

January 16, 2024

North Carolina General Assembly
Joint Legislative Commission on
Government Operations
16 W Jones ST
Raleigh, NC 27601

Chairman Jackson and Bell,

Thank you for the opportunity to provide an update to the Joint Legislative Commission on Governmental Operations Subcommittee on Hurricane Response and Recovery regarding the Flood Resiliency Blueprint initiative. This letter provides an update regarding the six items mentioned in your December 20, 2023.

AECOM is a global infrastructure consulting firm of 52,000 employees, 400 in North Carolina, providing technical and consulting services to clients to solve many complex challenges such as energy, water, transportation, and flooding. AECOM is a recognized industry leader in flood risk management. At the national level, AECOM provides modeling, mapping, design, risk analysis, and construction services for both FEMA's Professional Technical Services Program, and the U.S. Army Corp of Engineers (USACE). At the state level, AECOM provides flood risk management services to Louisiana, South Carolina, Kentucky, Utah, Texas, and others. AECOM also provides flood risk management services at the municipal level, for cities such as Norfolk, Miami-Dade, and New York City.

In North Carolina, AECOM has been an active advisor and provider of flood risk management services to state, municipal and county government agencies. Since 2001, AECOM has provided technical services to the North Carolina Floodplain Mapping Program. These services include public outreach and education, data acquisition, hydrologic and hydraulic modeling, Flood Insurance Rate Map (FIRM) generation, impact analysis, mitigation planning, and tool development. AECOM has also provided on-going services to the Department of Transportation, the Department of Public Safety, and the City of Charlotte/Mecklenburg County.

AECOM believes flood resiliency can be achieved through strategic investment in three key goals. These include (1) reduction in the likelihood and extent of flooding, (2) reduction in the vulnerability and impact from flooding, and (3) increase communities' ability to maintain and quickly resume pre-storm activities following flooding. AECOM has the expertise, experience, and assets to support the advancement of these goals through Blueprint.

1. AECOM's role in the Blueprint process to date and in the future

As a long-term, vested partner in flood resilience in North Carolina, AECOM was very pleased with the passage of Section 5.9(c) of S.L. 2021-180, that established and funded the Flood Resiliency Blueprint. Following the passage of legislation, AECOM submitted a response to the Request for Information (RFI – 16-01202022-01) posted on January 20, 2022, by the State regarding the Blueprint as defined in the legislation. The purpose for this request was to capture ideas and best practices from all interested parties regarding data, tools, and policy relevant to the development of a statewide Flood Resiliency Blueprint. Following, AECOM submitted a response to the "pre-qualifying" Invitation for Bid (#351554882) solicitation published by the North Carolina Department of Environmental Quality (NCDEQ) on January 20, 2022. AECOM was among a shortlist of firms who would be invited to respond to an anticipated full scope of work (SOW) solicitation. Following, AECOM submitted a response to the North Carolina Flood Resiliency Blueprint request for proposal (RFP – 16-380876980) published by NCDEQ on September 29, 2022. Following, AECOM was asked to present our submitted proposal at an in-person interview with the NCDEQ evaluation team on November 7, 2022. On

December 21, 2022, AECOM received notification from NCDEQ that we were selected as the Phase I firm. On December 28, 2022, AECOM received the executed contract from NCDEQ. The Statement of Work (SOW) for Phase I RFP included four primary tasks comprised of fifty-two (52) subtasks. The four primary tasks were:

1. Stakeholder Outreach/Facilitation
2. Gap Analysis
3. Recommendations/Decision Framework
4. Develop Draft Blueprint and Pilot Action Strategy

To this point, AECOM has completed tasks assigned by NCDEQ with an end date of December 2023 per the Comprehensive Project Schedule (Attachment H of the contract). Note that a series of Neuse Basin Flood Resiliency Action Strategy workshops are planned for early Spring 2024 within the Neuse Basin. AECOM anticipates providing facilitation and lead support for these workshops.

AECOM received from NCDEQ a Flood Resiliency Blueprint – Phase II request for quote (RFQ – 16-785503502) on October 2, 2023. Phase II includes the design and construction of the Flood Resiliency Blueprint Tool (Blueprint Tool) IT Platform. The Blueprint Tool system requirements and SOW for Phase II were developed during Phase I. Following AECOM’s response to the RFQ on October 9, 2023, NCDEQ accepted and executed a contract on November 1, 2023. The period of performance on this contract is December 31, 2024. Following this contract, and to the date of this letter, there have been no other RFPs or RFQs published, nor taskings issued to AECOM.

2. Blueprint process and timelines to completion

The Blueprint process is an iterative three phase, eight step workflow that builds upon the traditional flood risk management (FRM) process. The eight steps include:

Stage 1 – Initiation
Step 1 – Actionable Data, Modeling, Analysis
Step 2 – Initiate Community Engagement and Discovery
Stage 2 – Analysis and Planning
Step 3 – Flood Risk Planning & Analysis
Step 4 – Action Review, Creation, and Adjustment
Step 5 – Action Analysis and Ranking
Stage 3 – Implementation and Reporting
Step 6 – Flood Resiliency Blueprint Basin Action Strategy
Step 7 – Action Implementation
Step 8 – NCDEQ – Program and Project Accountability

The Blueprint process has been designed to provide actionable information to state, regional, and local decision-makers, and planners to help collaborate, coordinate, and decide on how and where to invest in flood resiliency, why to make those investments (s), determine the present and future impact that will result from the investment(s) and what funding source(s) can be used to invest. The process and underpinning of the Blueprint Tool will carry decisionmakers and planners through an interactive and iterative workflow that provides hazard and risk assessments for an ensemble of flood scenarios, and a suit of known and recently identified mitigation actions (e.g., policy, nature-based, structure,

gray) that can advance flood prevention and mitigation. The process and tool will also capture and track key metrics to see how investments can or have moved the needle on resiliency. The inclusion of metrics and profiles for actions will increase decision-makers' and planners' ability to prioritize actions/investments. It should be noted that all steps will either be led or supported by state staff to avoid or reduce any burden placed on communities. The eight-step process will be revisited every five years from the generation of the previous Basin Action Strategy (Step 6). During the five years, NCDEQ will perform project management oversight and support as actions are implemented by communities. Rolling updates to Basin Action Strategy(s) will be tracked by NCDEQ and submitted in the Blueprint Tool by communities and other entities responsible for implementing resiliency actions.

The timeline for completion for Phase 1 – Initiation will be heavily dependent on the availability and required modeling and analysis, the number of counties and jurisdictions, and currency of data. The estimated range for completion for Phase 2 – Analysis and Planning is approximately six months for small basins to 12 months for larger basins. This timeline will be heavily influenced by the number of counties and municipalities that participate, and the span and complexity of basin wide flooding. The timeline for completion for Phase 3 – Implementation and Reporting will be influenced by several factors. First, the timing and amount of funding available through government appropriations and grants. Second, the complexity of federal and or state regulations (e.g., E.O. 11988 – Floodplain Management) and processes associated with an action/project. Third, the presence of state and local staff, contractors, and a project management system of record to support implementation of actions.

3. Online decision support tool purpose, intended users, and current and future data sources

As noted earlier, the Blueprint Tool is the underpinning, decision support framework of data, models, analysis, and actionable information to enable state, regional, municipal, community, non-government, industry, and business decision-makers and planners to collaborate, coordinate, and best decide on a prioritized list of actions to invest in for flood resiliency, the why to make those investment(s), the present and future impact that will result from the investment(s), and the how the action(s) will be supported. The Blueprint Tool will carry decisionmakers and planners through an interactive and iterative workflow of:

- Hazard and risk assessments for an ensemble of future conditions flood scenarios,
- Mitigating solutions/actions (e.g., policy, nature-based, structure, gray) that will advance flood prevention and mitigation,
- Refinement and prioritization of actions,
- Investment/performance metrics, and
- Funding strategy.

To support the Blueprint process, information associated with flood probability, flood extent, flood impact, loss avoidance, population, jurisdictions, ecosystem, infrastructure, structures, commerce, and sources of funding will need to be generated, acquired, mapped, updated, maintained, and stored. To meet this information requirement, coordination with, and leverage information generated and or maintained by NC Emergency Management, NC Flood Mapping Program (NCFMP), Center Geographic Information and Analysis, NCDEQ, Commerce, and Department of Agriculture and Consumer Services. In particular, coordination with and leverage of the 2D Advisory Flood modeling that the NCFMP is currently performing is critical to the success of Blueprint. The State will also leverage the work that AECOM has done regarding strategic federal, state, non-governmental, and philanthropic funding sources.

4. Basin-specific action strategies, gap analysis, and flood resilience measures

Under Phase I, AECOM was tasked through subtask 1.7 to document all legacy/existing action recommendations. Based on an extensive search, AECOM has documented more than 950 action Neuse River Basin recommendations. These recommendations were created between 2017 and 2022 through the Hazard Mitigation Plan update or post-hurricane recovery and resilience planning efforts. For each action recommendation, AECOM has documented the action description, origin and ownership, priority, type, estimated cost, and status and barriers. These recommendations and the draft Neuse River Basin Action Strategy will be reviewed by communities during the anticipated workshops.

Task 2 of the Phase 1 contract focused on documenting the current state, or lack thereof, of community, hazard, actions, and funding data, modeling, analysis, recommendations, and tools. Of the fourteen subtasks associated with

Task 2, all have been reviewed by NCDEQ, the technical advisory groups (TAGs), and the Principle Advisory Group (PAG), refined and finalized.

There is a very wide range types of flood resiliency measures (or investments) that have been recommended – acquisitions, elevations, installation of backflow preventers, developing stormwater management plans, etc. Action Profiles for each recommendation would be used in the ranking process within the Blueprint Tool. The user of the Blueprint Tool would then rank and prioritize the actions, as well as identify potential funding sources to assist in implementation.

5. Process to date and the initial draft blueprint

To ensure full transparency, input, and feedback from stakeholders, all prepared documents generated by AECOM when through an extensive review process. This process would consist of:

- Initial authoring by AECOM of draft report(s)
- Review and feedback by NCDEQ
- Draft adjustment by AECOM and concurrence by NCDEQ
- Refined draft posted to SharePoint site for review and feedback from relevant TAGs and PAG
- AECOM review and response to external comments. Where appropriate, adjustments are made to the draft.
- Final draft reviewed by NCDEQ.
- Refined report posted as final.

Subtask 4.5 under Phase I tasked AECOM to generate a draft North Carolina Flood Resiliency Blueprint. Based on an agreed upon report outline and level of content by NCDEQ, the initial draft Blueprint was submitted by AECOM to NCDEQ on November 7, 2023. The document went through the review process described above and was posted for TAG review and comment on November 29, 2023. The draft Blueprint received over 500 comments. In coordination with NCDEQ, AECOM has reviewed and made appropriate adjustments to the final draft recognizing the Draft Blueprint will continue to be refined based on additional feedback from advisory group and community members, as well as the pilot Neuse River Basin Action Strategy and the creation of the Flood Resiliency Blueprint Tool.

6. Composition and input of the Principal Advisory Group and Technical Advisory Group

To ensure transparency and robust input and feedback on the Blueprint process and tool, six technical advisory groups (TAGs), a principal advisory group (PAG), and a Neuse Regional Advisory Group were established. The six TAGs included:

- Hazard Identification
- Vulnerability/Risk/Impact
- Partnership/Funding
- Resilience/Mitigation/Reduction
- Governance
- Tool Development/Acceptance

The composition of the TAGs included recognized practitioners, subject matter experts, and representatives from key organizations and or stakeholders. The PAG was composed of the chairs from each of the TAGs and other key stakeholders such as the Golden Leaf Foundation, U.S. Army Corp of Engineers, the Governor’s Office, Association of County Commissioners, NC League of Municipalities, and the Office of State Budget Office (OSBM). Through the 148 TAG and PAG members, perspectives were provided from state, county and municipal government, councils of governments, Tribal Nations, non-governmental organizations, academia, and the environmental justice community.

As noted earlier, all TAG and PAG members were provided opportunities to provide input and feedback on the 52 subtask deliverables/reports. In addition, 56 TAG and PAG meetings were held to provide updates to the members and receive feedback. The majority of the 500 plus comments on the draft Blueprint (subtask 4.5) originated from TAGs and PAG members. This was also the case with the 300 plus comments on the draft Neuse Action Strategy (subtask 4.4).

The Flood Resiliency Blueprint is a vital process and tool that enables stakeholders to develop and invest in actions that best advance flood resiliency. The process and tool places emphasis on future conditions, stakeholder engagement, quantifiable impact, holistic watershed planning, prioritization of actions (known and new), and leveraging

available funding. AECOM is very pleased to support this initiative and believes it is a model that other governments will follow.

Thank you again for the opportunity to provide an update on Blueprint.

Sincerely,

John K. Dorman

John Kay Dorman
Vice President, AECOM

W. Dave Canaan

W. Dave Canaan
Sr. Program Manager, AECOM

Attachments: Resumes



John Dorman

Strategic Funding and Disaster Management

John Dorman has 36 years of experience in public, private, and non-profit strategic policy, planning, budgeting and finance, and all hazard risk management. John has an in-depth knowledge and experience with federal programs, processes, and funding opportunities such as the Infrastructure Investment and Jobs Act (IIJA/BIL) and Inflation Reduction Act (IRA). John has provided leadership in the generation of multi-billion-dollar, federal financial assistance requests to Congress following disasters. John has provided strategic funding advisory services for more than 150 large-scale projects. John has also authored and managed state and national demonstrations and new programs, and has provided leadership on federal advisory committees such as the Technical Mapping Advisory Committee.

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AECOM

Physical Location

Raleigh, NC

Years of Experience

Total Years: 36

Education

BS, Political Science, North Carolina State University

Registrations, Certifications, Licenses, Special Training

U.S. DOT Federal Aviation Administration, UAS Remote Pilot

Project experience

AECOM, Strategic Funding and Disaster Management, Vice President: Support federal, state and local clients on risk and emergency management policy, planning, strategy and projects. Foster and facilitate the leveraging of risk management data, models, analysis and technologies into all emergency management life cycle components. Provide strategic funding research, analysis and planning to support client projects and programs.

Owner, John Dorman Consulting, LLC: Provides consulting and analytical services associated with: strategic planning; performance budgeting; policy development; risk management application planning; school and facility risk and response management; flood hazard policy, modeling, mapping, risk assessment, mitigation, alerting and insurance; emergency response and recovery.

Assistant State Emergency Management Director for Risk Management, North Carolina Emergency Management: Oversaw and managed the planning, design, acquisition, implementation and maintenance of all data, models, planning, applications and information technology infrastructure supporting emergency management preparedness, operations, response, resilient recovery and mitigation. Oversaw all policy, plans, budgets, contracts and projects associated with the North Carolina Floodplain Mapping Program; the Flood Warning Program; the Risk Management Program; the North Carolina Floodplain Management Program; the Statewide Infrastructure Protection Program; Hazard Mitigation.

Director, North Carolina Flood Risk Management Program: Developed and oversaw the execution of statewide policy, plans, partnerships, fee-receipt budgets, contracts, engineering studies, base data acquisition, mapping, and information technology infrastructure associated with the statewide update and maintenance of all Digital Flood Insurance Rate Maps (DFIRM) in the State of North Carolina. This program secured and managed \$235 million in federal, state, and receipt-based revenues to date. Developed and oversaw the execution of policy, budgets, contracts, and information technology infrastructure associated with the North Carolina Flood Warning Program and the Flood Inundation Mapping and Alert Network (FIMAN). Developed and oversaw the execution of policy, plans, budgets, contracts and systems associated with the North Carolina Integrated Hazard Risk Management (IHRM) Program. This program is funded through federal dollars totaling \$5.0 million. Developed and oversaw the execution of policy, plans, budgets, and contracts associated with the North Carolina Floodplain Management Program (NFIP).

Statewide Planning Administrator, North Carolina Office of State Planning, Budget and Management: Responsible for the development and execution of all statewide policy and planning development and implementation associated with: Performance/

John Dorman | Strategic Funding and Disaster Management (cont.)

Program Budgeting; Geographic Information Systems; State Demographics and Demography; Geodesy; Floodplain Mapping; and Flood Notification and Alerting. Oversight and management of the preparation and execution of Biennial Department Plans and Gubernatorial Performance/Program Budgets. Oversight and management of the daily operations for the State Planning Office's six sections.

The City of Richmond - Strategic Funding Advisor: The City of Richmond is under a consent order to upgrade and reduce the overflow discharge of wastewater from their combined sewer infrastructure. Due in part to more intense rainfall events and community population growth, Richmond's combined sewer overflow infrastructure is unable to manage and retain the volume of wastewater resulting in periodic overflow discharges into the James River. Provided strategic funding consult and constructed a 10-year strategic funding plan that supports the required infrastructure.

North Carolina Flood Resiliency Blueprint - Flood Risk Management and Strategic Funding Advisor: The State of North Carolina has legislatively directed that a flood resiliency blueprint / plan be constructed for each of the 17 major river basins. The process will be comprised of community, municipal, and county stakeholders identifying policy, gray infrastructure, and nature-based solutions and actions that will further resiliency, especially for vulnerable populations. As for many resilient planning endeavors, progress is not gained following action identification due to lack of funding. The IIJA, IRA and ARPA have all provided real, accessible funding that can be leveraged with state dollars to implement actions. Provided strategic analysis and planning associated with flood resiliency, federal and state programs and funding, and actionable decision support systems.

State of Kansas - Drought Management Strategic Funding - Strategic Funding Advisor: Provided strategic analysis and consult regarding funding opportunities and capture strategies that the Governor can implement to support her water resiliency objectives.

State of South Carolina – Department of Water Resources - Strategic Funding Advisor: Provided strategic funding analysis and consult for the Flood Mitigation Program as it developed its 3-year strategic plan to further flood resiliency and mitigation. AECOM has also supported the construction and submittal of several grant applications to include FEMA (BRIC) and NOAA – Coastal Resilience Regional Partnership Challenge Letter of Intent (\$50M).

Salt Lake City Department of Utilities - Strategic Funding Advisor: Provided the identification and matching of funding sources to support two large water treatment and reuse projects. AECOM also constructed a Justice 40 Plan for the City.



Dave Canaan

Senior Program Manager

Dave Canaan has extensive, hands-on public sector experience with financial, budgetary, organizational, planning, and regulatory matters related to storm water utility administration, floodplain management, surface water quality enhancement and preservation, and land development permitting and enforcement. He recently retired from Mecklenburg County where he was the Director of County Storm Water for almost 30 years. After retirement he worked for Raftelis Financial Consultants supporting stormwater utilities in North Carolina and in other states. However, recently he capitalized on the opportunity to get more flood risk management-centric and joined AECOM in September 2023. In 1999, Dave received the Larry Johnson Floodplain Manager of the Year from the Association of State Floodplain Managers (ASFPM), the Director's Award for Floodplain Manager of the Year from the NC Division of Emergency Management and the Mecklenburg County Employee of the Year. In 2023, Dave was honored again by ASFPM with the presentation of the Larry Larson Meritorious Lifetime Achievement in Floodplain Management Award.

Project experience

AECOM, Flood Risk and Resiliency Practice, Senior Program Manager:

Dave serves as a leader in AECOM's Flood Risk and Resiliency Practice through strategic thinking and practical application of managerial, financial, and technical skills in flood risk management and resilience building. Dave's focus is, but not limited to the following: flood risk management, stormwater utilities, emergency management, land use and building code standards, sea level rise / climate change adaptation strategies, natural resource and habitat restoration, floodplain management, change management, and business continuity.

Raftelis Financial Consultants, Inc., Principal Consultant:

Dave was responsible for client relations and project management in the provision of financial, budgetary, organizational, planning, and regulatory consulting services related to storm water utility administration, floodplain management, surface water quality enhancement and preservation, and land development permitting and enforcement.

Charlotte-Mecklenburg County Storm Water Services, County Storm Water

Director: Charlotte-Mecklenburg Storm Water Services was the first stormwater utility in North Carolina. In preparation for the launch of the joint utility which includes Mecklenburg County, City of Charlotte, and the towns of Davidson, Cornelius, Huntersville, Matthews, Mint Hill and Pineville seven interlocal agreements were required to be negotiated and executed. As the **County Storm Water Director**, Dave took the lead role in completing that daunting task. As part of the negotiations, Dave minimized duplication of among the partners while each municipality and the County preserved their own stormwater identities. To that end, a common advisory committee was created. To leverage a skill one partner may possess (example: managing capital projects) interlocal agreements were

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Physical Location

Charlotte, NC

Years of Experience

Total Years: 40

Education

BS, Civil Engineering, Tennessee
Tech University

Registrations, Certifications, Licenses, Special Training

University of North Carolina,
Chapel Hill: County
Administration Course

Dave Canaan | Senior Program Manager (cont.)

crafted in such a manner as to act as contractual agreements for services rendered (examples: managing parts or the entire NPDES and performing billing and collection services).

Charlotte-Mecklenburg County Storm Water Services, Water Quality Program: In 2010, the County's Water Quality program was folded into the stormwater program. The County's Water Quality Program was the first water quality program in North Carolina at the local level. In 2012, the Water Quality Capital Improvement Program was created. Similar to the Flood Mitigation Capital Improvement Program, the program was continuously improved over the years to where diverse habitat has started returning to streams in Mecklenburg County. This is due to a robust, overall stream data collection strategy and priority ranking system – designed and implemented by staff.

The Flood Mitigation and Water Quality Capital Improvement Programs are combined to make Mecklenburg County Storm Water's Capital Improvement Program. The results to date of this combined effort are: 40 miles of stream have been restored, over 700 families relocated out of the floodplain, 450 buildings acquired and demolished, and 190 acres in open space claimed. Mecklenburg County administers the Community Rating System for many of the municipalities in the County. In 2021, the City of Charlotte received a Class 3 rating making Charlotte the most populous CRS community with the highest discount in flood insurance premiums.

Under Dave's leadership, the Capital Improvement Program was even further enhanced to be more goal driven. After years of work and preparation, a 15-year capital program (including a funding strategy based on a mixture of fee increases and bonds) was endorsed by the Board of County Commissioners in June 2021 and is well underway today. The strategy includes investing over \$400 million over the 15-year period to enhance or restore 70 miles of stream and mitigate approximately 300 flood-prone structures. The concepts of driving the community to residual risk was not just applied to flood mitigation, the concept was also incorporated into the water quality program.

Charlotte-Mecklenburg County Storm Water Services, Regulation Development: Dave has extensive experience with the creation of multiple regulations using a data-driven approach and enforcement of those regulations in a fair and equitable manner. For most of Dave's career with the County, he oversaw the enforcement of land development regulations for the County and the six towns within Mecklenburg County. During his tenure he expanded the program by opening satellite offices and, in partnership with County Code Enforcement, implemented the first paperless plan review process in the southeast. Currently, Mecklenburg County, the six towns, Charlotte-Mecklenburg Schools, Central Piedmont Community College hold the only joint NPDES in NC.

Charlotte-Mecklenburg County Storm Water Services, County Stormwater: The County's GIS team reported to Dave when GIS was in its infancy. From the very beginning, Dave drove County Storm Water to be a GIS-centric organization. Storm Water became an example of how GIS can magnify the effectiveness of a service and it became apparent that GIS could play a critical role in almost all departments across the County. The program continued to be expanded and was elevated to become a peer to County Storm Water and other similar programs in the department.

The County's Groundwater program was 100% tax funded and there were concerns that the lack of local groundwater well regulations could be a risk to human health. Under Dave's leadership, he applied lessons learned from developing, launching, and managing a stormwater program (including the strategic use of a stakeholder's process) to the Groundwater Program. After a relatively brief period, the County adopted a new, local groundwater ordinance and groundwater fees to not only protect public health and to treat groundwater as a natural resource, but these accomplishments also put the program in a more long-term, stable financial position. After each of these were implemented and established, the Groundwater program was moved into the Health Department.

At one time, the County provided zoning services for both the County and the City. This created some challenges as Charlotte-Mecklenburg was experiencing unprecedented growth. Dave was in a leadership role that led to the de-centralization of zoning services that now serves the community much better and properly aligns entities zoning and budget priorities. When Dave retired, County Zoning Services was still under his purview.