



NEXT GENERATION 9-1-1 GIS RFP
AL-GIS-RFP-19-002

February 14, 2020

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Mr. Adam Brown
Alabama 9-1-1 Board
1 Commerce Street, Suite 620
Montgomery, AL 36104

RE: Alabama 9-1-1 Board Next Generation 9-1-1 GIS RFP (AL-GIS-RFP-19-002)

Dear Mr. Brown:

The DATAMARK team at Michael Baker International, Inc. (Michael Baker) acknowledges its understanding of the general information presented in Section 1 of the RFP and its agreement with the requirements and conditions listed.

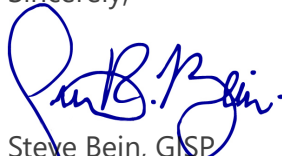
As an industry leader helping to shape the future of 9-1-1, our DATAMARK team is able to meet the Alabama 9-1-1 Board's requirements. We are focused on providing our clients key products and services that support long-term, cost-effective solutions.

For this project, the DATAMARK team will be led by our designated Single Point of Contact (SPOC), Michael Anderson, GISP, PMP, who has more than 25 years of experience in experience project management, consulting, planning, design, implementation, analysis, budgeting, supervision and quality assurance for a variety of GIT consulting, analysis, application development, and data development projects. Michael will coordinate all aspects of the project with the 9-1-1 Board and the Board's designees as well as coordinate and work as needed with the NG9-1-1 core service provider to ensure deliverables can be utilized for call routing.

DATAMARK has carefully reviewed the RFP and the agreement as well as the specific terms the State has identified as mandatory. We are willing to use the form of agreement provided, and as permitted by the RFP instructions and permissions, wishes to request consideration of limited comments to the contractual terms as noted in Section 2.3.5 of this proposal.

DATAMARK is pleased to have the opportunity to submit our proposal for the Alabama 9-1-1 Board Next Generation 9-1-1 GIS RFP (AL-GIS-RFP-19-002) and look forward to a successful partnership.

Sincerely,



Steve Bein, GISP
Principal-in-Charge
Authorized Representative



Michael Anderson, GISP, PMP
Project Manager/SPOC
100 Airside Drive, Moon Township, PA 15108
O: 724-495-4146 | C: 724-255-5308
mpanderson@mbakerintl.com



ALABAMA 911 BOARD

NEXT GENERATION 9-1-1 GIS RFP
AL-GIS-RFP-19-002

February 14, 2020

2.3.1 GENERAL (OPTIONAL)

The Alabama 911 Board (Board) should be commended on its forward-thinking approach to GIS data for Next Generation 9-1-1 (NG9-1-1). Transitioning to NG9-1-1 brings new technologies and data demands to the 9-1-1 community, thus creating a potentially challenging transition. Upon a thorough review of the Alabama 9-1-1 Board Next Generation 9-1-1's GIS RFP AL-GIS-RFP-19-002, Michael Baker International's (Michael Baker) DATAMARK team asserts we are the best consultants to support the State on the outlined tasks. A successful partnership with DATAMARK provides:

- ✓ A project team of GIS and Public Safety industry leaders with over 30 years of experience in the complex technical areas of GIS, Public Safety, E9-1-1 and Next Generation 9-1-1
- ✓ Subject matter experts working to shape the future of 9-1-1 through participation in technical, operational, and legislative working groups including NENA, URISA, and GITA
- ✓ Access to a secure, industry leading, web-based Software-as-a-Service solution for supporting GIS data validations and data provisioning that exceed NENA's NG9-1-1 data readiness requirements
- ✓ A project team with local experience and solid understanding of PSAP, regional, and state needs
- ✓ Public Safety SME staff with direct experience in the development and deployment of a statewide NG9-1-1 solution

The successful implementation of NG9-1-1 requires a collaborative approach with the State's ANGEN System Service Provider (SSP), local GIS data providers, and local PSAPs. We propose an integrated solution that allows for the ongoing and long-term management, maintenance, and provisioning of GIS data into the required ANGEN Next Generation Core Services (NGCS) components. We offer a holistic approach to this requirement through our managed services and solutions. This offering uses DATAMARK's Validate-Edit-Provision (VEP) Solutions to provide a secure web-based portal for consumption of local GIS data and allow for unlimited validation runs of the data prior to submission to the aggregated State dataset.

The DATAMARK VEP Software-as-a-Service (SaaS) cloud-based solution is an industry leading product that puts the power of data validation and geospatial data editing in the hands of the data owner while providing a single solution that can be relied upon to transition local's PSAP data to NG9-1-1 compliance while adhering the most current NENA standards. We adhere to stringent cyber security standards and continuously strive to ensure the security of client data by meeting NIST SP 800-53 guidelines for secure solution access leveraging AWS backup and recovery procedures that have been validated by an external third-party audit firm.

DATAMARK's technical experts are well versed in NG9-1-1 requirements and public safety data workflows and stand ready to assist agencies with their NG9-1-1 GIS needs. The platform ensures:

- ✓ No additional investment in hardware or software
- ✓ User-friendly interface from the GIS novice to the GIS expert
- ✓ Unlimited access to comprehensive data QC and validation checks to prepare data for NG9-1-1
- ✓ Interoperability with existing public safety systems
- ✓ Platform agnostic design supports a variety of other applications, including CAD, CAD mapping, and AVL

VEP's holistic integration of data from multiple data sources, combined with its data-forward maintenance plan, ensures updated information is consumable in NG9-1-1 Core Services (NGCS) and across the entire organizational data enterprise. VEP uses the current NENA NG9-1-1 GIS Data Model as a template. Still, the application is flexible enough to incorporate our clients' custom fields and additional schema requirements.

The DATAMARK team proposes the following solutions and services:

DATAMARK VEP Validator

SaaS cloud-based solution providing a secure login portal to Local GIS and PSAP users for performing:

- ✓ Processing
- ✓ Transformation
- ✓ Data validations (QC)
- ✓ Marking Exceptions
- ✓ Anomaly and Discrepancy Reporting
- ✓ Provisioning to Next Generation Core Services

DATAMARK Aggregator

SaaS cloud-based solution providing a secure login portal to State level users for performing:

- ✓ Multi-Jurisdictional Validations
- ✓ Multi-Jurisdictional Anomaly and Discrepancy reporting
- ✓ Provisioning to DATAMARK Spatial Interface

DATAMARK Spatial Interface (SI)

SaaS cloud-based interface providing GIS data updates to the ECRF/LVF system.

DATAMARK VEP Editor (optional)

SaaS cloud-based solution providing a secure login portal to Local GIS and PSAP users for performing:

- ✓ Processing
- ✓ Transformation
- ✓ Data validations (QC)
- ✓ Data Editing
- ✓ Map View
- ✓ Observer Points
- ✓ Anomaly Remediation
- ✓ Marking Exceptions
- ✓ Anomaly and Discrepancy Reporting
- ✓ Provisioning to Next Generation Core Services

2.3.2 RESPONDENT'S COMPANY STRUCTURE

DATAMARK is part of Michael Baker International, Inc., and is incorporated in the State of Pennsylvania. Below is our Certificate of Good Standing to serve as our certificate of authority.

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF STATE

12/20/2019

TO ALL WHOM THESE PRESENTS SHALL COME, GREETING:

I DO HEREBY CERTIFY THAT,

Michael Baker International, Inc.

is duly registered as a Pennsylvania Business Corporation under the laws of the Commonwealth of Pennsylvania and remains subsisting so far as the records of this office show, as of the date herein.

I DO FURTHER CERTIFY THAT this Subsistence Certificate shall not imply that all fees, taxes and penalties owed to the Commonwealth of Pennsylvania are paid.



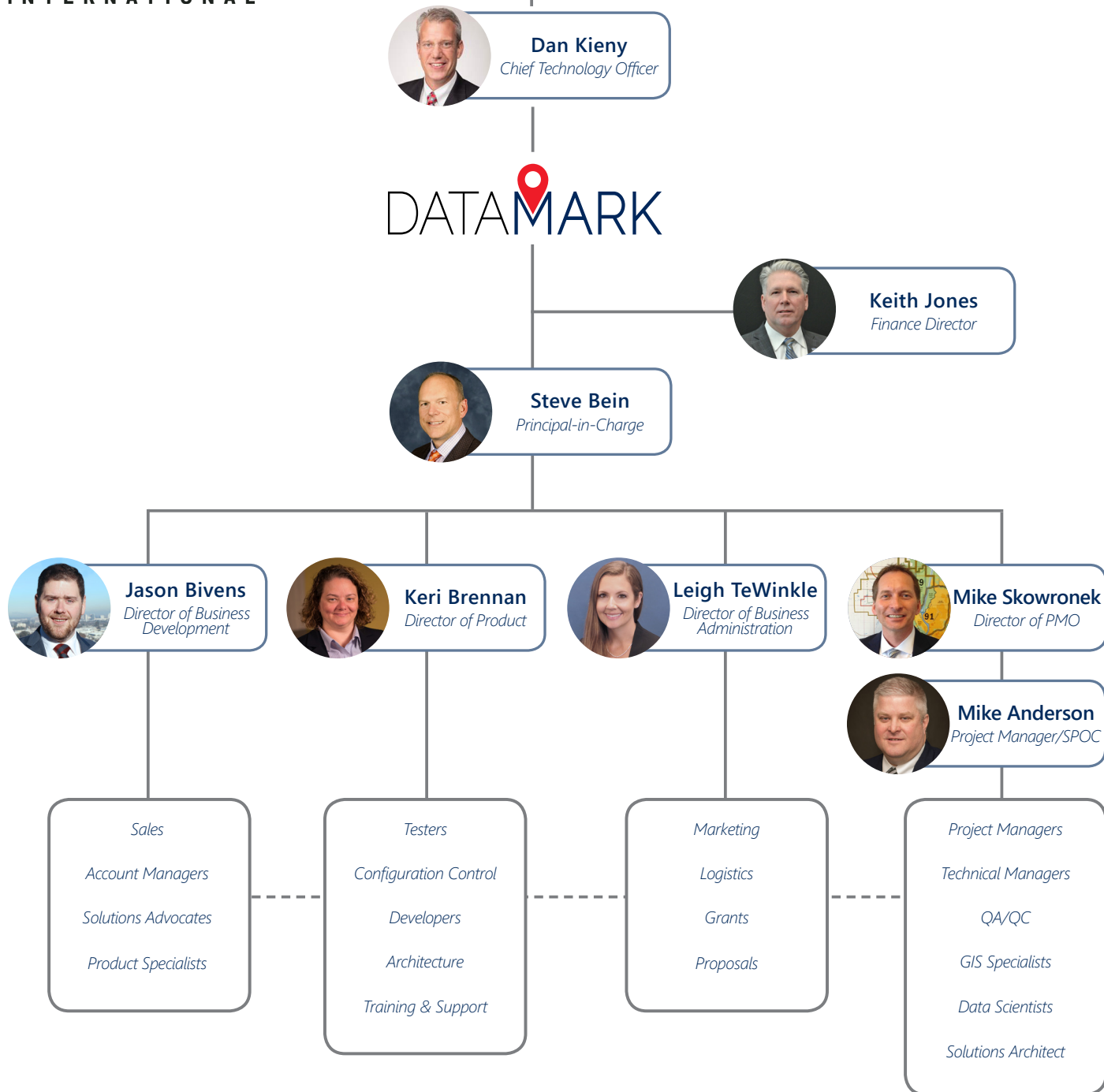
IN TESTIMONY WHEREOF, I have hereunto set my hand and caused the Seal of the Secretary's Office to be affixed, the day and year above written

Katly Bookman

Secretary of the Commonwealth

Certification Number: TSC191220100455-1

Verify this certificate online at <http://www.corporations.pa.gov/orders/verify>



2.3.3 COMPANY FINANCIAL INFORMATION

Supported by more than 3,000 employees in nearly 100 locations across the United States, Michael Baker provides a full continuum of engineering and consulting services, including design, planning, Geographic Information System (GIS), architectural, environmental, construction and program management.

Our clients include U.S. federal, state and municipal governments, foreign allied governments, and a wide range of commercial clients. Michael Baker is committed to delivering a standard of excellence that fosters a culture of innovation, collaboration and technological advancement to help solve our clients' complex challenges.

Michael Baker possesses the financial capacity, experience, staff and qualifications to ensure good faith performance of this contract.

Please see separate sealed envelope marked "Confidential Financial Statements".

2.3.4 INTEGRITY OF COMPANY STRUCTURE AND FINANCIAL REPORTING

Michael Baker International, Inc., under which DATAMARK is a part, is a private corporation working for a wide variety of clientele, including the U.S. Government, branches of the military, and state and local municipalities and public agencies. Our annual financial statements are independently audited and prepared. Additionally, we comply with the requirements of the government regarding audits and allowable costs in order to maintain our status as a federal consultant. We therefore are in material compliance with laws regulating our services and charges. Our corporate leadership oversees the departments responsible for information which goes into a proposal, including cost, audit, and financial information. Corporate principal meetings are held regularly to address any issues brought up as regards the corporation. Michael Baker has, and maintains a strict morality and professional ethics code with which each and every member of the corporation must agree and comply.

2.3.5 CONTRACT TERMS/CLAUSES

Mandatory Clauses	Acceptance? (Yes / No)	If No, Explanation
Duties of Contractor, Rate of Pay, and Term of Contract	Yes	
Authority to Bind Contractor	Yes	
Compliance with Laws	Yes	
Drug-free Workplace Provision and Certification	Yes	
Employment Eligibility Verification	Yes	
Funding Cancellation	Yes	
Governing Laws	Yes	
Indemnification	No	We will be responsible for any errors we make but are concerned about taking on financial responsibility for the actions of parties outside of our control (such as our client). The term "acts" can be interpreted as the consultant following the instructions of its client, using data or information provided by its client or other agencies, or following law or the statutes, rules or regulations of the client. For this reason, clarification of the term "acts" is requested by modification to "negligent" or "wrongful" acts".
Non-discrimination Clause	Yes	
Ownership of Documents and Materials	Yes	
Payments	Yes	
Penalties/Interest/Attorney's Fees	Yes	
Termination for Convenience	Yes	
Non-collusion and Acceptance	Yes	

ADDITIONAL CONTRACT CONSIDERATIONS

Section 13 (Continuity of Services) – We are willing to provide reasonable assistance with any transition, but cannot provide pro bono labor for such. The following reasonable clarifications are requested: A2 – modification of “best efforts” to “reasonable efforts”; B1 – addition of the phrase “at agreed upon compensation; and” at the end.

Section 19 (Employment Option) – We request that this clause be removed in its entirety.

Section 25 (Insurance) – We can comply with the types of insurance required, but some clarification as to terminology is requested as follows: A1 – Modification of the limits to \$1,000,000 per occurrence and \$4,000,000 aggregate, which are normal limits. A2 – Modification of the limits to \$2,000,000 combined single limit, which again are usual and reasonable limits for the services to be provided. A3 – Modification of the limits to \$1,000,000 per claim and \$5,000,000 aggregate as per occurrence coverage is not commercially available to professional services firms. A6 – Removal of this clause or confirmation it will not apply as surety bonds would be an extremely rare requirement for our type of professional services firm.

Section 46 (Work Standards) – As a professional services firm we have a standard of care which must be observed in the performance of services. Modification of the first sentence is requested to: “The Contractor shall execute its responsibilities by following and applying at all times the professional and technical guidelines and standards normally employed by professionals performing similar services under similar circumstances.”

Additional clauses request – To address circumstances outside of the control of the contracting parties, the addition of the following two clauses is requested as follows:

“47. Limitation of Liability. To the fullest extent permitted by law, the Board agrees to limit Contractor’s liability to the Board and to all other contractors or subcontractors on the project for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in any way related to the project or this Agreement from any cause or causes including but not limited to Contractor’s negligent acts, errors, omissions, strict liability, breach of contract, or breach of warranty, such that the total aggregate of liability of Contractor to all those named shall not exceed \$50,000 or the total fee for Contractor’s services rendered in the project, whichever is greater.”

“48. Waiver of Consequential Damages. In no event shall either Party have any claim or right against the other, whether in contract, warranty, tort (including negligence), strict liability or otherwise, for any special, indirect, incidental, or consequential damages or any kind or nature whatsoever, such as but not limited to loss of revenue, loss of profits on revenue, loss of customers or contracts, loss of use of equipment or loss of data, work interruption, increased cost of work or cost of any financing, howsoever caused, even if same were reasonably foreseeable.”

2.3.6 REFERENCES

REFERENCE ONE

Legal Name of Company or Governmental Entity	Santa Clara County, California
Industry of Company	Government
Mailing Address	150 West Tasman Drive, First Floor, San Jose, CA 95134
Telephone Number	408-918-7127
Contact Name	Scott Zimmer
Title	Senior Strategic Sourcing Officer
Telephone/Fax Number	408-491-7455
E-mail Address	scott.zimmer@prc.sccgov.org
Time period in which services were provided	September 2019 - present
Please describe the service provided to this reference	The DATAMARK team is providing the necessary GIS software and data support to meet the County's multi-faceted need for addressing data across the enterprise.

REFERENCE TWO

Legal Name of Company or Governmental Entity	Manatee County, Florida
Industry of Company	Government
Mailing Address	1112 Manatee Avenue West, Bradenton, FL 34205
Telephone Number	941-748-4501
Contact Name	Dan Thomas
Title	Project Manager
Telephone/Fax Number	941-748-4501 ext. 3652
E-mail Address	dan.thomas@mymanatee.org
Time period in which services were provided	2017 - present
Please describe the service provided to this reference	Implementation of an Address Database and Maintenance System. The vision for the project is to deploy an address maintenance solution to streamline and automate the County's current addressing process which is spread across three departments and relies on a disparate combination of GIS software tools and manual processes.

REFERENCE THREE

Legal Name of Company or Governmental Entity	Merced County, California
Industry of Company	Government
Mailing Address	2222 M Street, Merced, CA 95340
Telephone Number	209-385-7434
Contact Name	Gene Barrera
Title	GIS Manager
Telephone/Fax Number	209-385-7507
E-mail Address	gene.barrera@countyofmerced.com
Time period in which services were provided	January 2018 – December 2019
Please describe the service provided to this reference	Developed Strategic Implementation Plan (SIP) for the Merced County GIS Master Road and Address Database (MRAD). The SIP sets the stage for Merced County to implement a NG9-1-1 compliant, GIS data solution.

TERMINATED CONTRACTS

We have had no contracts terminated within the past five (5) years for cause or for convenience.

CORPORATE LITIGATION

Our company has no pending litigation regarding contract disputes.

2.3.7 REGISTRATION TO DO BUSINESS

Michael Baker International, Inc., is properly registered as a domestic foreign corporation with the State of Alabama, Entity number 854-655, and our current status on the Secretary of State's website is "Exists".

2.3.8 AUTHORIZING DOCUMENT

Steve Bein, DATAMARK's Principal-in-Charge is legally authorized to commit the organization contractually. Below is our current Board Resolution and List of Officers.

Written Consent in Lieu of a Meeting of the Board of Directors of Michael Baker International, Inc.

30-Aug-19

The undersigned, being the Board of Directors (the Board) of Michael Baker International, Inc. a Pennsylvania General Corporation (the Corporation), pursuant to Section 1727(b) of the Business Corporation Law and the Corporation's governance documents, hereby consent to and adopt the following resolutions in lieu of a meeting:

Appointment of Officer(s)

WHEREAS, the Board has determined that it is in the best interest of the Corporation to ratify, confirm and approve the appointment of the person(s) to the positions set forth opposite their respective names on Exhibit A attached hereto and made a part hereof, and to remove any person(s) not named on Exhibit A attached hereto.

NOW THEREFORE, BE IT RESOLVED, the person(s) be and hereby are elected to the positions set forth opposite their respective names on Exhibit A attached hereto and made a part hereof, to hold such position until the earlier election and qualification of their respective successors or until their earlier resignation or removal (collectively the Appointed Officer(s)), and any person(s) not named on Exhibit A attached hereto, be and hereby is, removed as an Officer of the Corporation;

FURTHER RESOLVED, that all acts previously, concurrently and subsequently taken by the Appointed Officers from the date of his or her assumption to the position to the date hereof in the capacity of the position set forth opposite their respective names are hereby expressly confirmed, ratified, approved and authorized in all respects as actions of the Corporation;

General Authorization

FURTHER RESOLVED, that the Officer(s) of the Corporation, or any later designated Officer(s), hereby are authorized, in the name and on behalf of the Corporation, to take such further actions and to execute and deliver such further instruments, certificates or documents in the name of the Corporation, and to retain such counsel, agents and advisors and to incur and pay such expenses, fees and taxes as shall, in the opinion of the Officer(s) of the Corporation executing the same may determine to be necessary or advisable in order to effectuate or carry out fully the purpose and interest of all of the foregoing resolutions (such determination to be conclusively, but not exclusively, evidenced by the taking of such actions or the execution of such instruments, certificates or documents by any such Officer(s));

FURTHER RESOLVED, that any actions taken by the Shareholder(s), Director(s), or Officer(s) of the Corporation on or prior to the date of the foregoing resolutions that are within the authority conferred hereby are hereby ratified, confirmed and approved as the act and deed of this Corporation;

FURTHER RESOLVED, that the execution of this Written Consent and delivery thereof by facsimile or electronic signatures shall be sufficient for all purposes and shall be binding upon any party who so executes;

FURTHER RESOLVED, this Written Consent may be executed in two or more counterparts, each of which shall be an original and all of which together shall constitute one and the same Written Consent; and

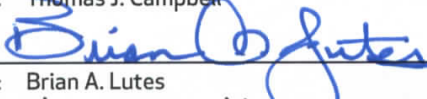
FINALLY RESOLVED, that an executed copy of this Written Consent shall be filed with the minutes of the proceedings of the Board.

[SIGNATURE PAGE FOLLOWS]


IN WITNESS WHEREOF, the undersigned have executed this Written Consent as of the date first above written.

Directors

By: 
Name: Thomas J. Campbell

By: 
Name: Brian A. Lutes

By: 
Name: H. James McKnight

By: 
Name: Theodore J. Williams

[Signature page to Written Consent in Lieu of a Meeting of the Board of Directors of Michael Baker International, Inc.]

Appendix A

Thomas J. Campbell	Chairman
Brian A. Lutes	President & Chief Executive Officer
David Boone	Executive Vice President, Chief Growth Officer
H. James McKnight	Executive Vice President, Chief Legal Officer & Secretary
Leanna Anderson	Executive Vice President & Chief Communications Officer
Martin Miner	Executive Vice President & Chief Technology Officer
Penny Mercadante	Executive Vice President & Chief Human Resources Officer
Theodore J. Williams	Executive Vice President, Chief Financial Officer
Amy N. Davis	Senior Vice President & Chief Accounting Officer & Treasurer
Anna Lantin	Senior Vice President, Business Development
Beth A. Drylie	Senior Vice President & Office Executive, Virginia Beach
Brian May	Senior Vice President & National Market Lead - Minneapolis
Cory Wilder	Senior Vice President & Office Executive, Houston
Darren K. Riegler	Senior Vice President & Area Executive - Ontario, Palm Desert, Temecula, San Diego
Edward Gentilcore	Senior Vice President and Deputy General Counsel
Frank D. Terak	Senior Vice President, Federal Markets Lead
Fredrick M. Muncy	Senior Vice President & Mid Atlantic Practice Lead, Water Supply/Wastewater
George Guszczka	Senior Vice President & Office Executive, Alexandria & Manassas
H. Daniel Cessna	Senior Vice President & National Practice Lead - Transportation
James Koch	Senior Vice President & Regional Director, Mid-Atlantic
Jeffrey A. Baker	Senior Vice President, Anchorage Office Executive
Jeffrey D. Clevenger	Senior Vice President & Director Design Build Delivery
Jeffrey Kullman	Senior Vice President & Regional Director, Mountain Region
Jennifer C. Lewis	Senior Vice President & Regional Director, Southeast Region
John Alberghini	Senior Vice President & Navy - Federal Market Lead
John C. Dietrick	Senior Vice President & Regional Practice Lead, Great Lakes
Juan Contreras	Senior Vice President & Regional Director, Gulf Region
Kenton P. Zinn	Senior Vice President & Regional Director, Great Lakes Region
Maher Sidani	Senior Vice President & Director, Project Delivery Excellence
Malcolm Dougherty	Senior Vice President & National Practice Lead - Transportation
Michael A. Tylman	Senior Vice President, Regional Practice Lead, Land Development
Michael Brescia	Senior Vice President & Regional Director, Northeast
Michael J. Conaboy	Senior Vice President & Regional Director, West
Nicolaas Veraart	Senior Vice President & National Practice Lead - Planning
Richard Keagy	Senior Vice President & Regional Business Development Lead
Robert D. Schlesinger	Senior Vice President & Area Executive, Santa Ana, Camarillo, Long Beach, Los Angeles

Scott Roux	Senior Vice President & National Practice Lead - Bridge
Suad Ciscic	Senior Vice President & National Practice Lead - Water
Thomas J. Zagorski	Senior Vice President & National Practice Lead - Construction Services
Thomas Post	Senior Vice President & Area Executive - Northern California
Magdy M. Hagag	Senior Vice President & Office Executive, Hamilton
Adam Phillips	Vice President & Assistant Corporate Controller
Albert W. Bowman	Vice President & Director - Transportation
Alfred Murillo	Vice President & Office Executive San Antonio, TX
Beth Steimle	Vice President & Office Executive, Tampa
Bradley Thoburn	Vice President & Regional Practice Lead - Planning
Bradley R. Mielke	Vice President & Structures Manager
Brian C. Russell	Vice President & Office Executive, Jacksonville
Brian K. Oliver	Vice President & Project Manager, Land Development
Brian Peiritsch	Vice President & Director of Communications
Brian Rider	Vice President & Director, Talent Acquisition
Charles F. Duggar	Vice President & Office Executive, Baton Rouge
Craig Eddy	Vice President & Office Executive, Richmond
Craig Wenger	Vice President & Office Executive, Phoenix
Dale L. Gray	Vice President & Director - FEMA
Darcie Zeliesko	Vice President , Talent Acquisition
David Dawson	Vice President & Director, Financial Planning & Analysis
Don M. Treude	Vice President, GCR Business Development
Douglas Peterson	Vice President & Office Executive, Boston
Dwain G. Hathaway	Vice President & Office Executive, Cary
Eric D. Frary	Vice President & Office Executive, Fort Washington
Fabio Escobar Jr.	Vice President & Project Manager, Land Development
Francesco Russo	Vice President & Technical Director - Bridge Engineering
Gary Warkentin	Vice President & Transportation Planning Manager
James Bell	Vice President & Senior Regional Practice Lead Construction Management
James R. Haughey	Vice President & Regional Practice Lead, ADM
Jerome A. Ruddins II	Vice President & Department Manager, Construction Management
Jill G. Bell	Vice President & Assistant Treasurer
John D. Tanner III	Vice President & Office Executive, Riverside/San Bernadino
John H. Harris	Vice President & Department Manager, Water Supply/Wastewater
John Moynier	Vice President & Practice Executive - Water
John Nagle	Vice President & Project Manager, Water Supply/Wastewater
John Tedder	Vice President & Associate General Counsel
John V. Walsh	Vice President & Office Executive, Columbia
John W. Mentz	Vice President & Department Manager, Environmental Compliance
Jon Shellhaas	Vice President & Director of Performance Efficiency
Joseph A. Danyo	Vice President & Technical Manager, Transportation

Joseph R. Catalano	Vice President & Office Executive, Chicago
Joseph Salvadori	Vice President & Practice Executive - Bridge
Kristy L. DeChicchis	Vice President & Director, Proposal Production Center
Kurt D. Fritz	Vice President & Office Executive, Idaho Falls
Laura Weiss	Vice President & Office Executive, Dallas
Lawrence L. Truman	Vice President & Interim Office Manager, Ontario
Lois M. Muller	Vice President & Program Manager
Lori Stump-Ganter	Vice President & Director, Continuous Improvement
Lorna Parkins	Vice President & East Region Practice Leader - Planning
Lydia Grose	Vice President - Office Executive, Philadelphia
Mark A. Childs	Vice President, Cost Management
Mark E. Kistler	Vice President & Operations Manager V
Mary Anne Buvens	Vice President & Program Manager - CBP
Mary Jo Hamman	Vice President & Office Executive, Indianapolis
Matthew Guard	Vice President - Health and Safety
Mauricio M. Iacueli	Vice President & Project Manager, Land Development
Michael H. Stengel	Vice President & Office Executive, Little Rock
Michael Hall	Vice President & Office Executive, Newark
Michael J. Bruz	Vice President & Transportation Engineering Manager
Michael J. Waibel	Vice President & Regional Practice Lead - Aviation
Michael Lincheck	Vice President & Planning Practice Executive
Michael S. Arens	Vice President & Office Executive, Utah
Patricia Blain Dunaway	Vice President & Office Executive, Louisville
Patrick A. Leach	Vice President & Practice Executive, Construction Services
Paul Gluck	Vice President & Office Executive, Cleveland
Philip Walker	VP & Regional Practice Lead - Bridge, Southeast Region
Quintin Watkins	Vice President & Department Manager - Aviation
R. Joseph Chaffin	Vice President & Practice Executive, Architecture
Richard B. Beck	Vice President & Natural Resources/Regulatory Manager
Richard Carrell	Vice President & Department Manager, Land Development
Robert Balanti	Vice President & Director, Human Resources
Russell E. Hall	Vice President & Office Executive, Charleston
Scott M. Delesdernier	Vice President & Office Executive, New England Operations
Scott M. Taylor	Vice President & Senior Engineer - Surface Water
Shawn Snisarenko	Vice President, Business Development
Stephanie Long	Vice President & Finance Planning & Analysis
Stephen W. Wragg	Vice President & Department Manager, Planning
Steven Bein	Vice President & Department Manager, GIT
Steven J. Huff	Vice President & Transportation Practice Lead, Southern California
Steven L. Barber	Vice President & Office Executive, Harrisburg
Thomas D. Montgomery	Vice President & Office Executive, Norcross

Thomas Ritz	Vice President & Regional Practice Lead - Bridges
Timothy M. Thiele	Vice President & Office Manager
Tony Melton	Vice President & Regional Practice Lead - Design Build
Trudi Lim	Vice President & Office Executive, San Diego
Victor J. Siaurusaitis	Vice President & Office Executive, Baltimore
Vincent A. Thompson, II	Vice President, Asst.General Counsel, Asst. Secretary & Compliance Officer
William Almes	Vice President & Practice Executive - Civil and Environmental
William G. Cox	Vice President & Department Manager, Survey/Mapping
William Marman	Vice President & Office Executive, New York
William R. Balentine	Vice President & Office Executive, Ridgeland
Aaron J. Morris	Associate Vice President & LIDAR Services Director
Aaron Stover	Associate Vice President & Director, Bridge
Albert Vincent Warot	Associate Vice President & Operations Manager
Alfonso Riera	Associate Vice President & Business Developer, Federal
Anas Alkhatib	Associate Vice President & Department Manager, Design Build
Andrew Thomas	Associate Vice President & Client Manager - Design Build
Anthony DiFrancesco	Associate Vice President - Operations Manager, Construction Services
Anthony Van Howe	Associate Vice President & Regional Finance Manager
Brad J. Homan	Associate Vice President & Practice Manager, Aviation
Bryan D. Mouser	Associate Vice President & Transportation Operations Manager
Carl V. Jeffreys	Associate Vice President & Technical Manager, Environmental Restoration Sub-Pr
Chadi Karam	Associate Vice President & Department Manager - Civil
Chadwick D. Huffines	Associate Vice President & Construction Services Manager
Christopher D. Caputi	Associate Vice President & Technical Manager, Environmental Compliance
Christopher L. Alberts	Associate Vice President & Office Manager, Palm Desert
Christopher Tagert	Associate Vice President & Department Manager, Water/Planning/GIT
Danielle Smith	Associate Vice President & Operations Manager - Transportation
David A. Frey	Associate Vice President & Director, Transportation
David B. Tudryn	Associate Vice President & Chief Architect, New England
David Fekete	Associate Vice President & Director, Geospatial/Survey
David L. Stephens	Associate Vice President & Technical Manager, Building Design
David Mercier	Associate Vice President & Department Manager - Water Quality
David Reel	Associate Vice President & Regional Practice Lead - Planning
Dayle M. Coburn	Associate Vice President & Department Manager - Transportation
Derek M. Christianson	Associate Vice President & Department Manager, Transportation
Diana Hartman	Associate Vice President & Project Manager - Planning
Don P. Joiner	Associate Vice President & Technical Manager, Environmental Compliance
Douglas Barker	Associate Vice President & Project Manager - AE
Eddie G. Torres	Associate Vice President & Project Manager, Environmental
Edward LaGuardia	Associate Vice President & Technical Manager - Rail and Transit
Elizabeth Krousel	Associate Vice President & Project Manager, Water Quality

