Attachment 2.

Proposal of
DIGITAL MAPPING, INC. (DMI)

DIGITAL MAPPING, INC.
Complete GIS Photogrammetric Services

FOR:

TOWN OF TRUCKEE

RFP NO: 2025-09 | AERIAL IMAGERY AND LIDAR ACQUISITION PROJECT

DUE DATE: JANUARY 15, 2026, AT 4:00 P.M.

Submitted to:

Drew Jack
GIS Analyst
Town of Truckee
10183 Truckee Airport Road
Truckee, CA 96161
Phone: 530-582-7700
djack@townoftruckee.gov

Submitted by:

Cengiz Yagcioglu, CP
Geospatial Director
Digital Mapping, Inc. (DMI)
21062 Brookhurst St, Suite 101
Huntington Beach, CA 92646
(714) 968-5459
cengiz@admap.com

Section 1.) Transmittal Letter

Drew Jack
GIS Specialist
Town of Truckee
10183 Truckee Airport Road
(530) 582-2483 | djack@townoftruckee.com

Re: Proposal for "Aerial Imagery and Lidar Acquisition Project"

Dear Drew Jack,

On behalf of **Digital Mapping, Inc. (DMI)**, I am pleased to submit our proposal in response to the Town of Truckee's Request for Proposals entitled "**Aerial Imagery and LiDAR Acquisition Project**."

DMI is a California-based corporation with more than 37 years of experience providing high-accuracy geospatial services, including LiDAR acquisition, photogrammetry, orthophotography, planimetric mapping, and GIS data processing. As the consultant that successfully completed the Town's 2021 aerial imagery and LiDAR acquisition project, we are familiar with the technical requirements, coordination needs, and quality expectations of the Town of Truckee and its partner agencies, collectively referred to as the "partners," for this regional aerial ortho photography and LiDAR data collection effort within the North Lake Tahoe and Truckee area.

We are confident in our ability to meet or exceed all technical specifications and to deliver accurate, consistent, and timely data products in support of the Town and its partner agencies. Our qualifications for this project include:

- **Proven Methodology**: Established photogrammetric and LiDAR workflows supported by advanced digital image processing techniques to produce high-resolution, engineer-grade deliverables.
- **Experienced Team**: A multidisciplinary staff of certified photogrammetrists, licensed land surveyors, commercial pilots, and GIS professionals with extensive experience in mountainous terrain.
- **Demonstrated Track Record**: A long history of successfully supporting local, state, and federal agencies with reliable, high-quality geospatial data.

I will serve as the primary point of contact for this proposal and am authorized to negotiate and contractually bind Digital Mapping, Inc. I am available to respond to any questions that may arise during the evaluation process.

Thank you for your consideration. We appreciate the opportunity to submit this proposal and look forward to the possibility of continuing our partnership with the Town of Truckee and its partner agencies.

Cengiz Yagcioglu, CP
Geospatial Director
Digital Mapping, Inc. (DMI)
21062 Brookhurst Street, Suite 101, Huntington Beach, CA, 92646
(714) 968-5459 | cengiz@admap.com

Section 2.) Executive Summary

2.1.) Project Understanding

The Town of Truckee and its partner agencies are seeking a qualified consultant to acquire engineer-grade aerial orthophotography, QL1 LiDAR data, and associated GIS deliverables to support regional planning, asset management, and infrastructure operations within the North Lake Tahoe and Truckee area. Digital Mapping, Inc. (DMI) proposes a proven, low-risk approach that builds upon our successful completion of the Town's 2021 imagery and LiDAR acquisition project.

2.2.) Proposed Scope of Services (Summary)

DMI's proposed solution includes all the requested deliverables in the RFP. Imagery products will be delivered at 3-inch resolution, with optional higher-resolution products (2-inch and 1-inch) available if requested.

All imagery, LiDAR, DEM, and contour deliverables will be provided using the required ¼-mile by ¼-mile non-overlapping tiling scheme, consistent with the RFP.

Mobilization

- DMI team will mobilize from Chino, CA and will stay in project area until completion of aerial acquisition

Ground Surveying

- DMI will utilize existing control points to maximum extent and establish new controls as needed. A preliminary ground control plan is included in technical approach section.
- Our survey team will also collect independent check points to assess the accuracy of LiDAR data per USGS and ASPRS standards.

Aerial Data Acquisition

- We will deploy FAA-compliant aircraft equipped with a DMC-III Digital Mapping Camera and Optech ALTM T1000 LiDAR sensor, both integrated with Applanix POS AV inertial navigation systems.
- DMI has the capability to install imagery and LiDAR sensors into single aircraft for simultaneous imagery and LiDAR dataset collection.
- Advanced mission planning softwares, Leica Mission Planning and Optech AMM will be utilized to design optimal flight paths, ensuring proper overlap and coverage. Preliminary flight plans are included in Appendix, with final maps to be presented at the project kickoff meeting.
- DMI will acquire heavily forested project area with more than 50% LiDAR overlap to increase nadir penetration into vegetation. In heavily forested areas, increased LiDAR overlap will be employed to improve nadir penetration through vegetation and enhance the accuracy of bare-earth elevation modeling.
- Our experienced flight crew will coordinate closely with FAA officials and local ATC.

Imagery Processing

- Automated aerial triangulation will be performed using ImageStation Automatic Triangulation (ISAT).
- ABGPS/IMU data and ground control points will be integrated to enhance horizontal and vertical accuracy.
- Imagery will be orthorectified using a DEM derived from the classified LiDAR ground surface.

- Seamlines will be manually refined during the mosaicking stage to ensure seamless tile edges and consistent tone across the project area. All artifacts or anomalies will be corrected during post-processing.

LiDAR Processing

- Raw LiDAR swaths will be calibrated and aligned for relative accuracy.
- The data will be tiled and classified using automated macros, followed by manual QC to resolve any classification errors or anomalies.

LiDAR Derived Products

- DEM (bare-earth surface) will be generated in GeoTIFF format using classified ground points.
- One-foot (1') contour data will be generated from the classified LiDAR ground surface and delivered in AutoCAD DXF and ESRI feature class formats, in accordance with the RFP.

GIS Features

- DMI will collect and/or update existing GIS feature data utilizing combination of stereo compilation (imagery and LiDAR intensity) and automated feature extraction tools.
- Regardless of the method used, final feature data will be checked and corrected using ortho-imagery as a backdrop.

Accuracy and Reporting

- DMI's QA/QC process follows ASPRS and USGS guidelines for accuracy validation.
- Our team performs visual and statistical checks on all datasets—including classification accuracy, alignment, and radiometric consistency. Each deliverable undergoes independent review to confirm compliance with partners' technical specifications and contract standards.
- With project completion DMI will prepare a Project and Accuracy report detailing all accuracy results and project steps implemented for production

2.3.) Schedule and Risk Management

- Data acquisition planned within the Summer 2026 window with final delivery to be completed by end of **October 2026.**
- Schedule flexibility to address weather and wildfire smoke conditions
- Contingency planning and re-flight strategies incorporated
- Proven coordination approach for multi-agency stakeholders

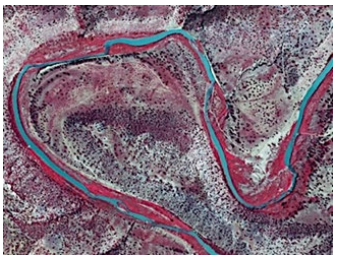
2.4.) Why DMI

- More than 37 years of geospatial mapping experience
- Successful delivery of the Town's 2021 imagery and LiDAR project
- Extensive experience delivering successful aerial imagery and LiDAR projects in complex mountainous and forested environments.
- Experienced team of certified photogrammetrists, licensed surveyors, pilots, and GIS professionals
- In-house aircraft, sensors, processing systems, and dedicated QA/QC staff.

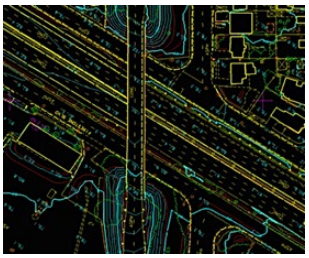
Section 3.) Company Overview

DMI excels in wide-area imagery, LiDAR, and mapping projects, consistently delivering quality results on time and within budget across the United States. Based in Orange County, DMI is a woman-owned California Corporation, certified by the State of California as a WBE, MBE, and SBE, with 37 years of expertise in aerial photography, digital photogrammetry, LiDAR capture and processing, digital orthophotography, topographic and planimetric mapping, and related services.

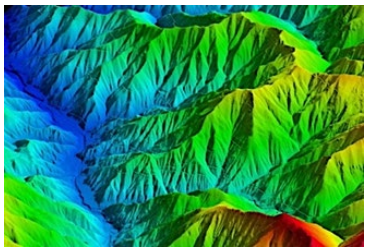
Office Locations: 21062 Brookhurst Street, Suite 101 Huntington Beach, CA 92646 **Flight Operations Hangar Location:** 7000 Merrill Avenue, Hangar 60 (PO Box 84) Chino, CA 91710 **Telephone/Fax:** (P) 714-968-5459 (F) 714-968-2429 **President, CEO:** Liliana Aliyazicioglu **VP, PLS** Dennis Dillman **CFO. Sr. Project Manager:** Gencaga (Gen) Aliyazicioglu	**Our Services:** • Photogrammetric Mapping • Digital Orthophotography • Digital Imagery Acquisition and Processing • LiDAR Acquisition and Processing • Photogrammetric Scanning and Printing • Data Registration • GIS Products • Oblique Imagery • Map Graphics Production • Aerial Triangulation / Digital Terrain Model / Digital Elevation Model • Airborne GPS / Remote Sensing • Land Surveying



USDA



Caltrans



USGS & USFS

Digital Mapping, Inc. (DMI) will perform all work in-house and will not utilize subcontractors for this project. DMI's team possesses the expertise, equipment, and resources necessary to meet all project requirements without the need for external subcontractors.

3.1.) Project Manager and support team

Digital Mapping, Inc. (DMI) has assembled a highly qualified project team to successfully execute this project. Under the direct supervision of Gencaga (Gen) Aliyazicioglu, a Certified Photogrammetrist, the team brings extensive expertise across all phases of aerial imagery and LiDAR acquisition, processing, and delivery.

DMI's staff includes experienced pilots, Professional Land Surveyors (PLS), Certified Photogrammetrists (CP), GIS professionals, orthophoto and LiDAR technicians, computer programmers, and engineers. This multidisciplinary team possesses the technical knowledge, operational capability, and quality assurance expertise necessary to meet the project requirements and deliver accurate, consistent, and reliable geospatial data products.

3.1.i.) Project Manager

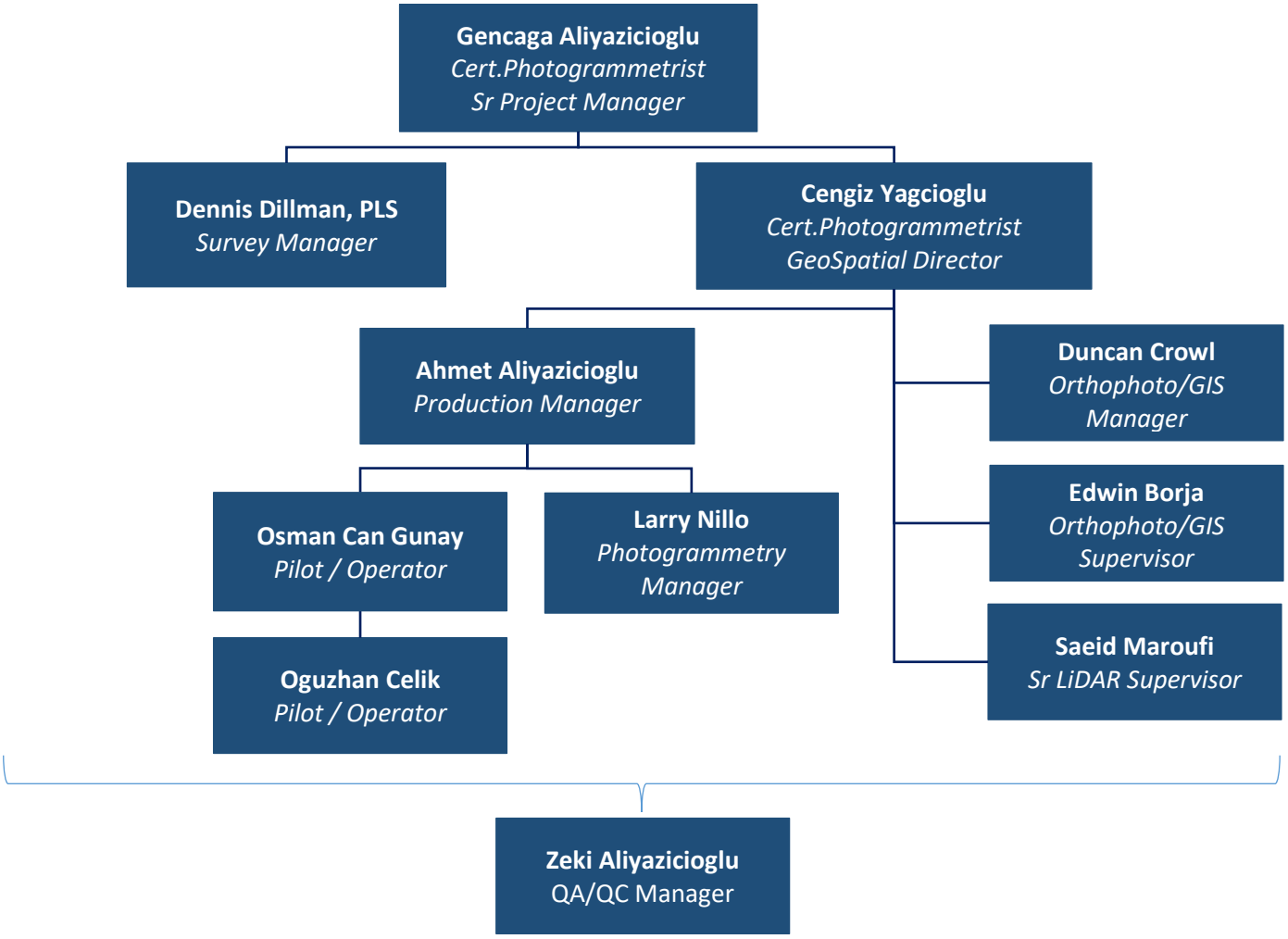
Mr. Gencaga (Gen) Aliyazicioglu, a Certified Photogrammetrist with over 45 years of photogrammetric and geospatial experience, will serve as the Project Manager.

Gencaga (Gen) Aliyazicioglu
Certified Photogrammetrist (#R969CP) | CFO | Sr. Project Manager
Phone: (714) 968 5459, Cell:(714) 448 7534, Email: gen@admap.com

3.1.ii.) Experience and qualifications of key personnel

Name	Role	Experience (Year)	License / Registration	Workload (Current)	Effort (project)
Gencaga (Gen) Aliyazicioglu	Project Manager	49	ASPRS Certified Photogrammetrist (#R969CP)	40%	15%
Cengiz Yagcioglu	GeoSpatial Director	22	ASPRS Certified Photogrammetrist (#CP1676)	25%	30%
Dennis Dillman	Project Surveyor	60	California Registered Land Surveyor (5424)	30%	10%
Ahmet Aliyazicioglu	Production Manager	32		30%	20%
Saeid Maroufi	Sr LiDAR Supervisor	20		20%	30%
Duncan Crowl	Orthophoto / GIS Manager	34		20%	20%
Larry Nillo	Photogrammetry Manager	25		20%	20%
Edwin Borja	Orthophoto / GIS Supervisor	14		20%	30%
Zeki Aliyazicioglu	QA/QC Manager	21		20%	20%
Osman Can Gunay	Pilot / Sensor Operator	6		20%	50%
Oguzhan Celik	Pilot / Sensor Operator	6		20%	50%

3.1.iii.) Organization Chart



Staff Resources		
Certified Photogrammetrist: 2	Orthophoto Processing: 4	Pilot / Operator: 2
Compilers: 2	LiDAR Processing: 2	Admin: 2

3.1.iv.) **Key Personnel Resumes**

Gencaga (Gen) Aliyazicioglu | Sr. Project Manager / DMI

Education:
BS in Photogrammetric Engineering (1972)
Ohio State University

Registration:
Certified Photogrammetrist (No: 969CP)

Professional Affiliations:
ASPRS, MAPSS

Years with DMI:
37

Years total:
50

As a Certified Photogrammetrist Mr. Aliyazicioglu has extensive experience with all aspects of digital aerial mapping starting with the project management, flight planning, ground control frameworks, photogrammetry, post-processing, aerial triangulation, ortho-production, LiDAR data collection and processing, GIS, and QA/QC.

Project Experience / Role:

- **Aerial Imagery Services for Maricopa County (AZ) – (2022-2024)**
  0.25' and 0.8' resolution orthophotography services for Maricopa County covering 11,268 sq miles (three cycles) and QL1 / QL0 LiDAR services multiple cities / *Project Manager*
- **City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing (2024)**
  3 Inch GSD 4 Band orthophotos, QL1 classified and colorized LiDAR, oblique imagery covering 20 sq miles / *Project Manager*
- **Kern County – Aerial Imagery Project (CA) – (2024)**
  6 Band 6 Inch resolution digital orthophotos for Kern County covering 9522 sq miles / *Project Manager*
- **Pima Association of Governments Regional Orthophotography (AZ) – (2024)**
  0.5' resolution 4 Band orthophotography services for PAG covering 3,391 sq miles / *Project Manager*
- **Digital Orthophotography Services for Mojave Water Agency (CA) – (2021-2024)**
  1 foot resolution 4 Band orthophotography covering 3,700 sq miles (four cycles) / *Project Manager*
- Digital Orthophotography and LiDAR Services for Sacramento Area Council of Governments (CA) – (2022)
  3 inch resolution orthophotography and QL1 LiDAR services covering 3,000 sq miles / *Project Manager*
- **Digital Orthophotography Services for SNWA (NV) – (2022)**
  3 inch resolution 4 Band orthophotography covering 820 sq miles / *Project Manager*
- **Lake Tahoe and Town of Truckee – (CA, NV) – (2022)**
  3 inch and 1 Inch orthophotography and QL1 LiDAR processing covering 188 sq miles / *Project Manager*
- **San Bernardino National Forest Aerial Imagery and LiDAR – (CA) – (2022)**
  3 inch resolution 4 Band orthophotography and QL1 LiDAR dataset covering 1,000 sq mile / *Project Manager*
- **San Bernardino National Forest Aerial Imagery and LiDAR Acquisition (2020-2021)**
  3 inch resolution digital orthophotography and QL1 LiDAR services for San Bernardino Valley Municipal Water District covering approximately 1000 sq miles of San Bernardino National Forest Area. / *Project Manager*

Cengiz YAGCIOGLU | Geospatial Director / DMI

Education:
BS in Mathematics (1999), Koc University
MBA (2003), University of Southern California

Registration:
Certified Photogrammetrist (No: CP1676)

Professional Affiliations:
ASPRS, MAPPS

Years with DMI:
19

Years total:
23

Mr. Yagcioglu is a GeoSpatial Director with over 15 years of experience in all geospatial services and currently oversees DMI's geospatial production. As a certified photogrammetrist, he possesses comprehensive expertise in all aspects of geospatial data processing and particularly excels in LiDAR datasets, with in-depth knowledge of USGS LiDAR base specifications and industry standards.

Project Experience / Role:

- **Aerial Imagery Services for Maricopa County (AZ) – (2022-2024)**
  0.25' and 0.8' resolution orthophotography services for Maricopa County covering 11,268 sq miles (three cycles) and QL1 / QL0 LiDAR services multiple cities / *Geospatial Director*
- **City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing (2024)**
  3 Inch GSD 4 Band orthophotos, QL1 classified and colorized LiDAR, oblique imagery covering 20 sq miles / *Geospatial Director.*
- **Kern County – Aerial Imagery Project (CA) – (2024)**
  6 Band 6 Inch resolution digital orthophotos for Kern County covering 9522 sq miles / *Project Coordinator*
- **Pima Association of Governments Regional Orthophotography (AZ) – (2024)**
  0.5' resolution 4 Band orthophotography services for PAG covering 3,391 sq miles / *Project Coordinator*
- **Digital Orthophotography Services for Mojave Water Agency (CA) – (2021-2024)**
  1 foot resolution 4 Band orthophotography covering 3,700 sq miles (four cycles) / *Project Coordinator*
- Digital Orthophotography and LiDAR Services for Sacramento Area Council of Governments (CA) – (2022)
  3 inch resolution orthophotography and QL1 LiDAR services covering 3,000 sq miles / *LiDAR Director*
- **Digital Orthophotography Services for SNWA (NV) – (2022)**
  3 inch resolution 4 Band orthophotography covering 820 sq miles / *Project Coordinator*
- **Lake Tahoe and Town of Truckee – (CA, NV) – (2022)**
  3 inch and 1 Inch orthophotography and QL1 LiDAR processing covering 188 sq miles / *LiDAR Director*
- **San Bernardino National Forest Aerial Imagery and LiDAR – (CA) – (2022)**
  3 inch resolution 4 Band orthophotography and QL1 LiDAR dataset covering 1,000 sq mile / *LiDAR Director*
- **San Bernardino National Forest Aerial Imagery and LiDAR Acquisition (2020-2021)**
  3 inch resolution digital orthophotography and QL1 LiDAR services for San Bernardino Valley Municipal Water District covering approximately 1000 sq miles of San Bernardino National Forest Area. / *LiDAR Director*

Dennis Dillman | PLS, Project Surveyor / DMI

Education:
Land Surveying (1983)
San Bernardino Valley College

Registration:
Professional Land Surveyor, CA (#5424)

Professional Affiliations:
ASPRS

Years with DMI:
37

Years total:
61

Mr. Dillman is a Licensed Professional Land Surveyor in California, bringing over 60 years of extensive experience in land surveying. Since the founding of DMI in 1987, Mr. Dillman has been an integral part of the company. Throughout his career, he has successfully completed a wide range of projects, covering all aspects of land surveying. His expertise, strengthened by his hands-on field experience and formal education, makes him a recognized authority in aerial mapping, topographic surveys, and boundary surveys.

Project Experience / Role:

- **Aerial Imagery Services for Maricopa County (AZ) – (2022-2024)**
  0.25' and 0.8' resolution orthophotography services for Maricopa County covering 11,268 sq miles (three cycles) and QL1 / QL0 LiDAR services for the City of Tempe and Gilbert / *Project Surveyor*
- **City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing (2024)**
  3 Inch GSD 4 Band orthophotos, QL1 classified and colorized LiDAR, oblique imagery covering 20 sq miles / *Project Surveyor*
- **Kern County – Aerial Imagery Project (CA) – (2024)**
  6 Band 6 Inch resolution digital orthophotos for Kern County covering 9522 sq miles / *Project Surveyor*
- **Pima Association of Governments Regional Orthophotography (AZ) – (2024)**
  0.5' resolution 4 Band orthophotography services for PAG covering 3,391 sq miles / *Project Surveyor*
- **Digital Orthophotography Services for Mojave Water Agency (CA) – (2021-2024)**
  1 foot resolution 4 Band orthophotography covering 3,700 sq miles (four cycles) / *Project Surveyor*
- Digital Orthophotography and LiDAR Services for Sacramento Area Council of Governments (CA) – (2022)
  3 inch resolution orthophotography and QL1 LiDAR services covering 3,000 sq miles / *Project Surveyor*
- **Digital Orthophotography Services for SNWA (NV) – (2022)**
  3 inch resolution 4 Band orthophotography covering 820 sq miles / *Project Surveyor*
- **Prado Basin and Upper Santa Ana Watershed Aerial Imagery for OCWD – (2019, 2020 and 2022)**
  3" pixel resolution 4 band digital orthophoto imagery of Prado Basin and Upper Santa Ana Watershed area covering 84 miles / *Project Surveyor*
- **Lake Tahoe and Town of Truckee – (CA, NV) – (2022)**
  3 inch and 1 Inch orthophotography and QL1 LiDAR processing covering 188 sq miles / *Project Surveyor*
- **San Bernardino National Forest Aerial Imagery and LiDAR – (CA) – (2022)**
  3 inch resolution 4 Band orthophotography and QL1 LiDAR dataset covering 1,000 sq mile / *Project Surveyor*

Duncan Crowl | Orthophotography and GIS Manager / DMI

Education:
BS in Geography (1982)
Professional Affiliations:
ASPRS

Years with DMI:
19

Years total:
36

Duncan Crowl has over 32 years of professional experience (12 years with DMI) (ASPRS Member '86) and is knowledgeable specifically with the photogrammetry and GIS industry. Mr. Crowl received his BS in Geography and Advanced Geotechnical Mapping and Geomatics from California State University Fullerton. He has operated a wide array of softcopy photogrammetry software and hardware systems. Most notably ImageStation, SoCET Set, ER Mapper, and Leica Photogrammetry Suite of products and solutions. His responsibilities include overall project administration, layout of photography and control, photogrammetry, DTM collection, GIS, CAD, digital and quality control quality assurance, and technical development of new technologies. Also, Mr. Crowl is responsible for ensuring all requirements are met with the highest quality and timely delivery.

Project Experience / Role:

- **Aerial Imagery Services for Maricopa County (AZ) – (2022-2024)**
  0.25' and 0.8' resolution orthophotography services for Maricopa County covering 11,268 sq miles (three cycles) and QL1 / QL0 LiDAR services for the City of Tempe and Gilbert / *GIS Manager*
- **City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing (2024)**
  3 Inch GSD 4 Band orthophotos, QL1 classified and colorized LiDAR, oblique imagery covering 20 sq miles / *GIS Manager.*
- **On-Call Aerial Surveying Services" for Orange County Public Works OCPW (2018 – ongoing)**
  multiple task orders involving aerial mapping, orthophotography, and LiDAR services for Orange County Public Works (OCPW) / *GIS Manager*
- **Kern County – Aerial Imagery Project (CA) – (2024)**
  6 Band 6 Inch resolution digital orthophotos for Kern County covering 9522 sq miles / *GIS Manager*
- **Pima Association of Governments Regional Orthophotography (AZ) – (2024)**
  0.5' resolution 4 Band orthophotography services for PAG covering 3,391 sq miles / *GIS Manager*
- **Digital Orthophotography Services for Mojave Water Agency (CA) – (2021-2024)**
  1 foot resolution 4 Band orthophotography covering 3,700 sq miles (four cycles) / *GIS Manager*
- Digital Orthophotography and LiDAR Services for Sacramento Area Council of Governments (CA) – (2022)
  3 inch resolution orthophotography and QL1 LiDAR services covering 3,000 sq miles / *GIS Manager*
- **Digital Orthophotography Services for SNWA (NV) – (2022)**
  3 inch resolution 4 Band orthophotography covering 820 sq miles / *GIS Manager*
- **Prado Basin and Upper Santa Ana Watershed Aerial Imagery for OCWD – (2019, 2020 and 2022)**
  3" pixel resolution 4 band digital orthophoto imagery of Prado Basin and Upper Santa Ana Watershed area covering 84 miles / *GIS Manager*

Ahmet Aliyazicioglu | Production Manager / DMI

Education:
Bachelor of Science / Mechanical Engineering
Professional Affiliations:
ASPRS

Years with DMI:
25

Years total:
32

DMI's production manager, Mr. Aliyazicioglu, is responsible for production scheduling and personnel quality training. He manages projects from post-calibration through delivery using LP 360, AutoCAD, Geocue, TerraScan, TerraModeler, and MicroStation software. His experience includes quality control and accuracy assessment of LiDAR data and the development of terrain products for GIS integration. Mr. Aliyazicioglu has successfully led LiDAR and GIS projects for various county, state, and federal government agencies.

Project Experience / Role:

- **Aerial Imagery Services for Maricopa County (AZ) – (2022-2024)**
  0.25' and 0.8' resolution orthophotography services for Maricopa County covering 11,268 sq miles (three cycles) and QL1 / QL0 LiDAR services for the City of Tempe and Gilbert / *Production Manager*
- **City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing (2024)**
  3 Inch GSD 4 Band orthophotos, QL1 classified and colorized LiDAR, oblique imagery covering 20 sq miles / *Production Manager*
- **On-Call Aerial Surveying Services" for Orange County Public Works OCPW (2018 – ongoing)**
  multiple task orders involving aerial mapping, orthophotography, and LiDAR services for Orange County Public Works (OCPW) / *Production Manager*
- **Kern County – Aerial Imagery Project (CA) – (2024)**
  6 Band 6 Inch resolution digital orthophotos for Kern County covering 9522 sq miles / *Production Manager*
- **Pima Association of Governments Regional Orthophotography (AZ) – (2024)**
  0.5' resolution 4 Band orthophotography services for PAG covering 3,391 sq miles / *Production Manager*
- **Digital Orthophotography Services for Mojave Water Agency (CA) – (2021-2024)**
  1 foot resolution 4 Band orthophotography covering 3,700 sq miles (four cycles) / *Production Manager*
- **Digital Orthophotography and LiDAR Services for Sacramento Area Council of Governments (CA) – (2022)**
  3 inch resolution orthophotography and QL1 LiDAR services covering 3,000 sq miles / *Production Manager*
- **Digital Orthophotography Services for SNWA (NV) – (2022)**
  3 inch resolution 4 Band orthophotography covering 820 sq miles / *Production Manager*
- **Prado Basin and Upper Santa Ana Watershed Aerial Imagery for OCWD – (2019, 2020 and 2022)**
  3" pixel resolution 4 band digital orthophoto imagery of Prado Basin and Upper Santa Ana Watershed area covering 84 miles / *Production Manager*

3.2.) Capabilities

3.2.i.) Airborne Capabilities

			
Leica DMC III Digital Mapping Camera	**Leica DMC IIe230 Digital Mapping Camera**	**Leica DMC I Digital Mapping Camera**	**Optech ALTM Galaxy T1000 LiDAR Sensor**
			
Optech Gemini LiDAR Sensor	**Chieftain Navajo**	**Beechcraft Bonanza**	**Geranimo**

3.2.ii.) Software and Equipment

DMI utilizes industry-standard orthophotography, photogrammetry, and LiDAR hardware and software to support all phases of data acquisition, processing, quality control, and delivery. DMI's integrated suite of technical and operational systems ensures that appropriate tools and resources are applied efficiently and consistently to meet the requirements of this contract.

Soft-Copy Workstations - Digital Imaging and Photogrammetry	
Z/I Image Station	12
KLT Atlas	10
VR2/VR1 Cardinal Systems	10
Orthophotography Workstations	
Correction & Editing	17 Workstations
Mosaics & Tiling	4 Servers
Orthorectification	4 Servers
LiDAR Workstations	
Post Processing	6 Workstation – 4 servers
Calibration / Classification	8 Workstations
Software	
Aerial Triangulation:	ImageStation ISAT, HxMap
Orthophoto:	ImageStation OrthoPro, HxMAP
LiDAR:	GeoCUE, Optech LMS, Terrasolid Softwares, LP360
Other:	LizardTech MrSID, ERDAS,
GIS:	ArcGIS Pro, Global Mapper, ER Mapper, GeoMedia Professional
CAD:	AutoCAD Civil 3D, Bentley MicroStation, Inroads, Openroads

3.2.iii.) **Acquisition specifications**

Imagery Acquisition Specs			
Imagery GSD	3”		
Altitude AGL (feet):	4,400’		
Camera System	Leica DMC-III Digital Mapping Camera		
Focal Length:	92 mm		
Imagery Bands and Bit rate:	4 Band (R,G,B, NIR), 8-bits per band		
Forward Overlap:	60%		
Side Overlap:	30%		
Solar Angle:	Minimum 40 degrees		
LiDAR Acquisition Specs			
Sensor	OPTECH ALTM Galaxy T1000 LiDAR sensor		
Flight Height	4,400’ AGL		
Laser PRF (kHz)	450	Planned Density (ppm^2)	12
Scan Pattern	Seesaw	Min Density (ppm^2)	8
Field of View (Degree):	38	Overlap	55%
Frequency (Hz):	78	Speed (knots)	130

Section 4.) Project Approach

4.1.) Project Management / Communication

Digital Mapping, Inc. (DMI) is committed to maintaining clear, consistent, and proactive communication throughout the project to ensure timely updates, effective issue resolution, and seamless coordination with the Town of Truckee and its partner agencies ("the partners"). DMI's structured project management approach ensures that all project tasks are executed efficiently while keeping the partners fully informed at each stage of the work.

Communication & Coordination

Weekly Calls and Project Updates:	• DMI will conduct weekly project meetings with the partners' project team to discuss progress, address any challenges, and outline upcoming tasks. • The initial kickoff meeting will establish the schedule and reporting format for these updates. • The Project Manager will lead these meetings and provide weekly status reports, summarizing completed tasks, challenges encountered, and projected timelines
Routine Issue Communication:	• The Project Manager will serve as the primary point of contact throughout the project. • Any concerns or issues will be addressed promptly through continuous coordination with the partners' project team. • If issues arise, DMI will work collaboratively with the partners to implement a corrective action plan, ensuring the project remains on track.
Internal Project Management Tools	• DMI utilizes an internally developed project management software to streamline workflows, optimize resource allocation, and enhance project transparency. This tool facilitates: • Creation of detailed project plans with assigned tasks and deadlines, ensuring all phases progress smoothly. • Real-time progress monitoring to track deliverables efficiently and provide up-to-date status reports. • Milestone tracking and issue resolution workflows for proactive adjustments to keep the project on schedule.

Weather Considerations & Risk Mitigation

- DMI has extensive experience managing weather-related challenges associated with aerial data acquisition.
- Aircraft and sensor resources will be strategically positioned near the project area to allow rapid mobilization when conditions are favorable.
- Continuous monitoring of weather and airspace conditions allows flight plans to be adjusted as needed to optimize data capture and maintain the overall project schedule.

4.2.) Data Capture and Delivery Schedule

DMI has the personnel, equipment, and technical capacity necessary to execute this project efficiently without disruption. Adequate staffing and resources have been planned to ensure timely completion of all project phases.

A preliminary schedule is provided below for the 3-inch resolution orthophotography and LiDAR option and is subject to final refinement following contract award and confirmation of selected deliverables.

Task Description	Number of Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Ground Surveying	1																				
Imagery and LiDAR Acquisition	2																				
Data Processing																					
Raw Imagery Process	3																				
LiDAR Swath Calibration	3																				
Aerial Triangulation	2																				
LiDAR Bare-earth classification	5																				
Ortho rectification	6																				
Ortho Mosaic / Tiling	6																				
Digital Elevation Model & Contours	3																				
GIS Feature update	9																				
Final Delivery																					

Preliminary Schedule Assumptions

- **Aerial Acquisition Window:** Summer 2026 (approximately a six-week period centered around the summer solstice)
- **Final Deliverables:** Planned to be by end of October 2026
- **Schedule Dependencies:** Weather conditions, wildfire smoke, and applicable flight restrictions
- **Past Performance:** DMI successfully completed the Town's 2021 imagery and LiDAR project within the required timeframe

Resource Allocation

Name	Resources Allocated
Aerial Acquisition	% 50
Imagery Processing	% 30
LiDAR Processing	% 30
DEM & Contours	% 30
GIS Features	% 30

DMI has pre-allocated sufficient resources to support all phases of the project. If unforeseen delays occur, additional resources may be deployed to maintain schedule commitments.

4.3.) Technical Approach

4.3.i.) Mobilization

1.) *Flight Planning*

DMI believes successful data acquisition starts with proper mission planning. DMI's mission planning team has years of experience in flight planning, resource allocation, and task scheduling necessary for this mission. This includes a step-by-step plan of the required flight lines to acquire the required datasets.

DMI utilizes the newly designed mission planning software Leica Mission Planning to implement and manage the aerial mission. This program is a comprehensive reporting, mission planning, and post-processing tool that provides DMI innovative solutions for our aerial processes. The utilization of this flight planning software allows us to view the project coverage area and the published flight lines in their appropriate coordinate system.

DMI will provide the partners with a proposed flight map to be used for the project during the kick off meeting. DMI will then make any adjustments requested. DMI's project manager will then finalize the flight plan in SHP or KMZ format during the pre-planning stages of the project. Prior to receiving our notice to proceed, DMI will provide the final flight plans to the partners for a final evaluation and approval.

2.) *Pre-Flight Preparation*

During pre-flight preparation, DMI ensures thorough planning to optimize data acquisition and minimize delays. Weather conditions are continuously monitored to determine the ideal flight window for capturing high-quality imagery and LiDAR data. Our pilots and project team stay updated on real-time weather changes, adjusting schedules as necessary to avoid adverse conditions. Additionally, DMI obtains all necessary flight permissions for restricted or controlled airspace, coordinating with relevant authorities to ensure full compliance with regulations. This proactive approach ensures safe, efficient flights and minimizes disruptions to the project timeline.

4.3.ii.) Survey / Controls

Airborne GPS and IMU technology will serve as the primary methods for geo-referencing; however, a ground control framework is essential to provide checkpoints and enhance the accuracy of the control solution. DMI will identify or target aerial control points and ground checkpoints as necessary. Where existing control data from previous projects is unavailable or cannot be recovered, new control points will be established. DMI prioritizes the use of photo-identifiable ground points whenever possible to ensure both efficiency and accuracy.

With over 40 years of experience, DMI's surveying team has extensive expertise in land surveying techniques across various industries and in providing data capture services for GIS users. DMI's Professional Land Surveyor (PLS) will collaborate with the project manager to carefully select the precise locations for ground control points and any required checkpoints. This strategic selection ensures optimal coverage and accuracy to support the geo-referencing process.

1.) *Targeting:*

All ground control points requiring targeting will be marked with materials of appropriate color and size to facilitate easy identification in aerial imagery. These targets will be designed for effective use in the aerial triangulation process.

2.) *GPS Data Collection:*

Static or fast-static survey observation methods will be employed using differential dual-frequency GPS units. These methods will provide highly accurate coordinates for the newly established points, ensuring precise integration into the project's geospatial framework.

3.) *Ground Control Report*

Once the QA/QC process is complete, DMI can provide a detailed survey report upon client request. The report will include the inventory of control points, survey methods, control point locations, and any CORS stations used for the project. If requested, the report can be delivered in PDF, Excel, or other preferred formats.

4.3.iii.) Data Collection

1.) *Aerial Data Acquisition*

Our acquisition crew will be mobilized from Chino Airport. Defined project limit will have a minimum buffer zone and our flight crew will collect the imagery data to the full range of the buffer zone. Data and products in the buffer will be tested for any quality control requirement. Prior to any acquisition, our crew will verify that the airborne sensor settings are set to acquire the required data. Also, our flight crew will operate the sensors during optimal atmospheric condition with prime PDOP condition (less than 3) and satellite network configuration greater than 6 active satellites (viewed by both stationary and roving receivers). DMI will not proceed with any acquisition until consent is received from the partners and all requirements prior to acquisition have been met.

2.) *Proposed Sensors:*

a.) Digital Mapping Camera (DMC III)


Leica DMC-III

DMI recognizes that timely acquisition of aerial imagery is one of the most critical phases of this project. Consistent and high-quality imagery is essential for producing accurate and dependable orthophotography. For this effort, DMI will utilize our Leica DMC III large-format digital camera system, engineered for efficient and high-resolution airborne mapping.

The DMC III employs a modern CMOS sensor specifically designed for aerial applications, providing over 25,000 pixels across-track in a single frame. This allows for wide-area coverage with fewer flight lines, increasing collection efficiency while maintaining image quality. The system enables simultaneous acquisition of RGB and Near-Infrared (NIR) imagery, supporting both standard and CIR orthophoto products.

Thanks to its CMOS-based architecture, the DMC III provides excellent image clarity with reduced noise, minimal blooming, and a high dynamic range of 78 dB. Mechanical forward motion compensation (FMC) and a robust onboard storage capacity of up to 9.6 TB ensure reliable performance throughout extended acquisition missions, even in challenging flight conditions.

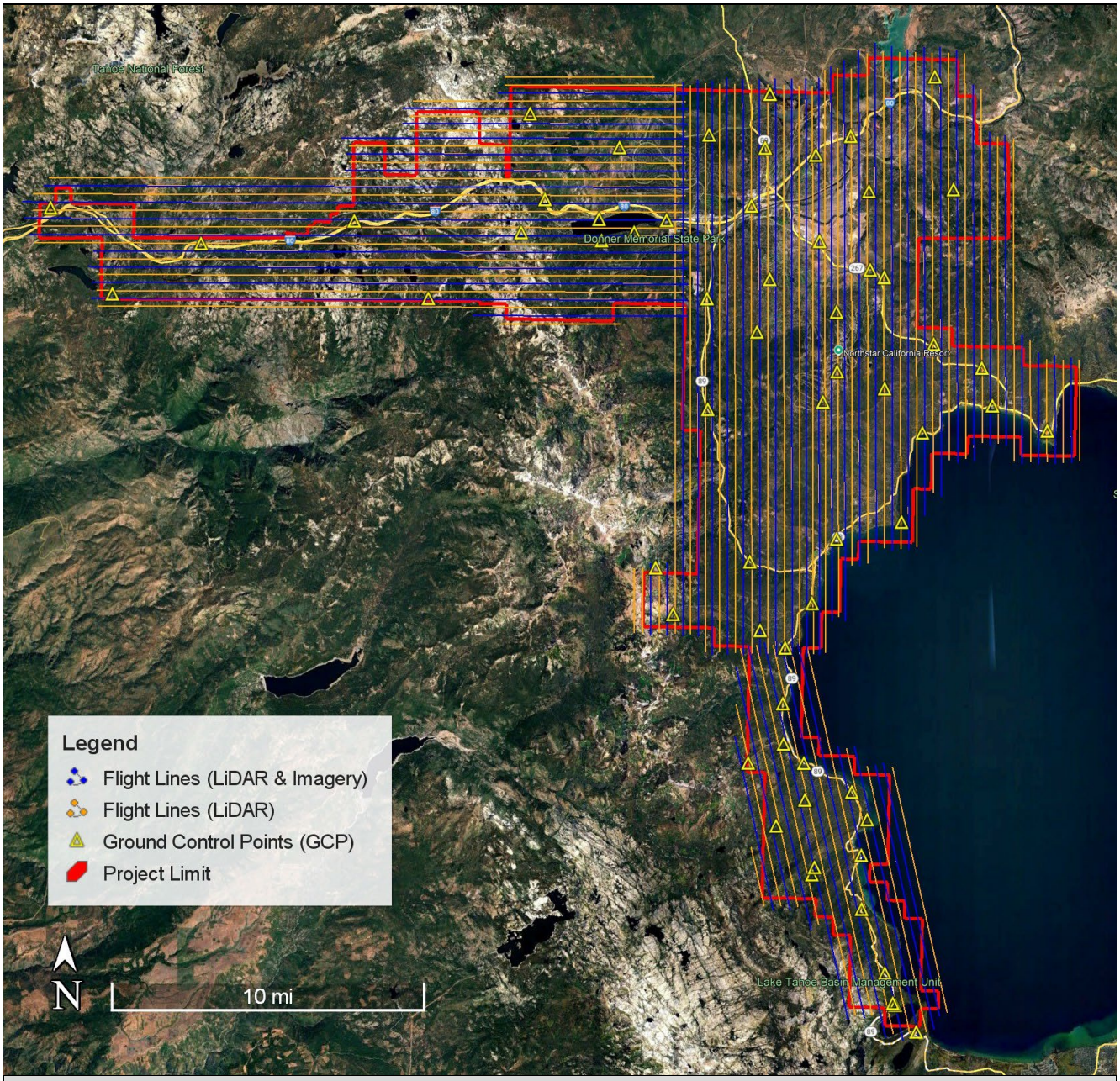
b.) Proposed LiDAR Sensors: Optech ALTM Galaxy T-1000

ALTM Galaxy is the ultimate wide-area sensor, with best-of-class density performance and collection efficiency. Galaxy is quite simply the smallest sensor on the market with the greatest performance capability, representing a giant leap ahead of its competitors in every way. Galaxy offers incredible collection efficiency and configuration flexibility with the highest data precision and accuracy possible.

- PulseTRAK technology enables a continuous operating envelope that can accommodate high-relief terrain with no data gaps or loss of density across multipulse transition zones.
- SwathTRAK technology maintains constant width flightlines for consistent data density in variable terrain and fewer flight lines.

It also features a 1MHz effective pulse rate, providing on-the-ground point density and efficiency formerly reserved for dual-beam sensors. Up to 8 returns per pulse are possible for increased vertical resolution of complex targets without the need for full waveform recording and processing. Industry-leading data precision and accuracy (< 0.03-0.20 m RMSE from 150-4700 m AGL) results in the highest-quality datasets possible.

3.) *Draft Flight Plan*



Town of Truckee | Draft Flight Plan
3" GSD Imagery and QL1 LiDAR (110 Flight lines, 60 GCP)

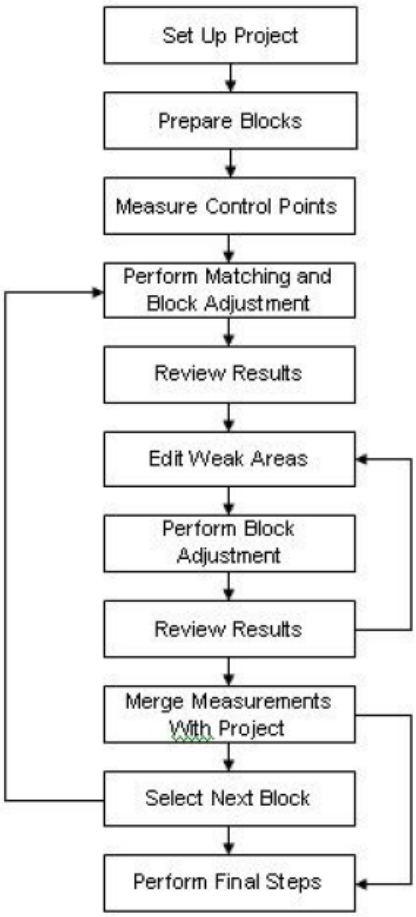
4.3.iv.) Imagery Processing

1.) *ABGPS/IMU Post-Processing*

Our technicians process the GPS data using our post-processing program, Applanix's POSPac, in order to calculate the high-accuracy kinematic solution trajectory of our aircrafts. The trajectory is combined with the IMU data for a position as a whole and location solution. Using geodetic algorithms, the finished solution is then combined to the location and orientation to develop the end result X, Y, Z position for each pulse return measured by the GPS receiver. We also use Applanix's SmartBase technology, which in turn joins a filter approach to combine the GPS receiver's raw data with IMU data. SmartBase allows us to process the raw observables from a minimum of six to a maximum of fifty unremittingly operational GPS reference stations, contiguous to the trajectory. SmartBase's quality control tool accomplishes a network modification on all the baselines and reference stations, we also run quality checks for single reference stations.

2.) *Aero Triangulation (AT)*

Once our technicians have completed post-processing the raw images and ABGS and IMU data, DMI will apply the latest digital photogrammetric methodology using our ISAT Intergraph Image Station for a complete a FAAAT to meet or exceed ASPRS and NSSDA accuracy standards. FAAAT is an improvement of conventional aerial triangulation whereas airborne GPS and IMU data are used or the direct measurement of the position and orientation of every exposure in the photogrammetric block.



DMI expects for a substantial number of points to be produced throughout the photo to increase accuracy through redundancy, this method of increased density of points, will at slightest, be equal to what can be attained with an analytical triangulation process. The data will result in highly reliable automatic tie point and pass point measurements because the directly observed exterior orientation data prevents divergence of the solution. The FAAAT process improves upon conventional or manual aerial triangulation by providing numerous automated and manual tie points and pass points. DMI will measure a minimum of 6 tie points and 15 pass points in each frame to tie single models together along a flight strip.

All selected pass point locations will lie on un-obscured level ground, wherever topographic conditions permit. Particular attention will be taken in consideration with the selection of natural tie points as pass points. Additional effort will be made to avoid the placement of pass points in areas of very bright background that could render a pass point unusable (not locatable) on the orthophoto.

By using the image association method, which is both automatic and manual, we will achieve final point sub-pixel measurements. By appointing each point a unique number, individual digital frames and frame locations are assigned a point. Each block will be continually joined together with the assortment of tie pass points along their individual borders with contiguous blocks. Visual examination of the density and distribution of the tie or pass points are performed and discrepancies will be reported for correction and adjustment. It is recognized that deviation from the ideal distribution may be necessary for photographs

covering bodies of water and areas of heavy ground cover. Tie points between strips will occur with a frequency of at least one per frame.

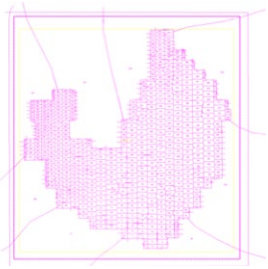
For increased accuracy of the fully assisted automatic aerial triangulation, the utilization of ABGPS and IMU technologies will assist by delivering highly precise exterior orientation parameters while delivering quality and dependable exterior orientation parameter results. All aerial triangulation tests will be performed by our technicians and endorsed by our project manager.

Aerial Triangulation Report

DMI will deliver an aerial triangulation report for every completed triangulation block; this will comprise of a debriefing of applied procedures, technologies, and results. The report will also contain duplicates of triangulation input and output, displaying triangulation point allowances, remaining errors, and general block RMSE. Included in the aerial triangulation report will also be the ABGPS locations, quality control checkpoint outcomes, certification of control points, POS exterior orientation data, survey points, control layout, and documentation of additional relevant data.

3.) *Digital Orthophotography*

a.) Ortho-Rectification



Seamline Creation

Orthorectification process involves utilizing automated DEM (or **newly** collected LiDAR), triangulated exterior orientations, aerial imagery data, calibrated camera model parameters, and controls. The utilization of ABGPS and IMU data will offer support for image orientation and positioning; minimizing the required number of ground control points and enabling the creation of an orthophoto. This process will assist in removing horizontal displacement produced by terrain height disparity, camera-based distortions, and the earth's curvature.

Imagery will be orthorectified using ImageStation's OrthoPro, which provides a 3D photogrammetric space. The rectified imagery will be color, contrast, and tone balanced; the imagery will also be edge-matched to adjacent images using manual image processing techniques. By choosing optimal positions of the rectified images, our technicians will combine images seamlessly with no apparent edges or breaks in feature geometry. To minimize tonal differences between combined areas, localized modification of the brightness values will be achieved as needed. The referenced orthophoto shall visually have better contrast and will be used for adjustment purposes.

Localized brightness values of the adjacent orthophoto will be fine-tuned to the reference orthophoto. The adjusted area will be restricted by tonal radiometric modification, which will not compromise the clarity, accuracy, and resolution of the orthophoto if possible. DMI will develop a digital orthophoto pilot area prior to commencement of the entire project.

b.) Mosaicing

Orthophoto Mosaic

Using ImageStation, OrthoPro, and Geomedia allows us to create complete mosaic by processing image blocks using two separate tonal corresponding functions. Each image is processed to remove any hotspots in the middle of the frame. DMI's technicians will then review each frame thoroughly and perform a histogram comparison process so that there is seamless tone throughout the mosaic images. After radiometric balancing, we will generate manual and automatic seam lines between source frames. In order to generate seamless orthophoto data that is fixed across the project area, seam lines need to be adjusted in order to deliver a successful transition from one image to another for the desired project tiling scheme. This can

be accomplished by utilizing a combined method of manual and automated practice for high-quality imagery. This method has proven to be cost effective while delivering excellent results. DMI will utilize automatic seamline creation for rural areas, which is ideal for producing mosaics. Our technicians analyze and manually alter seam lines that have features showing continuity, usually executing manual seam line placement in urban areas to deliver precision of high quality imagery. Tonal matching is accomplished by comparing pixel values in all the images areas, which contain the overlap. Our software reviews and modifies each image so that we are able to achieve an overall unison tone throughout the project. The image mosaics will be produced in such a manner so that adjacent mosaics can be viewed together simultaneously, and with no overlap areas, obscuring any portion of the adjacent mosaics.

4.3.v.) LIDAR Data Processing

1.) *LiDAR Data Post-Processing*

After the data has been acquired, our technicians process the LiDAR, ABGPS/IMU, and base station data by using our Optech and Aplanix programs. We then calculate the high-accuracy kinematic solution trajectory of the aircraft with the use of both these programs. This trajectory solution data is joined with the IMU data for a complete position and orientation solution. Using geodetic algorithms to position and derive the resulting X, Y, and Z positions for each pulse returned, the laser ranging data is consequently merged.

By merging post-processed aircraft position with altitude data, this creates a smoothed and best estimate of trajectory (SBET). Each laser point is connected with the SBET location to generate the development of the point cloud, which is the 3-D assortment of all the LiDAR sensor pulses. LiDAR data is collected as flight line strips in LAS format to assist in the analysis, filtering, and classification of the data. These LAS files are created in the specified datum and final projection. This data will be reviewed before proceeding with the classifications (ground).

2.) *LiDAR Post Processing Tools*

DMI's team will utilizes GeoCue, Optech, and Terrasolid LiDAR integration tools throughout the post-processing phase. These tools allow continuous workflow and project management during the entire project. Our technicians process the SBET-generated LiDAR flight lines, project boundary, and tile scheme.

DMI's technicians will launch Optech LMS to decode data, combine the trajectory, and range information to produce LAS point cloud. The point cloud is then examined to determine appropriate system calibration numbers on a mission-by-mission basis. The resulting calibrated flight line data are imported into a project utilizing TerraScan and our project management program GeoCue. Flight line by flight line, LAS files are tied to each other using TerraMatch. We then combine the various flight lines to create the project as whole, while breaking the dataset into manageable pieces. This process converts the dataset from geographic coordinates into the project coordinate system. Finally, LiDAR data is processed using TerraScan to remove vegetation and noise from the data. DMI's technicians will utilize TerraModel to create the surface data and DEM.

3.) *Flight Line Validation*

DMI's LiDAR technicians will review each flight line in detail for any potential errors that may have occurred during the processing phase. This process can be completed by using the LiDAR intensity image & color coded orthophoto images to assist in the QA/QC process. We will be able to separate and adjust vertical differences on different points between flight lines. DMI will be able to examine vertical overlap and color code to mark any difference between flight lines by using Geoue. The use of TerraMatch allows us to be able to determine and locate calibration points between flight lines. During this phase it allows DMI's technicians to complete flight line calibration adjustments. The final TerraMatch adjustments are imported and the LiDAR tiles are created in GeoCue. The use of the LiDAR intensity image is used as an added QA/QC step throughout this process.

4.) *Classifications*

Our unique, cost effective, and time efficient stratagem for processing LiDAR will allow for streamlined productivity and on-time-scheduled deliveries. Using commercial software, our technicians will set parameters to automatically classify different categories for various terrain types. Settings allow for adjustment of parameters to customize acquisition of multiple categories of low, medium, and high vegetation, as well as flight line overlap points, ground points and noise points.

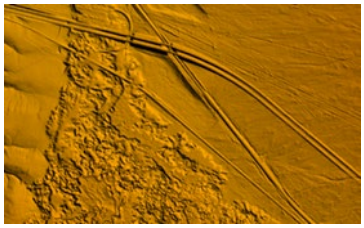
DMI's technicians also perform manual filtering to make sure important terrain data has not been filtered out. After tiles have been reviewed through our quality control process, we will complete one classification process to ensure the data is acceptable. Our LiDAR technicians use Geocue's TerraModeler, Terrascan, and ArcGIS. The following programs assist our technicians to develop base earth creation, classification of data and manual revisions. Our technicians create point classifications and characteristics such as iteration and terrain angles. With detailed development of custom macros, our team has created standards during the processing phase. LAS Point classification will be consistent across the entire project. DMI will ensure that there are no variations in the character, texture, or quality of the classification between tiles, swaths, lifts, or other non-natural division.

5.) *LAS Classifications Quality Control*

DMI's technicians utilize TerraScan and TerraModeler to manually review the LiDAR data to verify proper classification has been completed. The software assists with the final verification of the bare earth data set. DMI's technicians also perform manual classification techniques to provide an accurate data set. This process allows DMI to deliver a precise illustration of the ground.

4.3.vi.) Digital Elevation Model and Contours

1.) *Digital Elevation Model (DEM)*



The elevation modeling process will begin with the creation of a high-quality bare-earth Digital Elevation Model (DEM) derived from classified ground points within the LiDAR dataset. Non-ground features such as vegetation, buildings, and structures will be excluded through established classification workflows to produce an accurate representation of the underlying terrain. The resulting DEM will serve as the foundation for contour generation, hydrographic enforcement, and downstream GIS analyses.

2.) *Hydrographic Breaklines*

Hydrographic breaklines will be collected to accurately model changes in surface continuity and ensure proper terrain and hydrologic representation. Using LiDAR data as the primary source, breaklines will be compiled for applicable water features in accordance with project specifications and applicable standards.

Water bodies such as lakes and ponds exceeding the minimum size threshold, as well as qualifying streams and rivers, will be hydro-flattened by assigning a consistent elevation across each feature. Linear hydrographic features will be conditioned to support continuous downhill flow, and breaklines will be integrated seamlessly with surrounding terrain to preserve both topographic accuracy and visual quality.

Where necessary, breaklines may also be collected along terrain features such as banks, ridgelines, depressions, or other areas of abrupt elevation change when LiDAR mass points alone do not fully represent the surface within specification. The use of breaklines will be limited to locations where they provide clear benefit, as most terrain will be sufficiently modeled using classified LiDAR ground points alone.

3.) *Contours*

Contours will be generated from the finalized DEM at the specified interval. Automated contour generation tools will be used initially, followed by manual review and refinement to ensure accuracy, continuity, and cartographic quality.

Quality control procedures will include both automated checks and visual inspection to identify and correct issues such as contour artifacts, overlaps, or discontinuities. Final contours will be delivered in formats compatible with the Client's GIS and CAD environments.

4.3.vii.) GIS Features

Planimetric and GIS feature data will be compiled and updated using a combination of automated feature extraction techniques and manual editing. Automated processes will be used to identify candidate features and areas of change, while final feature compilation and validation will be performed through manual review using stereo imagery, orthophotos, and LiDAR data.

Stereo soft-copy photogrammetric workstations and industry-standard GIS and CAD tools will be used to digitize and refine features as required. All compiled GIS and planimetric data will adhere to the Client's established symbology, layer structure, and data standards to ensure consistency and seamless integration with existing datasets.

4.4.) QA/QC

4.4.i.) Orthophoto Quality Criteria

Geometric Accuracy	• Ensure all images meet or exceed project standards for geometric accuracy. • Verify that ground features (e.g., roads, railroads, bridges, buildings) show no distortion due to inadequate rectification.
Overall Image Quality	• