounding the facility.

REGULATORY STRATEGY AND COMPLIANCE **EXPERIENCE**

Technical support to American Forest and Paper Association and American Wood Council evaluating EPA's revisions to the plywood and composite wood products (PCWP) MACT, wood building products surface coating MACT, the pulp and paper sector MACT I, MACT II, and NSPS rules, the Paper and Other Web Coating MACT, the CSAPR update/Good Neighbor rules, the Risk Management Program (RMP) regulations, and ozone and $PM_{2.5}$ NAAQS. Developed impact analyses and technical comments on regulatory proposals. Developed permitting and modeling white papers for submittal to EPA on desired regulatory reforms and permit streamlining actions. Assisted in developing a list of air permitting, modeling, and NSR guidance documents to recommend for revocation. Analyzed the Cumulative Cost Burden of Air Regulations Potentially Impacting the Forest Products Industry. Prepared a report (and a 10-year update) for AF&PA that analyzed current regulatory burden and upcoming certain or potential EPA regulatory activities that could impact the industry, possible controls required for pulp and paper and wood products facilities, and their costs over time.

Project Manager for the Boiler MACT and CISWI rule and emissions database assessment projects for the AF&PA, ACC, RMA, and CIBO. These assessments included detailed evaluations of the EPA Boiler MACT and CISWI databases in order to assist AF&PA, ACC, RMA, and CIBO in making comments to EPA during their rule development process and inform industry outreach efforts. Technical evaluation also includes estimates of control upgrades and costs for each unit in the database. Led the development of comments on the proposed Boiler MACT, Boiler GACT, and CISWI rules and drafted reconsideration petition language for Boiler MACT and CISWI rules for AF&PA coalition. Evaluated proposed and final MATS rule and

compared to Boiler MACT and CISWI requirements. Prepared rule summaries and timelines. Evaluated impacts of and prepared comments on each Boiler MACT reconsideration rule.

Technical support to the Rubber Manufacturers Association (now the U.S. Tire Manufacturers Association) with respect to issues related to liquid fired units under Boiler MACT. Evaluated data and prepared technical comments. Provided emissions and release point data for residual risk modeling for several tire facilities. Peer review of an emissions test to speciate chromium data from rubber extrusion. Provided technical comments on EPA's proposed changes to the Tire Manufacturing MACT to fill regulatory gaps.

Technical support to American Chemistry Council as EPA conducted its risk and technology review of the ethylene manufacturing rule. Prepared comments on the draft ICR for submittal to EPA. Conducted a pretest to identify technical issues associated with testing high moisture decoking pot stacks. Compiled process and emissions data for evaluation of work practices and/or emission limits for decoking and furnace emissions. Assessed work practice options for pressure relief devices for various chemical sector rules based on refinery RTR. Prepared technical comments for ACC on the proposed revisions to the Organic Liquid Distribution, Miscellaneous Organic NESHAP, Hazardous Organic NESHAP, and other chemical sector air rules.

Technical support to the American Fuel and Petrochemical Manufacturers developing comments on EPA proposals such as the Stationary Combustion Turbines RTR and NSPS updates, Site Remediation MACT RTR, Organic Liquid Distribution MACT RTR, Revisions to the Air Emissions Reporting Requirements (AERR) rule, and the advance notice of proposed rulemaking (ANPRM) related to increasing consistency and transparency in considering costs and benefits in the rulemaking process. Developed and regularly update a tracking spreadsheet comparing EPA RTR results and actions.

Technical support to the American Petroleum Institute reviewing EPA's updates to the organic liquid storage tank AP-42 section and TANKS program. Also prepared a comment letter to EPA on fenceline monitoring Method 325. Developed technical comments on EPA's proposed updates to the organic liquid storage tank NSPS. Developed technical comments on EPA's proposed updates to the combustion turbines NSPS.

Technical support to the Pressure Sensitive Tape Council developing comments on EPA's proposed changes to the Paper and Other Web Coating MACT and Organic Liquid Distribution MACT.

Technical support to the Vinyl Institute, a trade association for PVC manufacturers, with evaluating the proposed and final PVC MACT, analyzing data, evaluating control costs, and preparing technical comments and analyses. Assisted with reconsideration issues and additional data analysis. Assisted with preparation of technical comments on the Hazardous Organic NESHAP.

Technical support to North American Insulation Manufacturers Association evaluating the cost of establishing new chromium emission limitations under the proposed RTR for the Mineral Wool and Wool Fiberglass Industries NESHAP and demonstrating EPA's analysis was flawed. Prepared a report for submittal to EPA with NAIMA comments on the proposed rule.

Technical support to the Brick Industry Association as they evaluated available emissions data and plant configurations in advance of a re-proposal of the Brick MACT and assisted BIA with analysis of EPA work products and development of comments on the proposed rule.

Technical support to a phosphate fertilizer manufacturer as they responded to EPA information requests and evaluated EPA's Risk and Technology Review of the Phosphate Fertilizer MACT.

Prepared industry wide air regulatory cost estimates for multiple trade associations for multiple air rules to inform regulatory comments and congressional outreach.

Provided Boiler MACT training through workshops and webinars to clients, trade associations, and other groups.

Provided a 3rd party evaluation of Boiler MACT and NAAQS compliance and engineering approaches prepared by other consultants for a forest products company with 2 facilities. Prepared a report recommending compliance approaches that aligned with long term business strategy and took into account other current and upcoming environmental regulations.

Project manager for Boiler MACT compliance project for a major forest products company with multiple mills and boilers. Evaluated current fuel, stack test, and operational data to recommend compliance approach for detailed engineering. Prepared compliance plans for the selected approach for each boiler.

Prepared non-waste NHSM documentation for non-traditional fuels fired for multiple facilities.

Case-by-case Boiler MACT assessments in support of NC Section 112(j) MACT Hammer permit applications. Negotiated favorable permit terms. Assisted NC facilities with transition to Boiler MACT.

Prepared regulatory strategies for permitting energy projects, including evaluation of emissions control options for existing units and options for repowering, based on both MACT/NSPS limits and NAAQS modeling analyses.

MACT and NSPS Implementation Support, including regulatory strategy, alternate monitoring approval requests, permitting, site specific plan development, testing, reporting, and evaluating ongoing compliance. Prepared required notifications and compliance reports.

Prepared fugitive dust control plans as required by the coal combustion products residuals rule for 18 power plants. Developed a template that met the regulatory requirements but provided the most flexibility to individual facilities to determine appropriate dust control measures based on the situation. Updated the plans as a result of annual reviews.

Evaluated Strategies for Meeting the SO_2 Data Requirements Rule for several large industrial facilities, identifying options to comply with the SO_2 Data Requirements Rule with modeling or monitoring. Developed emissions reduction scenarios and strategies where refined modeling or monitoring indicated ambient levels over the standard. Prepared a permit application to incorporate SO_2 emission limits based on NAAQS modeling into a Title V permit.

ENVIONMENTAL JUSTICE, COMPLIANCE, AND REPORTING ***EXPERIENCE***

Assisted a pharmaceutical facility with identifying compliance requirements, developing required plans, developing operating parameter ranges based on stack testing, and updating their air permit for compliance with the Commercial and Industrial Solid Waste Incinerator (CISWI) rule.

Planned and participated in a project where content of online tools and databases such as EJSCREEN, CEJST, and ECHO were reviewed and documented for a company's U.S. facilities.

Presented and moderated webinars and workshops on EJ tools and approaches to address community concerns. Developed state/federal EJ policy/regulatory tracking tool to which several industry associations subscribe.

Developed profiles for a company's facilities that described their risk related to a lower PM2.5 NAAQS (e.g., size of facility, state modeling policy, background value, proximity to monitors, proximity to other facilities that emit PM2.5).

Assisted with internal EMS auditing at a tire manufacturer. Performed gap analyses at multiple industrial facilities to evaluate conformance with ISO 14001 and determine steps to take to achieve ISO 14001 equivalency.

Air Quality Task Leader during multimedia compliance audits at several pulp and paper manufacturing facilities.

Prepared task lists from environmental permits for multiple industrial facilities for incorporation into corporate or facility-wide EMIS applications.

Title V annual compliance certifications and tools and multimedia environmental compliance management tools for several facilities.

Prepared the 2017 air emissions inventory for the South Carolina Ports Authority's terminals. Quantified criteria pollutant emissions for mobile sources at the port's terminals. Compared emissions to the previous inventories and documented changes in operations and emissions. Analyzed port emissions trends against local ambient monitoring data. Studied opportunities for further emissions reductions.

Prepared emissions inventories for facilities in multiple industries, including power, chemical/pharmaceutical, pulp and paper, wood products, and tire manufacturing. Gathered throughput data, updated emission factors and methodologies, prepared inventory reports.

Prepared technical comments for several trade associations on EPA's proposed changes to NSPS to incorporate electronic reporting requirements. Provided training to facilities on electronic reporting tools.

Assisted multiple facilities with responding to EPA Clean Air Act Section 114 information requests.

MONITORING AND CONTROL TECHNOLOGIES ***EXPERIENCE***

Prepared Four-Factor Analyses for wood products, pulp and paper, gas transmission, and chemical facilities in multiple states under the Regional Haze Rule requirements for the 2021-2028 planning period.

Evaluated BACT and LAER for PSD, NNSR, and state-specific construction permitting projects.

Developed CAM plans for clients in several industries. Developed sections of the CAM guidance document while working for an EPA contractor.

Prepared technical comments for several trade associations on EPA's proposed revisions to various sections of the EPA's OAQPS Control Cost Manual.

BART control technology evaluations for multiple forest products, chemical, and power industry facilities.

Prepared technical comments for multiple trade associations on the proposed revisions to CSAPR and underlying control technology analyses for non-EGU industrial combustion sources. Prepared technical comments on the Ozone Transport Federal Implementation Plan (Good Neighbor Rule) for AF&PA, specifically regarding the 2022 proposed control requirements for pulp and paper industry boilers.

Evaluated appropriate combustion source control technologies for MACT and NAAQS compliance and estimated costs for several facilities. Prepared a cost of controls analysis and presentation for NAM/AF&PA

meeting with White House OMB during their review of the ozone NAAQS revisions to show economic impacts of setting an ozone standard lower than 70 ppb. Prepared an impacts evaluation for a lower annual $PM_{2.5}$ NAAQS for AF&PA.

Drafted test plans and analyzed field test data to establish an EPA protocol for setup and operation of a triboelectric monitor as a fabric filter bag leak detection device.

Evaluated three particulate matter (PM) continuous emission monitoring systems (CEMS) at a coal-fired power plant; developed linear and quadratic correlations between actual and predicted PM emissions.