Genevieve Cahill	Associate Vice President & Business Developer
Geoffrey Brownell	Associate Vice President & Department Manager - Surface Water
Gilberto R Bosque	Associate Vice President & Technical Manager - Highways
Gregory G. Smay	Associate Vice President, Tax
Helen R. Tison	Associate Vice President & Operations Manager, Roadways
Jacob Watson	Associate Vice President & Department Manager, Building Design
James A. Frazier	Associate Vice President & Project Manager, Transportation
James J. Katsafanas	Associate Vice President & Director, Traffic
James Neral	Associate Vice President & Director, Total Rewards
James R Yeager	Associate Vice President & Technical Manager - Transportation Planning
Jeff W. Broadwater	Associate Vice President & Department Manager, Bridge
Jeffrey G. Bergsten	Associate Vice President & Director, Planning and Technical Services
Jeffrey Hester	Associate Vice President - Operations Manager, Aviation
Jeffrey May	Associate Vice President & Office Manager
Jeffrey McClure	Associate Vice President & Department Manager, Land Development
Jeffrey Roberts	Associate Vice President & Office Manager
John J. Tricini	Associate Vice President & Director, Highway
Joseph J. Romano	Associate Vice President & Technical Manager, Structural Engineering
Joseph M. Blickenderfer	Associate Vice President & Technical Manager - Oil and Gas Sub-Practice
Joseph P. Gardiner	Associate Vice President & Director, Construction Services
Joshua Sprowls	Associate Vice President & Director, Architectural Engineering
Julie Thurman	Associate Vice President & Department Manager - Highway
Justin Bouscher	Associate Vice President & Department Manager - Bridge
Ken Carlson	Associate Vice President & Director, IT Project Management
Kenneth J. Collins	Associate Vice President & Transportation Manager
Kenneth R. Mobley	Associate Vice President & Practice Manager, Planning and Public Engagement
Kevin Anderson	Associate Vice President & Operations Manager
Kevin J. Kugler	Associate Vice President & Regional Finance Manager
Kirk A. Weaver	Associate Vice President & Regional Finance Manager
Kirsten N. Bowen	Associate Vice President & Regional Practice Lead - Surface Transportation
Lance Wanamaker	Associate Vice President & Department Manager, Aviation
Larry L. Bankert	Associate Vice President & Project Manager, Toll Roads
Laurence D. Gale	Associate Vice President & Department Manager, Environmental
Leanne Doran	Associate Vice President & Director
Lori J. Duguid	Associate Vice President & Office Manager
Mark Nellas	Associate Vice President & Manager Enterprise Resource Planning
Mary E. Flynn	Associate Vice President & Construction Quality Manager
Matthew Smith	Associate Vice President & Program Manager
Matthew Stewart	Associate Vice President & Director - GIS
Max L. Heckman	Associate Vice President & Director, NEPA and Transportation Planning
Michael Anderson	Associate Vice President & Technical Manager - GIT

Michael Skowronek	Associate Vice President & Office Manager
Mohiuddin Shaik	Associate Vice President & Program Manager Design Build-QAM Services
Nabaz Saieed	Associate Vice President & Operations Manager
Oscar K. Rucker	Associate Vice President & Director, Right of Way Services
Paul A. Carson	Associate Vice President & Chief Engineer
Paul D. McGuinness	Associate Vice President & Chief Engineer, New England
Paul Snead	Associate Vice President & Office Manager
Paula C. Boardman	Associate Vice President & Office Leader, GIT/Civil/Architecture
Pernille D Buch-Pedersen	Associate Vice President & Project Manager - Surface Water
Philip D. Quillen	Associate Vice President & Project Manager - Structures
Philip Jufko	Associate Vice President & Director - Planning
R. Scott Quast	Associate Vice President & Department Manager - Water
Rachael Richter	Associate Vice President & Planning Department Manager
Ralph Eberhardt	Associate Vice President & Office Manager
Rameeta Garewal	Associate Vice President & Department Manager - Planning
Raymond G. Shrift	Associate Vice President, Director, Contracts & Procurement, Asst. Secretary
Richard E. Bonelli	Associate Vice President & Program Manager, Environmental Fuels
Robert Myers	Associate Vice President & Business Developer
Robert Stark	Associate Vice President & Technical Manager
Robert Tellish	Associate Vice President & Operations Manager
Sarah M. Cathcart	Associate Vice President, GCR Business Development
Saul M. Mellman	Associate Vice President & Department Manager, Transportation
Scott Buckley	Associate Vice President & Department Manager-Bridge/Structures
Scott D. Vannoy	Associate Vice President & Director, Structural Engineering
Scott M. Wardle	Associate Vice President & Project Manager, Construction Services
Sonja Simpson	Associate Vice President & Office Manager
Stephen J. Clancy	Associate Vice President & GIT Manager
Steven Gravlin	Associate Vice President & Office Manager
Steven Savich	Associate Vice President & Technical Manager - Land Development Sub-Practice
Steven Slocum	Associate Vice President & Department Manager - Survey/Mapping
Susan Barker	Associate Vice President & Office Manager
Tammy M. McAllister	Associate Vice President & Global Payroll Manager
Tanya Bilezikjian	Associate Vice President & Department Manager - Water
Thomas Roach	Associate Vice President, Department Manager - Highway
Thomas Tracy	Associate Vice President & Office Manager, Rancho Cordova
Timothy D. Sewell	Associate Vice President & Construction Services Manager
Todd Buckner	Associate Vice President & Department Manager - Roadway
Tracy L. Hollida	Associate Vice President & Client Manager, Aviation
Wei He	Associate Vice President & Technical Manager - Traffic/ITS
William H. Lindenbaum III	Associate Vice President & Construction Services Manager
William M Kristoff	Associate Vice President & Department Manager

Angela R. Logan	Assistant Secretary
Michael A. Tylman	Assistant Secretary
Pam Warfield	Assistant Secretary
Steven J. Huff	Assistant Secretary
Terri A. Vojnovich	Assistant Secretary

[Appendix A to Written Consent in Lieu of a Meeting of the Board of Directors of Michael Baker International, Inc.]

2.3.9 SUBCONTRACTORS

No subcontractors will be used for this project.

2.3.10 GENERAL INFORMATION

BUSINESS INFORMATION

Legal Name of Company	Michael Baker International, Inc.
Contact Name	Michael Anderson, GISP, PMP
Contact Title	Project Manager
Contact E-mail Address	mpanderson@mbakerintl.com
Company Mailing Address	100 Airside Drive
Company City, State, Zip	Moon Township, PA 15108
Company Telephone Number	724-495-4146
Company Fax Number	N/A
Company Website Address	DATAMARKGIS.com / MBAKERINTL.com
Number of Employees (company)	3,000+
Years of Experience	75+
Number of U.S. Offices	95+
Year Alabama Office Established (if applicable)	2010 (Mobile, AL)
Parent Company (if applicable)	N/A
Revenues (\$MM, prior year)	2018: \$629,844,000
Revenues (\$MM, two-years prior)	2017: \$617,817,000 / 2016: \$616,156,000
% of Revenue from Alabama customers	Approx. 1.3% over a multi-year period

Company History

Michael Baker, a leading provider of engineering and consulting services, has been partnering with communities since 1940 to solve their most complex infrastructure challenges with a legacy of expertise, experience, innovation and integrity. Supported by more than 3,000 employees in nearly 100 locations across the United States, we provide a full continuum of engineering and consulting services, including design, planning, architectural, environmental, construction and program management. Our clients include U.S. federal, state and municipal governments, foreign allied governments, and a wide range of commercial clients. Michael Baker is committed to delivering a standard of excellence that fosters a culture of innovation, collaboration and technological advancement to help solve our clients' complex challenges.

Michael Baker is one of the oldest and largest professional-services companies in the United States, providing engineering, consulting, and energy services. Michael Baker Jr. launched the Michael Baker Jr. consulting firm in Pennsylvania in 1940. Baker built a legacy that today forms the foundation on which we continue to serve and grow. Today, we continue to leverage our collective expertise and experience to make the communities we serve better. We strive to make them safer, more accessible, more environmentally sustainable and more livable. We facilitate their transformation supported by differentiating innovation, technologies and dedicated employees. We are change agents, leading our partners around the world into the future.

DATAMARK®

As trusted advisors in public safety, DATAMARK brings comprehensive, real-world expertise in police, fire, EMS and 9-1-1 leadership roles to Next Generation 9-1-1 transitions. The DATAMARK team leads the industry by shaping rules and legislation, and by building a suite of products and services that ensure accurate emergency response location data in life-critical situations. DATAMARK empowers its team and stakeholder partners to foster trusted relationships and cultivate data integrity for informed decision making. DATAMARK, the public safety GIS team of Michael Baker International, has decades of proven experience in mission-critical government addressing projects. The team works with clients to solve their complex needs, from data quality checks and addressing to workflow analysis and more.

DISASTER RECOVERY PLAN

Emergency Preparedness.

Michael Baker has processes and procedures in place to support continuity of operations during an emergency, including a pandemic and a strategy for maintaining operations for an extended period of time. Michael Baker's strategy focuses on procedures that provide maintenance and continuity for essential contracts and critical business services.

The policies and procedures in place for continuity of operations during an emergency, including a pandemic. Our policies and training of employees outlines how the company will maintain operations for an extended period of time, if needed.

- Michael Baker has the following documents and procedures in place:
- Office Closure Policy
- Business Continuity/Disaster Recovery Plan
- Pandemic Plan
- Emergency Action Plan Guidelines
- An Emergency Notification System

Michael Baker has been accepted as a NOAA Weather-Ready Nation Ambassador. The Weather-Ready Nation Ambassador initiative is an effort to formally recognize NOAA partners who are improving the nation's readiness against extreme weather, water, and climate events. As a Weather-Ready Nation Ambassador, Michael Baker is committing to work with NOAA and other Ambassadors to strengthen national resilience against extreme weather. Please visit the NOAA Weather-Ready Nation website for more information at <http://www.weather.gov/wrn/>.

How a crisis would impact operations at Michael Baker.

Today's changing threat environment and the increased potential for no-notice emergencies has amplified the need for a Business Continuity/Disaster Recovery (BC/DR) Plan and capabilities that enable companies such as Michael Baker to continue their business-essential functions across a broad spectrum of emergencies. A BC/DR Plan (akin a public agency's Continuity of Operations, COOP, Plan) is required to be sufficiently robust to function following all-hazard events such as a major fire, a catastrophic natural disaster, a manmade disaster, technological emergencies, pandemic, or terrorist attack-related incidents.

A sudden, unplanned catastrophic event causing great damage or loss may cause Michael Baker to be unable to provide critical business functions for a pre-determined period of time. Michael Baker has defined the resources, actions, tasks, and data required to return operations to an acceptable condition in the event of a business disruption within specific disaster recovery goals.

Michael Baker's emergency response continuity of operations plan summary including pandemic preparedness.

Business continuity at Michael Baker is defined as the orderly return of normal business operations after events that have affected the firm's office locations. Integral to the success of Michael Baker's

business continuity program is our ability to relocate employees and resume business functions at alternate locations.

In the aftermath of an incident, initial efforts typically focus on safeguarding Michael Baker personnel through the implementation of an Occupant Emergency Plan. Subsequently, attention focuses on reestablishing business essential functions according to the BC/DR Plan. Because the number and types of potential interruptions are unknown, effective planning must provide, in advance of an incident, a variety of means to ensure contingent operations.

In order to ensure currency of the BC/DR Plan, all changes and revisions must be processed through the Director of Health and Safety and the CIO who in-turn will route the changes through the CMT. The Director of Health and Safety and the CIO will review the plan as part of the Business Continuity/Disaster Recovery Plan testing process. On an on-going basis, the Director of Health and Safety and the CIO will:

- Periodically assess the conditions, status, capabilities, and availability of backup computers.
- PCs, LAN, telecommunication configurations, and the facility.
- Perform special studies requested by the Crisis Management Team to improve the efficiency of equipment and recovery procedures.
- Prepare periodic status reports for the Crisis Management Team.
- Coordinate business recovery tests and prepare test results and recommendations for plan improvement.
- Maintain and distribute this plan.

Michael Baker recognizes that BC/DR plans are living documents and are expected to be refined and improved to reflect lessons learned through training, exercises, and real-world events. The Michael Baker BC/DR Plan will constantly evolve to ensure that business-essential functions are maintained under all circumstances. This plan will be updated semi-annually and exercised accordingly.

Supplemental to Michael Baker's BC/DR Plan is its Pandemic Plan, which provides the management response by Michael Baker in the event of an influenza pandemic in the United States. Its primary objective is to set out a structured response plan in reaction to an Influenza Pandemic affecting Michael Baker staff and operations.

The Pandemic Plan has been developed to enhance protection of Michael Baker personnel and the continuity of the firm's operations. This plan provides the framework for all Michael Baker employees to prepare and respond to a pandemic flu and to minimize its impact by maintaining, as much as is possible, normal business operations and, at a minimum, essential business functions during a pandemic event.

- Michael Baker's Pandemic Plan has three objectives:
- To minimize the risk of pandemic influenza to employees;

- To provide flexible work arrangements to employees in particular office locations or, on a case-by-case basis, to accommodate regional actions taken by local or state health departments; and
- To continue normal or near-normal business operations during a pandemic.

Michael Baker's employee training plan and how often our plan is shared with employees.

Training, Drills, and Exercises (TD&E) are critical to the successful execution of Michael Baker's BC/DR and Pandemic Plan. TD&E are conducted to familiarize key staff members of their roles and responsibilities during an emergency and ensure that IT critical systems and equipment are maintained in a constant state of readiness and validates certain aspects of the BC/DR Plan. Furthermore, TD&E reassures our clients that our firm maintains a high level of preparedness and is capable to continue serving them even during a contingency operation.

The TD&E program ensures that Michael Baker is capable of supporting the continued execution of its business essential functions throughout an all-hazards event. TD&E encompasses:

- Training—Encompasses a range of activities to provide information, experience, and skills and familiarizes key personnel with the business essential functions that may be performed in an emergency.
- Exercises—Identifies areas that require additional training, planning, or other resources in order to improve Michael Baker's emergency business capability.

Specific objectives will be developed to ensure that exercising is focused, and performance is measured. It is usually not feasible to assess all aspects of a plan during a single exercise, and attempts to do so often diminish focus, create frustration, and yield unclear results. Michael Baker's approach will normally have no more than three objectives. Examples of our exercise objectives may include:

- Confirming that communications protocols work as expected and key members can be contacted quickly.
- Validating an awareness of individual roles and responsibilities, (e.g., Facility, Disaster Recovery Team, etc.).
- Confirming the availability of resources identified in the plan.
- Confirming that external contractors can provide adequate support (e.g. SunGard).
- Confirming the availability of necessary vital records.
- Determining minimum staffing resources.
- Confirming that individuals named as alternates are comfortable in their roles.
- Performing plan tasks without the use of normal communications capabilities.
- Confirming that back-up equipment or systems will perform as expected.
- Ensuring that alternate facilities for Operational Hubs are adequate to perform business essential functions.
- Evaluating the timeliness of plan implementation in an unannounced exercise.

Michael Baker Emergency Preparedness Teams and Essential Functions

Michael Baker has identified essential business functions and key employees within the firm and the necessary assignments to carry them out.

Michael Baker's Chief Financial Officer (CFO) or Chief Legal Officer (CLO) have the exclusive authority to activate this plan by process of declaring a disaster. If this person is unavailable, the most senior executive of the Operations Committee may declare a disaster.

The CFO will assume the role of Crisis Management Team (CMT) Leader, and the associated responsibilities. The CFO may delegate the Crisis Management Team Leader role, or if unavailable, the CLO may assume the CMT Leader Role.

Crisis Management Team

Crisis Management Team Leader - CFO	Senior manager to oversee recovery. Authority to declare a disaster.
Alternate Mgmt. Team Leader - CLO	Full authority to act if Team Leader is not available.
Operations Committee	Knowledge of current operations in areas threatened by the crisis. Interfaces with clients and customers in regard to Michael Baker emergency actions and client support.
Facility Team Leader - Real Estate Services Manager	Oversee facility, security, damage assessment, salvage, and reconstruction.
Recovery Team Leader - CIO	Knowledge of computer operations, systems, networks.
Manager, Finance - VP, Controller	Contact regulatory authority as soon as possible. Authority to spend the amounts required to fund recovery in the first days.
Communications - VP, Corporate Communications	Authority to speak for the organization. Responsible for employee communications.
Corporate Legal - Chief Legal Officer and Corporate Secretary	Ability and authority to make legal/contractual decisions.
Human Resources - Chief Resource Officer	Knowledge and authority to make Human Resources decisions.
Director of Health and Safety	Knowledge and authority to make employee health and safety decisions. Assists Crisis Management Team (CMT) Leader in gathering information about the event.

Disaster Recovery Team

Recovery Team Leader - CIO	Senior Manager, knowledgeable of computer operations/systems: <ul style="list-style-type: none">Retrieve the Off-site Backup tapes.Advise the alternate site of a disaster alert prior to a disaster; being declared.
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	<ul style="list-style-type: none"> Advise the alternate site of a declared disaster. Advise the alternate site of a stand down from alert if recovery is not to be effected at the site or the disaster is not declared. Liaise with alternate site management and personnel. Oversee Recovery of the necessary IT systems.
Alternate Team Leader - Director, Enterprise Infrastructure or Director, ERP	Full authority to act if team leader is not available.
Procurement Team Leader - Director, Support Services	Procures services to support Recovery Operations.
Recovery Vendor – SunGard	Supports the CIO in performing Disaster Recovery.
IT Team Leaders	<ul style="list-style-type: none"> Restoration of operations, print services, security and change management services and technical services. Recovery of voice and data network infrastructure. Includes recovery of hardware components, connectivity to the recovery site and recovery of critical network software. Recovery of critical servers.

Facility Team

Facility Team Leader (Real Estate Services Manager)	Authority and knowledge to deal with damage assessment, damage mitigation, salvage, restoration, alternate site installation, etc.; Establish the command center.
Alternate Team Leader (Office Services Manager)	<ul style="list-style-type: none"> Authority and knowledge to act in place of the team leader. Oversees Furniture Vendors. Oversees Site Security Vendor in cooperation with Property Manager. Trains and directs Occupant Emergency Team during an emergency.
Logistics Manager	Responsible for setting up the alternate site with equipment and furnishings as well as restoration of the damaged facility.
Operations Manager	Oversees copier and mailing vendor.
Move Card Specialist	Responsible for notifications to pre-selected vendors for the alternate and damaged facility.
IT Security Specialist	Responsible for the integrity of the Network Systems for both the alternate site and damaged facility.

Michael Baker Staffing Fulfillment During an Emergency and How Employees Will Carry Out Essential Functions and Contagion Control Measures.

A severe pandemic outbreak does have the potential for significant business interruption. Management will consider adopting a range of risk-control options, depending on local health department actions or government restrictions. Staffing issues resulting from incapacitation due to illness may result in reduction in services and products consistent with staffing capability and reduced demand for Michael Baker services. Michael Baker aims to always have an alternate person available for key roles in the disaster recovery plan especially so for scenarios that may involve individuals being personally impacted (e.g., contract a virus).

Michael Baker will maintain systems with designed capability to maintain business continuity in the event of significant multiple office disruptions. All key employees will have capability to access our systems remotely, and work from home or other alternate locations as needed to maintain critical business functions. The company is prepared to address needs for flexible working hours and telecommuting in the event drastic measures, such as office shutdowns, are necessary to confront a widespread and severe pandemic.

In the event of an office disruption, or a regional disruption, Michael Baker's plan calls for a response involving key employees accessing our network remotely from alternate locations. Michael Baker's intent is to resume operations from our alternate locations within the same business day; however, this may take much longer depending on what critical systems have been affected.

Michael Baker Communication Networks with Staff and Suppliers if Primary Communication Systems are Non-functioning – including Key Contacts, Chain of Communications and System Testing.

Michael Baker has an Emergency Notification System (ENS) in place to provide detailed information regarding office closings or other interruptions to normal office operation. The ENS includes a call flow and office principal instructions.

The TD&E component of the BC/DR Plan provides for internal testing and exercising of BC/DR Plan procedures to include independent evaluation by a third party and testing of alert and notification procedures.

Michael Baker's BC/DR Plan is a controlled document for internal use only (FIOU). The electronic version is available to Michael Baker employees on the firm's intranet site (Compass) under the Emergency Management site page. Employees are directed to refrain from sharing the document outside of Michael without prior approval from the Legal office.

SECURING BOARD/PRIVATE INFORMATION

At Michael Baker, information security is a top concern. Michael Baker maintains an executive level Chief Information Security Officer (CISO) who has a team of IT security professionals to evaluate and comment on DATAMARK's existing and proposed systems architecture and configuration, providing top level independent review of our system security on top of the gold standard security in place through Amazon Web Services. For services work performed within the Michael Baker offices, we are in the process of transitioning to a NIST compliant environment. Laptops, Workstations, Servers, etc. are checked regularly for current software versions and are constantly running antivirus protections. Security patches are tested and pushed monthly. We adhere to the principle of least privilege where access is limited, and the number of access attempts is audited. Accounts for separated employees are disabled promptly. The IT backbone at Michael Baker is protected with multiple layers of physical security and we maintain a disaster recovery plan with server data backed up daily offsite to our datacenter. Finally, our employees, partners, and clients are kept well informed of any current security challenges as well as how to employ and maintain best practices.

2.3.11 EXPERIENCE SERVING STATE GOVERNMENTS

DATAMARK, the team of enterprise GIS subject matter experts, offer field-experience led knowledge through diverse backgrounds across municipal, state, and federal levels of government. The DATAMARK team brings decades of experience working throughout the United States on GIS and local government addressing and data maintenance solution related projects. This significant experience includes enterprise GIS gap analysis, GIS strategic plans, developing GIS landbase datasets, GIS processing and enhancement, website development, GIS maintenance, standards development, data remediation, workflows, quality assurance/quality control and working with clients to develop policies and procedures.

The below matrix highlights some of our experience serving state and local governments:

Project Name	Client	State	Project Key Features										
			GIS Client	9-1-1 Client	GIS Strategic Planning	Data Gap Analysis	GIS Data Development and/or Remediation	CAD Data Development and/or Maintenance	MSAG and ALI to GIS Synchronization	GIS Database Design	Stakeholder Coordination	Boundary Facilitation	DATAMARK® Software User
Geographic Information Systems Strategic Plan Update	Commonwealth of Virginia	Virginia	✓		✓	✓				✓			
Comprehensive Hazard Mitigation Services	Pennsylvania Emergency Management Agency	Pennsylvania	✓	✓			✓			✓			
Statewide Addressing Program Management	Statewide Addressing & Mapping Board	West Virginia	✓	✓			✓	✓	✓				✓
NG9-1-1 GIS Data Prep Support	Office of Unified Communications	D.C.		✓		✓	✓	✓	✓		✓		
Quality Assurance Plan & MRAD	Merced County	California	✓	✓	✓	✓	✓			✓	✓	✓	
Public Safety Implementation & QAP & Enterprise GIS Plan	San Mateo County	California	✓	✓	✓	✓		✓			✓		✓
Master Address Database & Management Application	San José	California	✓		✓	✓	✓			✓	✓		✓
SanGIS – DATAMARK Quality Assurance Plan	San Diego County	California	✓		✓	✓				✓	✓		
GIS Address Management System	Santa Clara County	California	✓	✓	✓	✓			✓		✓		✓
DATAMARK VEP, ACE, & Quality Assurance Plan	Garrett County Public Safety	Maryland	✓	✓		✓				✓	✓	✓	✓
NG9-1-1 Address Assessment & Action Plan	Caroline County Emergency Services	Maryland	✓	✓		✓	✓		✓	✓	✓	✓	✓
Address Database & Maintenance	Manatee County	Florida	✓	✓		✓	✓		✓				✓
Orleans Parish Communications District	New Orleans	Louisiana	✓	✓									✓
Mahoning County NG9-1-1	Mahoning County	Ohio	✓	✓			✓		✓	✓			
DATAMARK QAP, ACE & VEP	Washington County	Florida	✓	✓		✓	✓		✓	✓	✓		✓
DATAMARK VEP Editor	Walton County	Florida	✓	✓									✓
CAD (Tyler New World) GIS Data Enhancement	City of Goodyear	Arizona	✓	✓			✓	✓		✓	✓		
DATAMARK Boundary Facilitation, & VEP	Queen Anne’s County	Maryland	✓	✓							✓	✓	✓
QAP, ACE, VEP Editor a& Boundary Clean-Up	Jackson County	Florida	✓	✓		✓	✓		✓	✓	✓		✓
E9-1-1 & Parcel Data Conversion & GIS Services	Beaver County Emergency Services	Pennsylvania	✓	✓	✓		✓	✓	✓	✓	✓		
Geographic Information Systems Footprint	Washington County Public Safety	Pennsylvania	✓	✓	✓		✓	✓	✓	✓	✓		
E9-1-1 & Parcel Data GIS Services	Butler County Public Safety	Pennsylvania	✓	✓	✓		✓	✓	✓	✓	✓		

2.3.12 EXPERIENCE SERVING SIMILAR CLIENTS



Commonwealth of Virginia, VA

GIS Strategic Plan Update

DATAMARK provided professional services to update the 2015 to 2020 statewide geographic information system (GIS) strategic plan for the Commonwealth of Virginia. Services included facilitating a comprehensive stakeholder outreach program, which included town hall meetings, an online survey and one-to-one interviews, analyzing the data from the meetings, survey, and interviews; and updating the strategic plan to incorporate Next Generation 9-1-1 (NG9-1-1) requirements.

The purpose of the project was to develop the five-year update of the Virginia GIS Strategic Plan to incorporate the emergence of NG9-1-1, which requires new roles, responsibilities, and coordination for GIS professionals at all levels of public safety communications group management, while ensuring that the strategic plan continues to align with local, regional, state agency, education, and private sector requirements.

The NG9-1-1 initiative will update the 9-1-1 service infrastructure to improve emergency response in an increasingly wireless and mobile society. Spatial data is one of the cornerstone components of a fully implemented NG9-1-1 system. For the GIS community, this means an increased accuracy standard, a more frequent update cycle, entirely new public safety datasets and a regional footprint of data.

The updated GIS strategic plan directly supports NG9-1-1 by defining the new role that GIS must serve at both the state and local levels. At the local level, address authorities must begin evaluating workflow methodologies and business practices that support timely entry of new addresses into the GIS database. At the state level, new technologies need to be evaluated that support the timely collection, aggregation, and quality control of location data for use at the regional and local level.



Merced County, CA

GIS Master Road and Address Database Implementation Services

DATAMARK developed a Strategic Implementation Plan (SIP) for the Merced County GIS Master Road and Address Database (MRAD). The SIP sets the stage for Merced County to implement a NG9-1-1 compliant, GIS data solution. The specific tasks for this effort included:

- » Assessment of Current Public Safety System GIS Usage, Available GIS Data and Current Public Safety Data Governance
- » Assessment of Public Safety GIS Data Quality, Data Gaps and Level of Effort to Fill the Gaps
 - Review of Public Safety GIS Data Maintenance and Data Sharing Workflows
 - Creation of Draft and Final Document

DATAMARK also performed data consolidation and remediation services that utilized the DATAMARK® VEP and Address Comparison and Evaluation (ACE) tools. Specific tasks included:

- » Schema Design - proposed and built consensus around a database schema design that met the business needs of the County and finds compliance with the Esri Local Government Information Model (LGIM) and the NENA NG9-1-1 GIS Data Model.
- » Data Completeness Assessment
 - Address Completeness Assessment
 - Address Comparison Evaluation (ACE)
 - Develop Master Address Database (MAD)
 - Road Centerline Completeness
 - Data Accuracy Assessment

In partnership with ESRI, DATAMARK also performed ArcGIS enterprise migration services to address the installation upgrade and configuration of the ArcGIS Enterprise platform.



County of Santa Clara, CA

GIS Address Management System

The DATAMARK team provided the necessary GIS software and data support to meet the County's multi-faceted need for addressing data across the enterprise. This is inclusive of most departments within the County's organization, but is most impactful for the County's 9-1-1 Communications Department to assist in its deployment of a new Computer Aided-Dispatch (CAD) system and the upcoming transition to Next Generation 9-1-1 (NG9-1-1).

In addition to the County's internal needs, DATAMARK will aggregate addressing GIS data from the County's constituent cities, which have a diversity of GIS capabilities ranging from cities with little-to-no GIS capabilities, to cities with a range of rich and mature GIS capabilities. This project featured:

- » Project Management & Configuration Management
- » Assessment & Planning
- » Configuration & Testing
- » Training & Documentation
- » Release & Maintenance

In order to streamline the complicated address management process distributed in the County's departments/agencies and other jurisdictions (i.e. municipalities), the DATAMARK deployed VEP that allows County employees to maintain addressing GIS data for the unincorporated areas and contract cities within Santa Clara County using a map-based editor that utilizes a Software-as-a-Service (SaaS) approach while also allowing the County's constituent cities to contribute their addressing GIS data to a centralized data aggregation platform.



Washington County, FL

Quality Assurance Plan, Address Comparison Evaluation, Staff Augmentation & VEP Product

DATAMARK performed several public safety GIS consulting services for Washington County, FL including a Quality Assurance Plan (QAP), Address Comparison and Evaluation (ACE) services, VEP product setup, and staff augmentation.

QAP - Developed a QAP for Washington County to set the stage for Washington County to implement a NG9-1-1 compliant, GIS data solution. The specific tasks for this effort included:

- » Assessment of Current Public Safety System GIS Usage, Available GIS Data and Current Public Safety Data Governance
- » Assessment of Public Safety GIS Data Quality, Data Gaps and Level of Effort to Fill the Gaps
 - Review of Public Safety GIS Data Maintenance and Data Sharing Workflows
 - Creation of Draft and Final Document

ACE – The DATAMARK team executed its ACE process to address missing addresses. An ACE compares a master address source to other sources containing address points (i.e., trash records, parcels, utility databases, etc.) to identify address candidates that are not within the master address data source.

Staff Augmentation Services – Washington County provided the DATAMARK team with current street centerline, address points and PSAP boundaries data for the DATAMARK team to perform public safety GIS data manipulation efforts working in partnership with staff from the County and regional stakeholders.

VEP - The DATAMARK team utilized DATAMARK VEP (Validate-Edit-Provision) as the GIS data validation platform for the validation and maintenance of NG9-1-1 GIS data including road centerlines, address points, public safety answering points (PSAP) boundaries, emergency service boundaries, and provisioning boundaries. The DATAMARK VEP platform was also deployed for use by the County for their use.

DATAMARK's suite of services and product are supporting 10% of the entire state of Florida:

Project Name	County
DATAMARK VEP & Technical Services	Bay County
QAP, ACE, VEP & Boundary Clean-Up	Jackson County
Address Database & Maintenance	Manatee County
DATAMARK NG9-1-1 GIS Educational Workshops	NENA Chapter - Education
DATAMARK VEP	Seminole County
DATAMARK VEP	Walton County
DATAMARK QAP, ACE & VEP	Washington County



Caroline County, MD

NG9-1-1 Address Assessment & Action Plan

The DATAMARK team prepared a complete NG9-1-1 GIS data readiness and remediation solution for Caroline County, MD. Caroline County currently utilizes GIS data for E9-1-1 and other public safety systems. However, with the forthcoming implementation of an ESInet, Caroline County needed to update their data to function within Next Generation Core Services (NGCS). Caroline County also needs to develop an authoritative PSAP boundary and Emergency Service Boundaries (ESBs), working collaboratively with their six neighboring jurisdictions to come to an agreement on a shared boundary solution.

The initial project kick-off meeting included county stakeholders, as well as the six neighboring jurisdictions, to identify roles and responsibilities for becoming NG9-1-1 ready. This project features:

- » MSAG/Centerline Comparison & Remediation
- » PSAP and ESB Creation
- » DATAMARK® ACE (Address Comparison and Evaluation) Solution
- » ALI/Address Point Comparison & Remediation
- » Licensing of the DATAMARK® VEP Solution

The final phase was implementing DATAMARK VEP for long-term data validation. Caroline County can continue utilizing current addressing workflows and maintain their own data in-house, leveraging the validation of DATAMARK VEP for NG9-1-1 data readiness. Furthermore, Caroline County will be the first authoritative PSAP boundary and ESBs in Maryland, becoming an example that other PSAPs may follow.

DATAMARK's suite of services and product are supporting 46% of the entire state of Maryland:

Project Name	County
DATAMARK VEP	Allegany County
DATAMARK VEP, ACE, Clean-up Services & Support	Baltimore City
DATAMARK VEP	Calvert County
NG9-1-1 Address Assessment & Action Plan	Caroline County
NG9-1-1 Address Assessment, Evaluation and Remediation & VEP Product	Garret County
DATAMARK Boundary Facilitation, & VEP	Queen Anne's County
DATAMARK QAP, ACE and Boundary Facilitation	Somerset County
DATAMARK VEP & Technical Services	Wicomico County
DATAMARK VEP & Technical Services	Worcester County
DATAMARK VEP & Technical Services	Kent County
DATAMARK VEP, QAP, ACE & Support Services	Talbot County



ALABAMA 911 BOARD

NEXT GENERATION 9-1-1 GIS RFP
AL-GIS-RFP-19-002

February 14, 2020

ATTACHMENT C - COST PROPOSAL

AL-GIS-RFP-19-002 - Attachment C - Cost Proposal Template

Per Item Costs	Quantity	Unit cost	Price	Indicate Frequency (i.e. one-time, monthly, annually, etc.)	Discount eligible? (Y/N)
Software License fees or costs	1	738,600	\$738,600.00	Annually	Y
Base system software			\$0.00	Included	
Customization required or proposed addressing specification			\$0.00	Not Applicable	
Additional modules required or proposed addressing specifications			\$0.00	Not Applicable	
3rd party software, if any, required for the operation of the system			\$0.00	Not Applicable	
Technical and user documentation			\$0.00	Included for Software	
Installation/conversion/integration/transition costs	1	482996	\$482,996.00	One-Time	Y
Training including training materials	1	80600	\$80,600.00	One-Time	Y
Maintenance costs			\$0.00	Included	
Existing software upgrade/integration/training			\$0.00	Included	
Updates to supplemental files			\$0.00	Included	
Revisions to documentation			\$0.00	Included for Software	
Utilities			\$0.00	Not Applicable	
New functionality compared to prior available functionality in the market			\$0.00	Continual Updates	
Technical support/customer service, per year			\$0.00	Included	
Unlimited phone technical support for the technical staff	1	86400	\$86,400.00	Annually	Y

Value added costs	Quantity	Unit cost	Price	Indicate Frequency (i.e. one-time, monthly, annually, etc.)	Discount eligible? (Y/N)
Consulting - hourly rate			\$0.00	Negotiable	Y

Annual price*	Year 1	Year 2	Year 3	Year 4	Year 5
Spatial Interface		\$35,000.00	\$70,000.00	\$73,500.00	\$77,000.00
QA/QC support	\$132,000.00	\$132,000.00	\$132,000.00	\$132,000.00	\$132,000.00
Geodatabase management	\$12,500.00	\$25,000.00	\$26,250.00	\$27,500.00	\$28,750.00

*The expectation is that this will be a price based upon the number of PSAPs and will grow gradually over time to the maximum amount

COST PROPOSAL NARRATIVE

Cost Proposal Item	Product of Service Description	Task Pricing	Total Item Pricing
Software License Fees or Cost	This proposal item includes the annual Software-as-a-Service (SaaS) subscription license fee for VEP Validator (quantity 117, cost \$585,000) and VEP Aggregator (quantity 1, cost \$153,600) for Year 1. The role of Validator and Aggregator are described beginning on page 50. The annual subscription fee for Validator and Aggregator will increase 5% per year after Year 1.		\$738,600.00
Technical and User Documentation	All users are granted access to the VEP customer support center with the VEP (SaaS) subscription. The VEP support center, described beginning on page 51, provides a Self Service Help Desk with access to a rich online library of user documentation, videos, tutorials and technical articles.		\$0.00
Installation/Conversion/Integration/Transition Costs	This proposal item provides a logical category to explain some of the tasks/costs that did not fit any other cost proposal item. All of these tasks are one-time costs or the ongoing management of the project and are described in detail in the noted sections of the proposal.		
	Task: Project Management – details begin on page 52. Activities for project control, monitoring and reporting.	\$88,720.00	
	Task: Project Coordination, Planning & Discovery – details begin on page 55. This task includes six strategic meetings with the Alabama 911 Board and other stakeholders to guide successful completion.	\$83,088.00	
	Task: Data Collection & Gap Analysis – details begin on page 55. This task includes collecting all of the GIS, ALI and MSAG data, performing a data readiness assessment and reporting data remediation requirements as well as on-boarding the data into VEP for ongoing data validation and aggregation.	\$273,888.00	
	Task: Data Provisioning & Integration – details begin on page 58. DATAMARK will work closely with the ANGEN SSP to ensure that the DATAMARK SI ensures proper integration into their NGCS components and the SI supports secure, on demand and scheduled layer replication.	\$37,300.00	
	Total Task pricing for this Cost Proposal Item:		\$482,996.00
Training (Including Training Materials)	This proposal item encompasses a training design session to guide development of the Alabama NG9-1-1 GIS Training Plan, Training Material Customization and Online Training Material Customization described beginning on page 58. DATAMARK has two proposed training courses to be convened a total of 10 times around the State. This is a one-time cost and additional instructor-led training courses could be convened for \$3,900 per class.		\$80,600.00
Maintenance Costs	This cost encompasses the annual Software-as-a-Service (SaaS) subscription fee that is described in the Software License and Fees or Cost item above. The pricing is bundled and represents 1 administrator user, and 1 validator user per Validator license. Additional users are available for a nominal fee. Due to the SaaS nature of VEP, no hardware maintenance is necessary.		\$0.00
Technical Support / Customer Service (per year)	This cost is included in the annual Software-as-a-Service (SaaS) subscription fee that is described in the Software License and Fees or Cost item above. All users are granted access to the VEP customer support center which is described beginning on pg. 51. Within the VEP interface, a user can access customer support help with questions about VEP. The customer support center contains an online support ticket system, a knowledge center to query on common questions and documentation on functionality, and a telephone support number for questions specific to VEP features and functions		\$0.00
Unlimited Phone Technical Support for the Technical Staff	This offering is tailored to the needs of the State of Alabama and is described beginning on page 62. DATAMARK will offer unlimited phone technical support for technical staff during normal business hours (8:00 AM – 5:00 PM (CST), Monday – Friday) to provide ample support to the local entities. This telephone support will target technical subjects that are critical to the success of Alabama NG9-1-1 and will be offered on an annual basis in addition to the VEP support described in the Technical Support/Customer Service item above.		\$86,400.00
Spatial Interface	DATAMARK will implement its Spatial Interface (SI) as a managed service to align with the ANGEN SSP, described on page 47. This cost is an annual fee for DATAMARK to provide ongoing support to the ANGEN SSP to ensure secure, on demand and scheduled layer replication of the aggregated GIS datasets, which are to be provisioned into the ECRF and LVF components of the ANGEN network. It is anticipated the SI will be implemented in Year 2 at a pro-rated cost.		\$70,000.00
QA/QC Support	This annual cost encompasses the provision of direct support to PSAPS by an Alabama resource from the AL 9-1-1 community (page 62). This will provide on-the-ground support to the PSAPS to ensure the State's objectives are met by providing the one-on-one coaching and tutorial necessary for the user's success in getting their data to meet the Board's GIS guidelines.		\$132,000.00
Geodatabase Management	This annual cost enables targeted geodatabase management activities to ensure that validations on the GIS data takes place throughout the entire GIS lifecycle process, including validations performed at the local jurisdictions, as part of the statewide aggregation and at the ingestion into the ANGEN LVF and ECRF as described on page 47.		\$25,000

COST ASSUMPTIONS, CONDITIONS AND CONSTRAINTS

1. Our solutions are extensible which allows for consumption of local jurisdictions additional operationally required GIS data layers outside of the NENA data model. DATAMARK assumes that additional required layers will be in a common data model, approved by the Alabama 911 Board or other identified authority, that will allow for aggregation. Otherwise, DATAMARK can provide a transformation solution as additional services.
2. DATAMARK will collaborate with state and local partners to collect the GIS and tabular (ALI & MSAG) datasets. Local jurisdiction will be responsible for all costs associated with obtaining copies of required datasets.
3. DATAMARK understands that data remediation and normalization are the responsibility of the local jurisdiction. We have priced our proposal to provide substantial data gap analysis and validation support to the local jurisdictions and would be happy to provide a cost estimate for DATAMARK to support data remediation and normalization support as well.
4. DATAMARK anticipates implementation of the DATAMARK SI to take place in the second year of the project. DATAMARK will pro-rate the annual license fee for the DATAMARK SI accordingly. Licensing for the DATAMARK SI will not begin until SI implementation and testing is complete.
5. DATAMARK is proposing it's VEP solution as an end-to-end NG9-1-1 focused GIS data aggregation, preparation, validation, analysis and maintenance solution in a single integrated Software-as-a-Service (SaaS) application. As a SaaS application, VEP frees the local PSAP from providing pre-requisite desktop software which lowers the total cost of ownership. Due to VEP's cloud-based approach, there are no expensive and time-consuming hardware purchases and maintenance concerns. All hardware, software, security and network costs are included in the annual VEP SaaS subscription fee.



NEXT GENERATION 9-1-1 GIS RFP
AL-GIS-RFP-19-002

February 14, 2020



1. INTRODUCTION

1.1 OVERVIEW

The DATAMARK team understands that the Alabama 911 Board is in the process of implementing the Alabama Next Generation Emergency Network (ANGEN). We also understand that GIS efforts have been split into two phases during the implementation of ANGEN.

- ✓ Phase 1: NG9-1-1 Call Routing Implementation
- ✓ Phase 2: NG9-1-1 Database Administration

The Board has indicated that for Phase 1, all PSAPs share their Primary PSAP Boundary data in GIS format with the Board and the ANGEN Systems Service Provider (SSP) immediately. Additionally, Phase 2 focuses on data normalization, structure, and analysis of the ALI, MSAG, and GIS files. Anomalies identified during these processes are provided back to local PSAPs via discrepancy reporting for data correction. DATAMARK understands from the Q&A responses that we are responsible for the collection of the remaining PSAP boundaries from local jurisdictions.

1.2 SCOPE OF SERVICES

Our team can provide the assistance and support needed for the replacement of the Master Street Address Guide (MSAG) and Automatic Location Identification (ALI) legacy databases that support 9-1-1 call routing currently. The transition to a full NG9-1-1 call routing solution requires the callers in today's 9-1-1 system are properly supported in the new environment. As well, the NG9-1-1 call routing transition may require the support of legacy elements of the 9-1-1 network and PSAPs until such time legacy connectivity and support are no longer necessary.

DATAMARK's products and services were developed knowing that most PSAPs would need support in the transition to NG9-1-1 call routing as well as in NG9-1-1 final states. Built within the platform are the quality control checks, schemas and domain tables necessary for the migration. With the experience of the DATAMARK Team, upon receipt of the statewide ALI records and the completion of the statewide GIS datasets, the DATAMARK VEP solution will be used to evaluate the legacy and NG9-1-1 datasets. The results of the evaluation will provide the information needed to assess what changes are necessary to provide a path to work with the local data providers, the Board, and the ANGEN Service Provider.

The transition of the MSAG and ALI databases requires concurrent efforts as each database informs different elements of existing 9-1-1 call routing. The ALI database contains the telephone number subscriber location information while MSAG identifies the proper call routing for the individual addresses contained in the ALI database. Every 9-1-1 call represents two needs (1) location (ALI) and (2) call routing (MSAG).

DATAMARK is fully prepared to assist the state in its migration to an NG9-1-1 environment through our expertise in public safety GIS. Our experts have direct experience in both statewide and regional NG9-1-1 deployments that will directly correlate to the needs in the state of Alabama.

DATAMARK's full project approach is included as an Appendix on page 55 of this Technical Proposal.

1.3 SPECIFICATIONS

COMPLY – DATAMARK's proposal response follows the requested format of responding to each specification as COMPLY, NOT COMPLY, or ALTERNATE with detailed responses as defined in the RFP.

1.4 OWNERSHIP OF DATA

COMPLY – DATAMARK understands and agrees to comply with Section 1.4. We acknowledge that all data and information provided will be returned to the State upon request or completion of this project and we will not copy, use, or transfer records, except in carrying out contracted work and with written consent of the State.

1.5 GIS MAP DATA AGGREGATION

COMPLY – DATAMARK understands and agrees to comply with Section 1.5. DATAMARK’s solutions maintain all data layers as feature classes in an ESRI enterprise geodatabase in the required WGS84 projection. We have reviewed Appendices A and B, and we will provide a data dictionary which complies with the NENA GIS Data model (NENA STA-015.10-2018 and NENA STA-006.1-2018).

Our solutions are extensible which allows for consumption of local jurisdictions additional operationally required GIS data layers outside of the NENA data model. DATAMARK assumes that additional required layers will be in a common data model, approved by the Alabama 911 Board or other identified authority, that will allow for aggregation. Otherwise, DATAMARK can provide a transformation solution as additional services.

DATAMARK will utilize the VEP Validator solution to perform the gap analysis to identify schema inconsistencies and incompleteness as well as identify spatial anomalies and discrepancies within the various datasets. Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, and include additional checks that support typical GIS industry standard quality control assessments. VEP Validator provides robust reports on anomalies and changes over time.

DATAMARK will collaborate with state and local partners to collect the GIS and tabular (ALI & MSAG) datasets. DATAMARK understands that remediation and normalization are the responsibility of the local jurisdiction, and the local jurisdiction will be responsible for all costs associated with obtaining copies of required datasets.

DATAMARK will provide training sessions that will review GIS data remediation workflows, use of the DATAMARK solutions, and provide guidance on best practices in GIS data maintenance. In addition, every user will have access to on-demand step by step tutorials to guide the local jurisdictions through validation and remediation workflows. We provide online video tutorials to enhance and streamline the learning experience. We will also provide ample direct support to the local entities within the guidelines of our support offerings included with every license.



2. GIS LAYER SPECIFICATIONS

2.1 ROAD CENTERLINES

COMPLY – Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, as well as the requirements listed in the Layer Specifications list for road centerlines and include additional checks that support typical GIS industry standard quality control assessments. These validation checks are run once a PSAP submits data layers to the VEP Validator solution. *An important value-add our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts.* VEP Validator provides robust reports on anomalies and changes over time.

Each PSAP's road centerlines are onboarded into the VEP solution within their own data store. Validation checks are then performed on each road centerline dataset, with anomalies and discrepancies being reported back to the local PSAP and to the State for monitoring by way of our robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying where segments do not break at boundaries or intersections, overlapping address ranges, and parity and directionality anomalies. The road centerline is then remediated by local PSAPs to reduce the number of anomalies, mark exceptions if warranted, and improve the overall quality and confidence of the attributes and spatial location of the line segments.

Aggregation to a statewide road centerline dataset is an automated process that occurs once the local PSAPs have remediated their datasets and feel that it is ready to be included in the statewide aggregated dataset. At the discretion of the PSAP, the road centerline dataset is sent to be included in the statewide aggregated road centerline dataset where additional cross-jurisdictional validations are performed with neighboring PSAP data. These validations meet all the Layer Specifications in the RFP and provide robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying overlapping address ranges and alignment differences with neighboring road centerlines. The local PSAP works to adjust the data by coordinating with their neighboring PSAPs when needed and resubmits the updated road centerlines to be included in the statewide aggregated road centerline dataset.

PSAP road centerline data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI. Based on the tolerances, automated and/or manual accept or reject actions will take place.

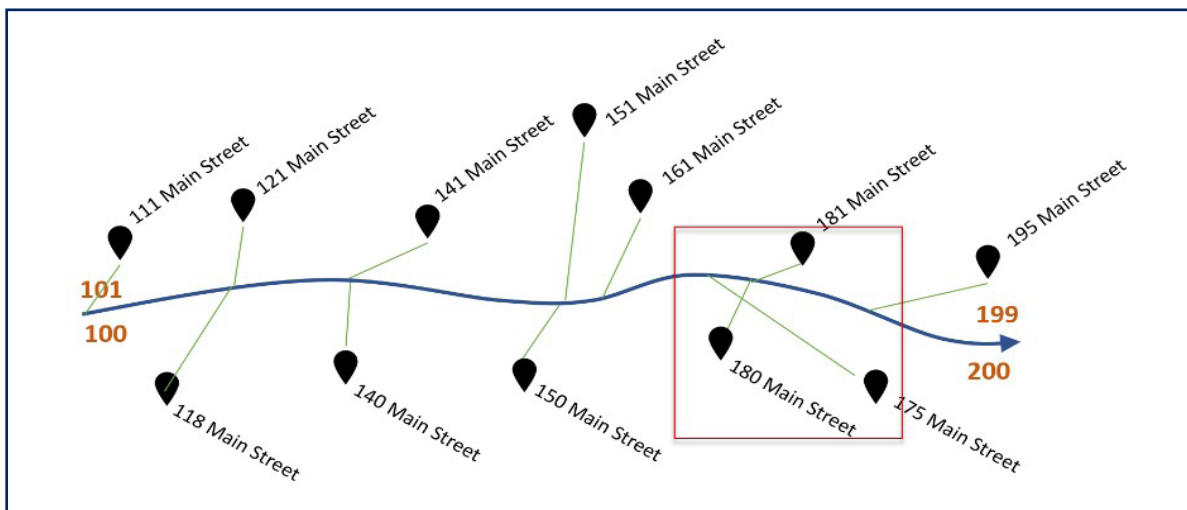
2.2 SITE/STRUCTURE ADDRESS POINTS

COMPLY – Please note the process for aggregating a statewide site/structure address point data layer follows the same process identified above for the statewide road centerline layer.

Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, as well as the requirements listed in the Layer Specifications list for site/structure address points and include additional checks that support typical GIS industry standard quality control assessments. These validation checks are run once a PSAP submits data layers to the VEP Validator solution. An important value-add that our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts. VEP Validator provides robust reports on anomalies and changes over time.

Each PSAP's site/structure address points are onboarded into the VEP solution within their own data store. Validation checks are then performed on each site/structure address points dataset, with anomalies and discrepancies being reported back to the local PSAP and to the state for monitoring by way of our robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying duplicate address points, address points out of order, and address points on wrong side of road centerline.

VEP's unique fishbone analysis provides a visual representation where address points and centerlines do not agree, whether AP (address point) out of order along RCL (road centerline), AP maps to multiple RCLs, AP Mis-ordered Along RCL, AP is on Wrong Side of RCL or a range of other anomalies. VEP's fishbone analysis is a powerful tool that draws a line from the address point to where it falls on its street centerline range. Please see the example image below of a fishbone output that identifies an out of order site/structure address point.



Example of a Fishbone Analysis produced in VEP

Local PSAPs perform data remediation to reduce the number of anomalies, mark exceptions if warranted, and improve the overall quality and confidence of the attributes and spatial location of the address points.

Aggregation to a statewide site/structure address point dataset is an automated process that occurs once the local PSAPs have remediated their datasets and feel that it is ready to be included in the statewide aggregated dataset. At the discretion of the PSAP, the site/structure address point dataset is sent to be included in the statewide aggregated site/structure address point dataset where additional cross-jurisdictional validations are performed with neighboring PSAP data. Examples include a site/structure address point that falls outside of the PSAP Boundary and duplicate address points that occur across a boundary. These validations meet all the Layer Specifications in the RFP and provide robust reports and spatial data showcasing visually the locations and types of anomalies. The local PSAP works to adjust the data by coordinating with their neighboring PSAPs when needed and resubmits the updated site/structure address points to be included in the statewide aggregated site/structure address point dataset.

PSAP site/structure address point data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEL ECRF and LVF through the DATAMARK SI. Based on the tolerances, automated and/or manual accept or reject actions will take place.

2.3 PSAP BOUNDARY

COMPLY – Please note the process for aggregating a statewide PSAP Boundary data layer follows the same process identified above for statewide road centerline and site/structure address point layers.

Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, as well as the requirements listed in the Layer Specifications list for PSAP boundaries and include additional checks that support typical GIS industry standard quality control assessments. These validation checks are run once a PSAP submits data layers to the VEP Validator solution. An important value-add our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts. VEP Validator provides robust reports on anomalies and changes over time.

Each PSAP's boundary dataset is onboarded into the VEP solution within their own data store. Validation checks are then performed on each boundary dataset, with anomalies and discrepancies being reported back to the local PSAP and to the state for monitoring by way of our robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying gaps and overlaps between PSAP boundaries, address points are contained within the PSAP boundary, and road centerlines break at the PSAP boundary. The boundary dataset is then remediated by local PSAPs to reduce the number of anomalies, mark exceptions if warranted, and improve the overall quality and confidence of the attributes and spatial location of the boundary dataset.

Aggregation to a statewide boundary dataset is an automated process that occurs once the local PSAPs have remediated their datasets and feel that it is ready to be included in the statewide aggregated dataset. At the discretion of the PSAP, the boundary dataset is sent to be included in the statewide aggregated boundary dataset where additional cross-jurisdictional validations are performed with neighboring PSAP data. These validations meet all the Layer Specifications in the RFP and provide robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying overlapping gaps and overlaps and address point has only one designated primary PSAP. The local PSAP works to adjust the data by coordinating with their neighboring PSAPs when needed and resubmits the updated boundary dataset to be included in the statewide aggregated boundary dataset.

PSAP boundary data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI. Based on the tolerances, automated and/or manual accept or reject actions will take place.

2.4 EMERGENCY SERVICES BOUNDARY

COMPLY – Please note the process for aggregating a statewide Emergency Service Boundary data layer follows the same process identified above for statewide road centerline, site/structure address point, and PSAP boundary layers.

Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, as well as the requirements listed in the Layer Specifications list for Emergency Services Boundaries and include additional checks that support typical GIS industry standard quality control assessments. These validation checks are run once a PSAP submits data layers to the VEP Validator solution. An important value-add that our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts. VEP Validator provides robust reports on anomalies and changes over time.

Each PSAP's Emergency Services Boundaries datasets are onboarded into the VEP solution within their own data store. Validation checks are then performed on each Emergency Services Boundary dataset, with anomalies and discrepancies being reported back to the local PSAP and to the state for monitoring by way of our robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying gaps and overlaps between Emergency Services Boundaries, road centerlines not broken at Emergency Services Boundaries, and there are no gaps or overlaps of the Emergency Services Boundaries within the PSAP boundary. The Emergency Services Boundaries dataset is then remediated by local PSAPs to reduce the number of anomalies, mark exceptions if warranted, and improve the overall quality and confidence of the attributes and spatial location of the Emergency Services Boundaries datasets.

Aggregation to a statewide Emergency Services Boundaries dataset is an automated process that occurs once the local PSAPs have remediated their datasets and feel that they are ready to be included in the statewide the local PSAPs have remediated their datasets and feel that they are ready to be included in the statewide aggregated datasets. At the discretion of the PSAP, the boundary datasets are sent to be included in the statewide aggregated boundary datasets where additional cross-jurisdictional validations are performed with neighboring PSAP data. These validations meet all the Layer Specifications in the RFP and provide robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying overlapping gaps and overlaps and road centerlines are broken at Emergency Services Boundaries. The local PSAP works to adjust the data by coordinating with their neighboring PSAPs when needed and resubmits the updated boundary datasets to be included in the statewide aggregated boundary datasets.

Emergency Services Boundaries data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI. Based on the tolerances, automated and/or manual accept or reject actions will take place.

2.5 PROVISIONING BOUNDARY

COMPLY – Please note the process for aggregating a statewide Provisioning Boundary data layer follows the same process identified above for statewide road centerline, site/structure address point, PSAP Boundary, and Emergency Service Boundary layers.

Our validations take into consideration attribute, topological and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, as well as the requirements listed in the Layer Specifications list for Provisioning boundaries and include additional checks that support typical GIS industry standard quality control assessments. These validation checks are run once a PSAP submits data layers to the VEP Validator solution. An important value-add our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts. VEP Validator provides robust reports on anomalies and changes over time.

Each PSAP's boundary dataset is on-boarded into the VEP solution within their own data store. Validation checks are then performed on each boundary dataset, with anomalies and discrepancies being reported back to the local PSAP and to the state for monitoring by way of our robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying gaps and overlaps between Provisioning boundaries. The boundary dataset is then remediated by local PSAPs to reduce the number of anomalies, mark exceptions if warranted, and improve the overall quality and confidence of the attributes and spatial location of the boundary dataset.

Aggregation to a statewide boundary dataset is an automated process that occurs once the local PSAPs have remediated their datasets and feel that it is ready to be included in the statewide aggregated dataset. At the discretion of the PSAP, the provisioning dataset is sent to be included in the statewide aggregated boundary dataset where additional cross-jurisdictional validations are performed with neighboring PSAP data. These validations meet all the Layer Specifications in the RFP and provide robust reports and spatial data showcasing visually the locations and types of anomalies. Examples include identifying overlapping gaps and overlaps. The local PSAP works to adjust the data by coordinating with their neighboring PSAPs when needed and resubmits the updated boundary dataset to be included in the statewide aggregated boundary dataset.

Provisioning boundary data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI through an automated or on-demand process. Based on the tolerances, automated and/or manual accept or reject actions will take place.

2.6 STREET NAME ALIAS TABLE

COMPLY – The DATAMARK VEP solution has a street alias table that adheres to the NENA NG9-1-1 Data Model standards as detailed in NENA-STA-006.1-2018. DATAMARK can assist local jurisdictions with the creation of a street name alias table for use within VEP as an additional service.



3. GIS SERVICES

COMPLY – The DATAMARK team understands the State of Alabama 911 Board is looking for an integrated solution that allows for the ongoing and long-term management, maintenance, and provisioning of GIS data into the required ANGEN ECRF and LVF. We offer a holistic approach to this requirement through our managed services and solutions. This offering uses VEP Validator and Aggregator to provide a secure web-based portal for consumption of local GIS data and allow for unlimited validation runs of the data prior to submission to the aggregated State dataset. The data is then provisioned to VEP Aggregator which hosts the State's aggregated dataset and provides unlimited multi-jurisdictional validation runs to ensure the data meets all required NENA GIS standards. Finally, data that passes the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI as an automated or on-demand process. Based on the tolerances, automated and/or manual accept or reject actions will take place.

DATAMARK Validate-Edit-Provision (VEP)

The DATAMARK VEP solution allows PSAPs to perform QA/QC audit tests and data analysis on-demand and as often as necessary prior to provisioning the GIS data into the ECRF AND LVF. The DATAMARK SI addresses data updates and discrepancy inquiries from the PSAPs as a managed service. Additionally, the rich reporting capability of VEP provides anomaly and discrepancy reporting back to the PSAP and Alabama 911 Board, creating a continuous feedback loop to ensure timely and accurate GIS data remediation.

DATAMARK VEP is an end-to-end NG9-1-1 GIS-based data aggregation, preparation, analysis and maintenance solution that is designed to meet the needs of various end-users. It provides a user-friendly interface for both GIS and non-GIS trained personnel to conduct 9-1-1 location data validation and quality control beyond internal datasets. VEP has the capability to work collaboratively with datasets from regional 9-1-1 location data partners, constituent GIS data providers, addressing authorities and neighboring 9-1-1 authorities.

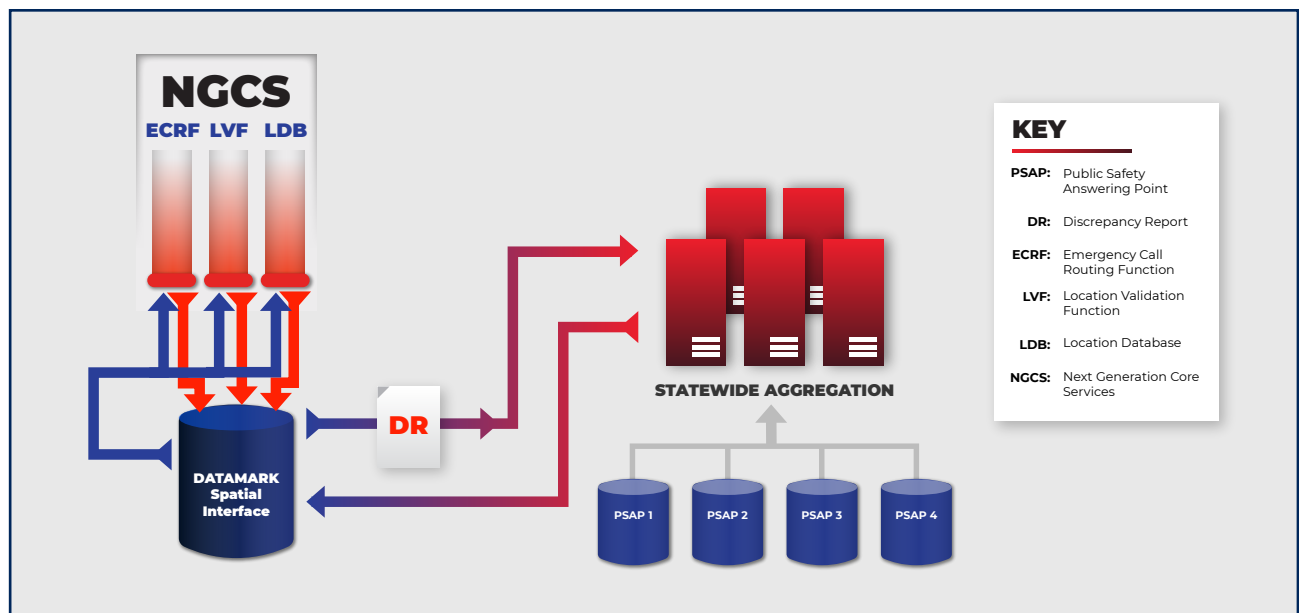
Spatial Interface (SI)

Using the DATAMARK Spatial Interface (SI) the aggregated statewide datasets are provisioned into the ANGEN ECRF and LVF. The DATAMARK VEP aggregated statewide databases are replicated into the secure DATAMARK Spatial Interface (SI). We are prepared to provide the SI and are eager to collaborate and coordinate with the ANGEN service provider to ensure unified integration with the ECRF AND LVF components ANGEN has provided to the state. We are committed to ensuring that, as the NG9-1-1 technology and standards evolve, the DATAMARK solutions will evolve with partner vendor technology (NGCS) and industry standards.

GIS datasets that pass the validation checks are sent through a change detection process, with additional validations performed to detect problems that can occur during aggregation and ensure compliance with specific tolerances. Acceptable data will then be provisioned to the ANGEN ECRF and LVF through the DATAMARK SI. Based on the tolerances, automated and/or manual accept or reject actions will take place. Data not passing validation checks are reported back to the appropriate PSAP for error resolution and immediate remediation and resubmission.

Validations on the GIS data takes place throughout the entire GIS lifecycle process, including validations performed at the local jurisdictions, as part of the statewide and at the ingestion into the ANGEN LVF and ECRF. The DATAMARK SI provides interactive communication between the ANGEN ECRF and LVF to local jurisdictions.

The transmittal of GIS data into the ANGEN ECRF and LVF will utilize the NGCS prescribed data transfer portal. As a redundancy, DATAMARK will provide a secondary data transfer portal in compliance with the NENA-STA-010.2-2016 NENA Detailed Functionality and Interface Standards.



Example of the multi-tenant design of the VEP solution to support statewide aggregation and provisioning

3.1 GIS DATA MANAGEMENT TOOLS

COMPLY – VEP Validator is a secure SaaS web-portal that allows for collection of all local GIS data, validations and quality control checks, robust anomaly and discrepancy reporting, and aggregation into the statewide GIS datasets. By implementing the VEP Solution, the Alabama 911 Board will deploy a forward-thinking solution that enables local stakeholders to:

- ✓ Upload and validate their GIS data required for the next generation core services (NGCS) in near real-time fashion.
- ✓ Interact with the data to improve flagged anomalies, which are specific locations/conditions where the data does not pass the various validation checks.
- ✓ Aggregate and provision the GIS data for inclusion in the ANGEN ECRF and LVF system.

The process of aggregating and validating GIS, MSAG and ALI data returns results of the extensive data validation rules. DATAMARK VEP provides fast, data-forward capabilities across a Software-as-a-Service (SaaS) platform and enables the PSAP to implement an iterative GIS data maintenance process that will lead to continuous improvement of data quality.

DATAMARK will provide customized training sessions that will review GIS data remediation workflows, use of the VEP solution including the web-portal, and upload process. Additionally, we provide guidance on best practices in GIS data maintenance. In addition, every user will have access to on-demand step by step tutorials to guide the local jurisdictions through validation and remediation workflows. We provide online video tutorials to enhance and streamline the learning experience. We will also provide ample direct support to the local entities within the guidelines of our support offerings included with every license.

3.2 GIS NORMALIZATION SERVICES

COMPLY – VEP Validator is a secure SaaS web-portal that allows for collection of all local GIS data, validations and quality control checks, and data normalization prior to aggregation into the statewide GIS datasets. This solution creates a standardized and best-practices workflow to ensure consistency of ongoing maintenance and aggregation.

The workflow is accomplished through a series of steps initiated by the local PSAP as detailed below. This process will be used as on-going GIS maintenance occurs in order to ensure that the statewide and ANGEN ECRF and LVF remain up to date.

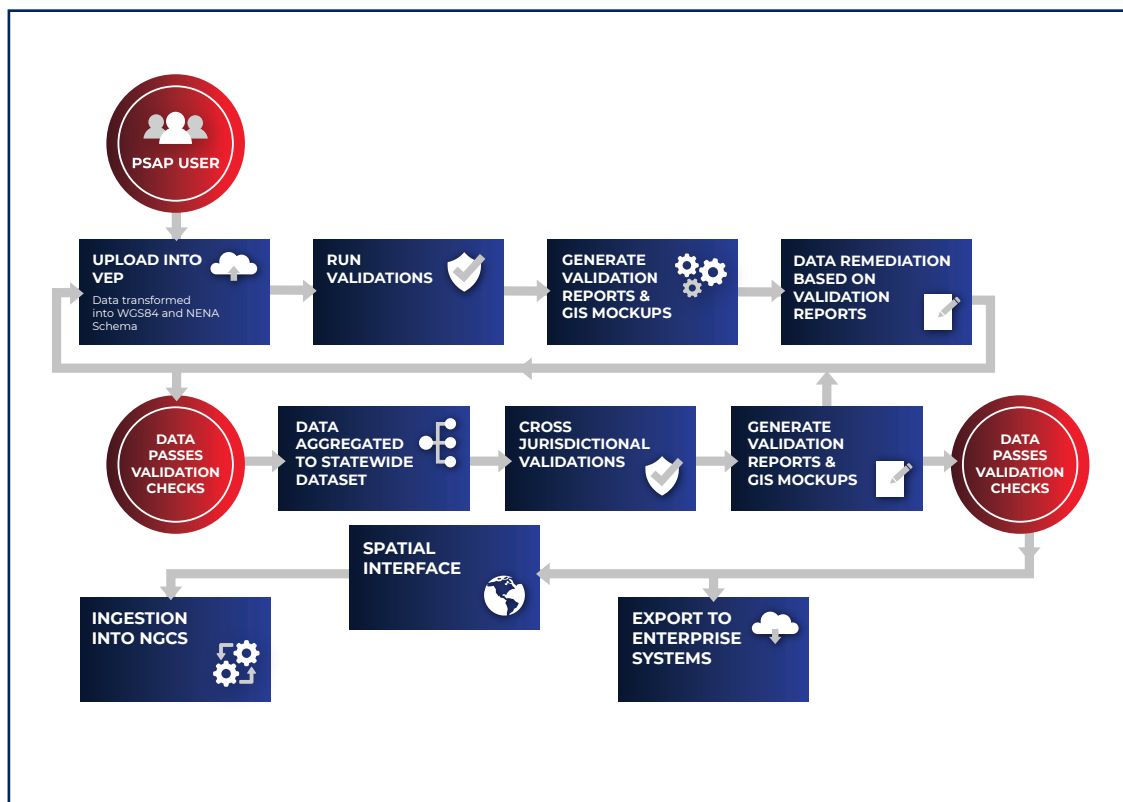
Upload: Local PSAP uploads their GIS and tabular (MSAG/ALI) datasets, including additional operationally relevant layers on-demand and as frequently as needed into VEP Validator. During upload an automated process evaluates the presence of critical attributes.

Transform: The uploaded data is normalized and transformed into the NENA required data model and projection.

Validate: Validations take into consideration attribute, topological and spatial data integrity within each layer as well as performing cross feature and cross-jurisdictional validations ensuring completeness and accuracy. An important value-add our solution provides is that users can run these validations independently, and as often as necessary to continue to see progress in data remediation efforts.

Reporting: Through our interactive reporting interface, users receive dynamic and real-time reports on discrepancies, anomalies, and change over time progression of data quality. The interface includes both pre-defined and configurable reports to extract the most valuable individualized information. Through our interactive reporting module, each jurisdiction receives notifications of discrepancies at all tiers of validations from local to NGCS components. The reporting module allows each user role based on their access in the system. Data not passing validation checks is reported back to the appropriate PSAP for error resolution and immediate remediation and resubmission.

Aggregation: Local jurisdiction data that passes validation checks are aggregated into the statewide datasets. After additional cross-jurisdictional validations are conducted, data that passes validation checks is provisioned into the ANGEN ECRF and LVF through the DATAMARK SI within twenty-four hours. Data not passing validation checks are reported back to the appropriate PSAP for error resolution and immediate remediation and resubmission.



Best-Practices Workflow

3.3 GIS MANAGED SERVICES

COMPLY – As described in our response to requirements 3.1 and 3.2, DATAMARK will utilize VEP Validator and Aggregator to perform the GIS data tasks and requirements. DATAMARK proposes the following to perform the additional requirements in this section:

Secure Web-Portal

VEP Validator is a secure SaaS web-portal that allows for collection of all local GIS data, validations and quality control checks, robust anomaly and discrepancy reporting, and aggregation into the statewide GIS datasets.

The DATAMARK team adheres to stringent cyber security standards and continuously strive to ensure the security of client data. To this point, the DATAMARK solution adheres to the NIST SP 800-53 guidelines for secure access. All data is encrypted at TLS with layers of security within our infrastructure.

DATAMARK VEP leverages AWS backup and recovery procedures that were validated by an external third-party audit firm. Their SOC 1 & SOC 2 reports are available for review upon request. The DATAMARK team is also working through an AICPA SOC 2 certification, which we anticipate being completed in the next 6-9 months. The DATAMARK team will work with the State of Alabama to support periodic non-invasive vulnerability scans to the VEP environment upon request.

- ✓ Each user has their own unique login
- ✓ We use SSL certificates for secure access to the VEP application
- ✓ Data is encrypted at TLS with layers of security within our infrastructure

Web Reporting & System and Data Metrics

Through our interactive reporting interface, users receive dynamic and real-time reports on discrepancies, anomalies, and change over time progression of data quality. The interface includes both pre-defined and configurable reports to extract the most valuable individualized information. Through our interactive reporting module, each jurisdiction receives notifications of discrepancies at all tiers of validations from local to NGCS components. The reporting module allows each user role based on their access in the system. Data not passing validation checks are reported back to the appropriate PSAP for error resolution, immediate remediation and resubmission.

Additionally, through a configurable dashboard, the State and other users authorized by the State will have access to view performance and system status metrics, PSAP discrepancy metrics, and the health of the statewide aggregated datasets.

Training

DATAMARK will provide customized training sessions that will review GIS data remediation workflows, use of the VEP solution including the web-portal, and change management processes. Additionally, we provide guidance on best practices for GIS data maintenance. In addition, every user will have access to on-demand step-by-step tutorials to guide the local jurisdictions through validation and remediation workflows. We provide online video tutorials to enhance and streamline the learning experience. We will also provide ample direct support to the local entities within the guidelines of our support offerings included with every license.

Customer Support & Knowledge Base

All users are granted access to the VEP customer support center. Within the VEP interface, a user can access customer support help with questions about VEP. The customer support center contains an online support ticket system, a knowledge center to query on common questions and documentation on functionality, and a telephone support number. Software maintenance and support is included with the licensing of VEP.

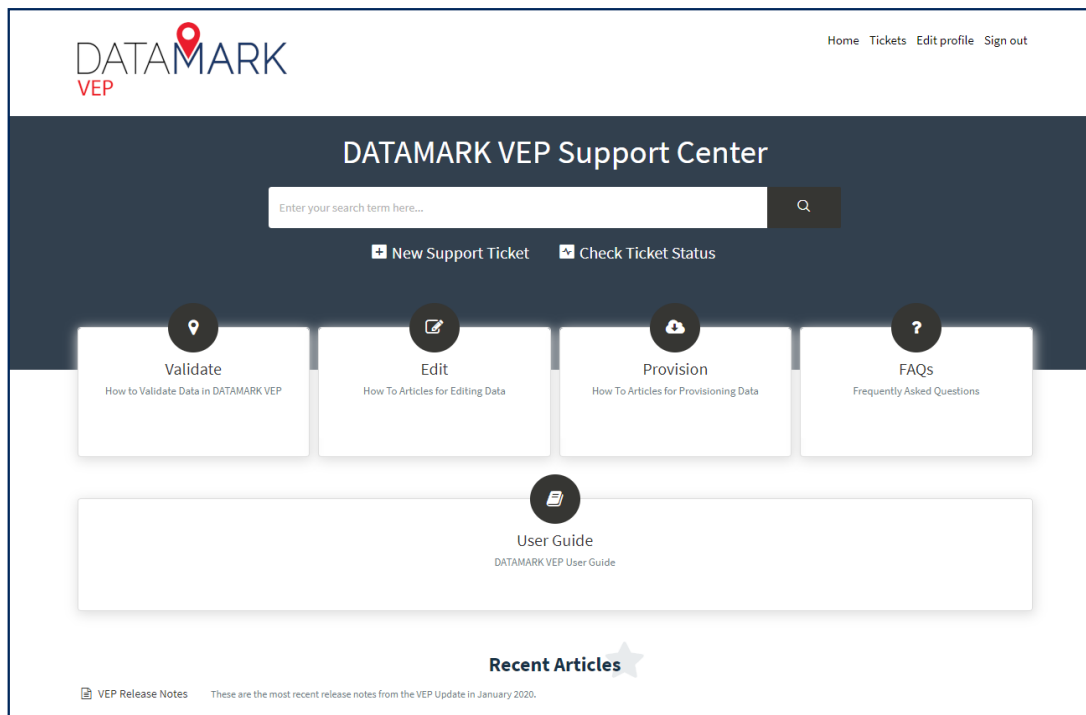
The DATAMARK team maintains existing customer support methodologies for reporting the existence of a problem in our DATAMARK VEP environment.

- ✓ DATAMARK Online Support Center - Access to support ticket and email support (requests received will be triaged and responses will occur based on the DATAMARK escalation plan)
- ✓ Emergency Telephone support – Available 24 hours a day, 365 days a year
- ✓ Self Service Help Desk - Access to an online library of videos and help articles

The Support Center is a secure, login-based help/support ticket system for registered users of the DATAMARK software. Generally, routine problems should be logged using the Support Center system and is provided as a link within our DATAMARK SaaS application.

Upon successful login, the following interface will provide several options.

- ✓ New Support Ticket
- ✓ Check Ticket Status
- ✓ Validate (How to validate data in DATAMARK VEP)
- ✓ Edit (How to articles for editing data)
- ✓ Aggregate (How to articles for aggregating to statewide dataset.
- ✓ Provision (How to articles for provisioning data)
- ✓ FAQs (Frequently Asked Questions)



DATAMARK VEP Support Center

Dynamic GIS Updates

Local jurisdiction data that passes validation checks are aggregated into the statewide datasets. After additional cross-jurisdictional validations are conducted, data that passes validation checks is provisioned into the ANGEN ECRF and LVF through the DATAMARK SI within twenty-four hours. Data not passing validation checks is reported back to the appropriate PSAP for error resolution and immediate remediation and resubmission.



4. PROJECT MANAGEMENT

COMPLY – Every project that the DATAMARK team performs is assigned a dedicated project manager who manages every aspect of project execution from contract negotiation to project closeout. The project manager is the single point of contact (SPOC) between the Board and the DATAMARK Team. The project manager is responsible for scope, budget, and schedule management and managing DATAMARK’s technical execution team. Our standard project management methodology starts with developing the Project Management Plan (PMP) which is based on Project Management Institute’s (PMI) standards and is the guiding plan for successful project execution.

4.1 SINGLE POINT OF CONTACT (SPOC)

COMPLY – For this project, the DATAMARK team will be led by our designated Single Point of Contact (SPOC), Michael Anderson, GISP, PMP, who has more than 25 years of experience in experience project management, consulting, planning, design, implementation, analysis, budgeting, supervision and quality assurance for a variety of GIT consulting, analysis, application development, and data development projects. Michael will coordinate all aspects of the project with the 911 Board and the Board’s designees as well as coordinate and work as needed with the NG9-1-1 service provider to ensure deliverables can be utilized for call routing.



Mike Anderson, GISP, PMP

Project Manager

Mr. Anderson has 25+ years of experience project management, consulting, planning, design, implementation, analysis, budgeting, supervision and quality assurance for a variety of GIT consulting, analysis, application development, and data development projects. Mike will be responsible for resource assignments and all financial aspects of the project.

EDUCATION

Master's Certificate,
Project Management,
University of Pittsburgh

B.S., Industrial Engineering,
Geneva College

LICENSES/ CERTIFICATIONS

Certified GISP
#00045445

Project Management
Professional, #462569

PROJECT EXPERIENCE

- Manatee County Addressing & Maintenance System; Bradenton, FL
- Addressing and GIS Support Services; Preston County, WV
- Mahoning County E9-1-1 Wireless Program - Phase II; Youngstown, OH
- FCC: National Broadband Map Data Quality Assessments; Washington, D.C.
- Emergency 9-1-1 Addressing and Mapping Services; Marshall County, WV
- Addressing & Mapping System Development & Implementation; Statewide, W.Va.
- E9-1-1 Data Conversion & GIS Services; Butler, PA
- Pennsylvania Broadband Mapping, Statewide, PA
- QAP, ACE, Staff Augmentation & VEP Product, Washington County FL
- NG9-1-1 Address Assessment & Action Plan, Caroline County MD
- DATAMARK VEP, ACE, & Quality Assurance Plan; Garrett County MD
- DATAMARK VEP Editor; Walton County FL
- DATAMARK Boundary Facilitation & VEP; Queen Anne's County MD

PROFESSIONAL AFFILIATIONS

- National Emergency Numbers Association (NENA)
- Urban and Regional Information Systems Association (URISA)

4.2 PROJECT KICK-OFF MEETING

COMPLY – The DATAMARK team will set-up the project for budget management and perform internal project startup tasks. The DATAMARK team conducts a project kickoff meeting with key Board staff overseeing the project, and other stakeholders deemed appropriate for the kickoff meeting by the Board, to ensure a solid understanding of the project action plan including project goals, timeline, and approach. During this meeting, team members are introduced, and their project roles and responsibilities are described. The project schedule is presented with an emphasis on the dates for key milestones, and the Project Management Plan is discussed.

4.3 PROJECT PLANNING

COMPLY – As one of the first tasks for the project, Michael Baker will develop a Project Management Plan (PMP) that will document our project management approach, techniques, and tools. The PMP will adhere to Michael Baker's well-established practices as a critical tool to help manage project finances, contracts, operations, and schedule. Standard components of the PMP include the following:

- ✓ Project Goals and Objectives
- ✓ Scope of Work Summary
- ✓ Deliverables

- ✓ Project Control Procedures
- ✓ Budget Control
- ✓ Project Communications Plan
- ✓ Risk Management Plan
- ✓ Schedule and Milestones Management
- ✓ Online Management Tools
- ✓ Change Management Plan
- ✓ Billing Procedures
- ✓ Project Status/Project Tracking

The PMP will follow Michael Baker's company-wide project management approach, referred to as "Project Management - The Michael Baker Way," which defines the process for which all projects are managed throughout Michael Baker. The ultimate objective of "The Michael Baker Way" is improving project performance through Product Delivery Excellence. Through better organization, tools, and methods to monitor budgets, an emphasis on communication, and a structured approach to delivering quality "The Michael Baker Way", clearly provides considerable value to our clients, the company, and its stakeholders. Key features include:

- ✓ Improving project performance through consistency, organization and efficiency for the client
- ✓ Serving as a one-stop reference point for Scope Management for this project
- ✓ Delivering the best product to the client by leveraging existing best practices throughout Michael Baker, as well as referencing accepted and established practices from outside sources

4.4 PROJECT STATUS REPORTING

COMPLY – DATAMARK's processes for tracking project status include entering a work breakdown structure into our Oracle-based ERP, which is an "active" alerting system that sends notices to managers when elements of projects are not within expected limits. The budget and schedule are monitored by the project manager; this frequent monitoring and early identification of any changes affecting project costs and schedule help control costs and stay on schedule.

Standardized project progress/milestone reports are provided to the Board weekly to ensure the Board has constant insight on project status. The format and content of the weekly project progress/milestone report is discussed and agreed upon with the State during the kickoff meeting. At a minimum, the progress/milestone report includes progress on each task, milestone achievements, deliverables, QA/QC metrics, and status updates for the week. In addition, a look ahead for the upcoming week of tasks to be completed, anticipated milestones, and deliverables to be achieved are included in the weekly report along with who is responsible, DATAMARK or the Board.

It is customary for DATAMARK to participate in an update status teleconferences to inform our clients on project status verbally. We understand and acknowledge the Board's requirement of DATAMARK to provide 3 on-site, oral status reports during the course of the project implementation.

APPENDIX: PROJECT APPROACH

Our experience in working with local jurisdictions to improve their GIS data to support a statewide NG9-1-1 effort has provided rich lessons learned and formulated our proven approach for the easiest most efficient transition. To meet the needs of the Alabama 911 Board, we are proposing the following tasks to be implemented in a mostly sequential order with ongoing communication of each task provided to the Board. This will ensure that throughout the implementation process, there is a constant line of communication and project awareness.

The DATAMARK team will achieve the Board's desired objectives through the following tasks:

TASK 1: PROJECT DISCOVERY, COORDINATION, & PLANNING

TASK 2: DATA COLLECTION & GAP ANALYSIS

TASK 3: DATA VALIDATION & ERROR REPORTING

TASK 4: DATA AGGREGATION

TASK 5: DATA PROVISIONING & INTEGRATION TESTING

TASK 6: TRAINING

TASK 7: ADDITIONAL LOCAL SUPPORT



TASK 1: PROJECT DISCOVERY, COORDINATION, & PLANNING

The DATAMARK team will hold up to six data discovery and workflow meetings with the Alabama 911 Board and other identified stakeholders to plan, collaborate, and coordinate the various project tasks and activities. Topics to be covered include reviewing schema requirements, proper communication channels, workflow and timeline establishment within the larger project team, ANGEN system specs and workflows, and GIS data management workflow dependencies.



TASK 2: DATA COLLECTION & GAP ANALYSIS

DATAMARK will collaborate with state and local partners to collect the GIS and tabular (ALI & MSAG) datasets. Local jurisdiction will be responsible for all costs associated with obtaining copies of required datasets. A data collection effort will be conducted by direct outreach to stakeholders within each PSAP. For the data collection effort, the DATAMARK team will utilize our secure file transfer system to send, receive, and share large files, quickly and securely. Features include an easy to understand web-mail-like interface for sending files that are unlimited in size, support the four major browser vendors, expiration date settings for messages, and a unique file drop page with a permanent URL for receiving files. The purpose of this initial data collection is to gather all datasets defined in the RFP that a PSAP maintains to load the data into VEP Validator and perform the gap analysis.

DATAMARK will utilize VEP Validator to perform the gap analysis to identify schema inconsistencies and incompleteness as well as identify spatial anomalies and discrepancies within the various datasets. Our validations take into consideration attribute, topological, and spatial validations within each layer as well as performing cross feature validations. The DATAMARK validations meet and exceed the NENA standards, and include additional checks that support typical GIS industry standard quality control assessments. VEP Validator provides robust reports on anomalies and changes over time.

Data that passes the data requirements for onboarding into VEP during the gap analysis will be field mapped into VEP Validator for use by the PSAP to perform continuous validations driving their remediation efforts. A gap analysis report is provided back describing the overall health of their GIS data. PSAPs not meeting the requirements for onboarding will be provided the gap analysis report with guidance on data fixes or updates that need to be performed prior to onboarding into VEP Validator. Once corrected, the PSAP can resubmit data to DATAMARK to perform the initial onboarding process. Performing the initial field mapping for the PSAP helps users continue to maintain their data in their own native schema and quickly and efficiently upload data for validation runs in the future. As a result of the gap analysis, PSAPs will be delivered a report identifying data validation errors, schema field mapping results, recommendations for remediation, and next steps for continued data management and maintenance.



TASK 3: DATA VALIDATION & ERROR REPORTING

Each PSAP has access to VEP Validator after the initial GIS gap analysis is performed to complete quality control assessments and continuously run on demand data validations as often as necessary. It is the responsibility of the locals to remediate their datasets utilizing the validation output, which is available in both report format and spatial data showcasing visually the locations and types of anomalies. Due to DATAMARK's rules-based validation engine, the QA/QC processes for VEP Validator is optimized for processing large datasets rapidly, while returning the required data and reports for local PSAP data remediation efforts. We understand that some local jurisdictions have limited or no capability to edit data for remediation, and ***we offer an optional license upgrade to VEP Editor*** that allows for full data maintenance, creation, updating, validation, and export of addressing data in a simple interface that is designed with both GIS and non-GIS users in mind, without any other third party licensing requirements.

Optional VEP Editor License

In addition to the iterative validation functions that VEP Validator performs, VEP Editor has a fully functioning edit module that allows for full data maintenance, creation, updating, validation, and export of addressing data in simple interface that is designed with both GIS and non-GIS users in mind. This solution is an option for those PSAPs that may not have the ability to perform data remediation locally.

Because of this approach, non-GIS personnel such as addressing/permit technicians, dispatchers, fire inspectors and others can make meaningful contributions to the work of maintaining high quality address data that not only benefits public safety but also the entire PSAP enterprise. As an upgraded licensing level, VEP Editor includes all VEP Validator functionality in addition to the powerful collaboration capabilities. As the application is accessed through any web browser, this solution means additional desktop GIS or plugin software is not necessary. This reduces costs both from a licensing perspective but also from the staff time not spent on software or hardware maintenance.

Validation results are available as markup tables for easy consumption within the user's local workstation. These validations assist local PSAPs by improving the holistic quality of their datasets, not just along jurisdictional boundaries. The power of VEP Validator are the capabilities to assess data comparison, completeness, and quality both internal and external of a primary PSAP boundary. A summary of the validation categories available for PSAPs to run on the local datasets includes:

- ✓ **Boundary Validations:** Returns topological errors between provisioning and emergency service boundaries and between provisioning and PSAP boundaries such as gaps and overlaps. Compares address point and road centerline datasets to boundaries to ensure full containment.

- ✓ Road Centerline Validations: Provides insights and audits to the spatial integrity and data schema such as null geometry, road name standardization, overlapping address ranges, parity congruency, address range value high to low, and topological integrity such as overshoots, undershoots, and small segments.
- ✓ Address Point Validations: Provide insights to spatial integrity and data schema such as null geometry, attribution completeness, and duplicate address points. In addition to validations internal to the road centerline dataset VEP examines the relationship between the attributes of the road centerlines and address points looking for misplaced address points.
- ✓ Tabular Validations: Cross-compares the MSAG and ALI databases to the road centerline and address point GIS datasets, to find missing data and determine consistency with street naming and range values.
- ✓ Fishbone Analysis: VEP's fishbone analysis compares the placed address point to its geolocated location on the road centerline. This process creates a line between the two locations which provides a powerful dataset for analysis. This analysis reveals anomalies such as address points on the wrong side of the road, out of order address points or a range of other anomalies. This approach reduces false positives and false negatives allowing for more efficient resolution of true anomalies.



TASK 4: DATA AGGREGATION

The aggregation capability of the platform is designed with cross-jurisdictional validations in mind. These cross-jurisdictional validations are applied to the data between neighboring PSAPs. The multi-tenant database structure within VEP allows for immediate statewide aggregations, cross-jurisdictional validations, and accessibility to both the state and local stakeholders.

Once a PSAP has completed its data remediation, the data is pushed to the aggregated database on an on-demand basis for inclusion in the statewide datasets. The local user has the control of when the data becomes a part of the statewide dataset for collaboration with the State and neighboring PSAPs. Once pushed, cross-jurisdictional validations are performed with neighboring PSAPs to identify errors and discrepancies across borders. The validations that are performed on the cross-jurisdictional data sets include:

- ✓ Boundary Validations: Returns islands, holes and overlaps between the PSAP/ESB/PB feature classes. Compares cross-jurisdictional road centerline segments for boundary snapping. Determines if APs and RCLs are not contained within a provisioning boundary
- ✓ Road Centerline Validations: Compares the road centerline alignment with neighboring boundaries, including overlapping address ranges
- ✓ Address Point Validations: Compares cross-jurisdictional address points to identify duplicate addresses

Based on our experiences with our existing clients, creating snap-to points has proven to be an effective way to create a seamless statewide road centerline dataset with neighboring jurisdictions. It allows PSAPs to have a voice and gives all parties the chance to agree upon the location of the road centerline start and stop points across borders. Snap-to points creation process entails:

- ✓ Generation of potential snap-to points along PSAP boundaries
- ✓ Local PSAPs review, collaborate and provide revised points as necessary
- ✓ Accepted statewide snap-to points are combined and distributed
- ✓ Road centerlines are edited to coincide at the snap-to points

The Board will have access to a dashboard to manage the collaborations for each of the PSAPs. Collaborating and synchronizing between local and statewide databases is a seamless process from the dashboard. Each locality can conduct unlimited validations against their local data and download aggregated data exports,

while cross-jurisdictional validations are performed. The cross-jurisdictional validation process returns any anomalies found during the cross-jurisdictional validation run to the originating jurisdiction for review and remediation.

Periodic compliance reporting to the Board and individual PSAPs are handled by the reporting capability in the platform. The reporting metrics include the current status of data submittals, local PSAP anomaly counts and percentages, aggregation statistics and status, detailed change log reporting (for audit trail), and other additional general metrics. Periodic reminders will be sent to PSAPs with data submittal requirements based on the Boards identified timeline.

The statewide aggregated datasets are provisioned into the ANGEN ECRF and LVF system using the DATAMARK Spatial Interface (SI) (see Task 5). These datasets, given proper authority, can be downloaded by local jurisdictions on demand in the NENA NG9-1-1 schema, and optionally other custom schemas, for ingestion into various public safety software solutions requiring the data.



TASK 5: DATA PROVISIONING & INTEGRATION TESTING

DATAMARK implements its Spatial Interface (SI) to align with the ANGEN SSP, and ensures proper integration into their NGCS components. The DATAMARK SI consumes the aggregated GIS datasets, which are to be provisioned into the ECRF and LVF components of the ANGEN network. The SI provides the data exchange for discrepancy/error reports and provisions to the ANGEN ECRF & LVF.

The DATAMARK SI is a secure replication of the statewide datasets that are provisioned to the ANGEN ECRF and LVF utilizing layer replication for insert/update/delete of data records. DATAMARK will work with the ANGEN SSP to ensure secure, on demand and scheduled layer replication. Timing of updates to the SI are dependent on the data being updated by the PSAP. The data that passes the quality control checks are provisioned to the ANGEN ECRF and LVF through the DATAMARK SI within twenty-four hours.

Integration Testing: DATAMARK will provide a two-week testing period to test the integration of the DATAMARK SI with the ANGEN ECRF and LVF system. A test plan will be developed and provided to use during this two-week testing period to ensure a seamless integration.



TASK 6: TRAINING

The DATAMARK team believes in a strong educational model and understands the importance of delivering quality training to end-users ensuring proper and smooth use of VEP Validator to achieve the goals of the Board. Our training team consists of skilled, qualified trainers with experience ranging from developing and teaching courses at the university level, leading GIS training for other State GIS programs, and training DATAMARK clients on all aspects of the software. A key differentiator we believe sets our training approach apart is that we not only train on the use of the software, but we provide “solution” training to our users. We know that not every PSAP is the same and that there is varying skill levels and knowledge bases, so we make sure to include training on basics of NG9-1-1 and GIS as well as VEP workflow training to each end-user.

Since we offer each of these courses in various format options, DATAMARK's training solution is recommended to be a custom solution with a training plan established with the Boards input to determine the best method of delivery in the most comprehensive, time, and cost-effective manners. We propose holding a training design session to create the training plan collectively and collaboratively to make sure we meet and exceed the expectations of the Board and the GIS and 9-1-1 professional communities.

Instructor-led Training Courses

As the State of Alabama begins their journey to NG9-1-1 GIS data readiness, it is important that the proper training and education is available to all end users to ensure a smooth transition to higher quality and higher confidence datasets to support geospatial call routing. DATAMARK's instructor-led training courses are designed to provide the proper structure as PSAPs make the necessary adjustments, ensure knowledge gaps are lessened, and provide access to experts in the GIS and public safety industries.

DATAMARK has two proposed training courses recommended to support this effort as well as online training materials geared to various audiences and their use of the VEP solutions. While there is tremendous value in holding face-to-face training sessions, we also recognize that it isn't always cost or time effective. Because of this it is important to note that each of these courses can also be held in a remote-hosted webinar format which allows participants to remotely get the customized touch of an instructor and allows participants to also ask questions throughout to ensure maximum understanding. The webinar can be recorded for future access to review and continue to learn throughout the project.

We recommend that Course 1, Validating GIS Data with VEP, will be conducted as 8 trainings sessions held regionally through the state. Course 2, Introduction to VEP for State Aggregators, will be conducted twice throughout the project period, scheduling to be determined by the Alabama 911 Board.

In continued support of the local PSAP community, DATAMARK will offer a follow-up virtual 4-hour training session in Webinar format for all PSAP users 90 days after deployment. This session will train users on all aspects of VEP, enabling users to acquire adequate knowledge to support and use the software effectively. DATAMARK staff will train the PSAPs on validations including street centerline and address updates, analysis, reporting, data export and user administration. This training session will be recorded so PSAPs have access to the content and discussions at any time.

In addition to the instructor-led training courses, DATAMARK maintains a robust knowledge base with step by-step tutorials, guides, and videos on all aspects of the platform. End-users can access this knowledge base on-demand and utilize the information to continue to train and learn about the functionality included in the software.

Course	Audience	Length	Format
1. Validating GIS Data with VEP	Local 9-1-1 Program Managers, GIS Managers, and local addressing authority decision-makers who assign addresses, maintain GIS data for 9-111 and maintain MSAG or ALI for PSAPs	1 day, 8 hours	Instructor-led/ Classroom
2. Introduction to VEP for State Aggregators	State Users	1 day, 8 hours	Instructor-led/ Classroom
3. Online Training Materials	All users of VEP (unlimited)	Online/Self-Paced	Online/Self-Service

The curriculum/syllabi for instructor-led courses are detailed on the following pages.



1. VALIDATING GIS DATA WITH VEP

Course Description:

This course will introduce local PSAPs and GIS users to VEP Validator to learn how to run validations to assist in improving the GIS data for accuracy, improved confidence, and overall GIS data readiness for NG9-1-1 efforts.

Student Expectations:

DATAMARK encourages attendees to engage the instructors and other attendees throughout the course to build a collaborative learning session.

Limitations:

Max Number of Students dependent on the training location. Recommended no more than 25 students per training session.

Availability Frequency:

Monthly, Quarterly, or on-demand

Course Objectives:

Module 1: Project Overview, 1.5 hours

- ✓ Course introduction & Goals
- ✓ Alabama's Vision & overall Project Goals
- ✓ GIS and NG9-1-1 Overview
- ✓ Understanding NG9-1-1 Data Needs & Workflows
- ✓ Introduction to VEP

Module 2: Data Preparation, Uploading and Downloading, 1.5 hours

- ✓ VEP Interface and overview of VEP modules
- ✓ Data considerations
 - unique id, format of field data type
- ✓ Field Mapping
- ✓ Downloading
 - NENA Schema
 - Native Schema

----- LUNCH BREAK (1 hour) -----

Module 3: Validations & Exceptions, 2 hours

- ✓ Overview of RCL validations
- ✓ Overview of AP validations
- ✓ Overview of Boundary validations
- ✓ Generating Validations
- ✓ Downloading the results
- ✓ Overlaying results in local environment using ArcMap or ArcGIS Pro Project
- ✓ Scenario-based examples
- ✓ Marking & Removing Exceptions

Module 4: Administrative Tools Support Center, & Open Discussion, 2 hours

- ✓ User Management
- ✓ Reports

- ✓ DATAMARK Support Center
 - Knowledge Base
 - Ticketing System
- ✓ Custom discussions based on attendee needs
- ✓ Workflow/data challenges
- ✓ Q/A Session



2. INTRODUCTION TO VEP FOR STATE AGGREGATION

Course Description:

This course will introduce administrators within the state's GIS and 9-1-1 professional community to VEP Solutions to learn about aggregation, generating cross-jurisdictional validations, provisioning, and how to export a statewide dataset for redistribution to the 9-1-1 community and other end users.

Student Expectations:

DATAMARK encourages attendees to engage the instructors and other attendees throughout the course to build a collaborative learning session.

Limitations:

Max Number of Students dependent on the training location. Recommended no more than 25 students per training session.

Availability Frequency:

Monthly, Quarterly, or on-demand

Course Objectives:

Module 1: Project Overview, 1.5 hours

- ✓ Course Introduction & Goals
- ✓ Alabama's Vision & Overall Project Goals
- ✓ GIS and NG9-1-1 Overview
- ✓ Understanding NG9-1-1 Data Needs & Workflows
- ✓ Introduction to VEP

Module 2: Cross-Jurisdictional Validation Rules, 2 hours

- ✓ Overview of cross-jurisdictional validations
- ✓ Generating Validations
- ✓ Sharing the results with PSAPs
- ✓ PSAP Governance
- ✓ Scenario-based examples

----- LUNCH BREAK (1 hour) -----

Module 3: Aggregation, 1.5 hours

- ✓ Reviewing the PSAP status
- ✓ Working with Statewide datasets
- ✓ Provisioning and Sharing

Module 4: Reporting, Administrative Tools, Customer Service, 2 hours

- ✓ User Management
- ✓ Reports
- ✓ DATAMARK Support Center
- ✓ Knowledge Base
- ✓ Ticketing System
- ✓ Custom discussions based on attendee needs
- ✓ Workflow/data challenges
- ✓ Q/A Session



TASK 7: ADDITIONAL LOCAL SUPPORT

The successful implementation of NG9-1-1 in Alabama requires a collaborative approach with significant contributions from local GIS data providers and local PSAPs. In order to help the local community be successful, DATAMARK will provide support from resources located in Alabama with recent experience working in an Alabama 9-1-1 center and with close ties to the Alabama 9-1-1 community. This additional local support is separate from and in addition to the various forms of training, online support and telephone support that have been described in previous sections of this proposal.

Local Coordinator

DATAMARK will provide an Alabama-based resource with recent experience working in the Alabama 9-1-1 community to provide appropriate one-on-one tutorial and coaching along the various phases of the project. This will bring a level of intimacy to our solution support that will help PSAPs meet the Board's objectives. This local resource will be an active member of the project and 9-1-1 community that will contribute to local coordination of all aspects of the project from data gathering to orchestrating training opportunities. It is anticipated that this local resource will travel regularly to ensure that all areas of the State have access to direct, personal support as they engage in this critical project.

Dedicated Telephone Support

Based on DATAMARK's extensive experience, it is anticipated that the local GIS data providers and local PSAPs in Alabama will experience a variety of challenges in moving to NG9-1-1 GIS data readiness. Some of the challenges that the local community will experience will occur early in the project and long before they begin to use the VEP software for validating and improving their GIS data. DATAMARK proposes to provide a local Alabama resource to provide dedicated telephone support to the Alabama local community for help with these various barriers to success.

This offering is tailored to the unique needs of the State of Alabama. DATAMARK will offer unlimited phone technical support for technical staff during normal business hours (8:00 AM – 5:00 PM (CST), Monday – Friday) to provide ample technical support to the local entities. This telephone support will target technical subjects that are critical to the success of Alabama NG9-1-1; data pre-processing before submittal, validation workflows, guidance on best practices for GIS data maintenance, etc. This custom telephone support will be offered on an annual basis in addition to the VEP support that is included with the VEP license subscription. Once the VEP solution is in place and PSAPs start using the solution in an ongoing basis to improve the accuracy and completeness of their datasets they can start to take advantage of VEP telephone support as well.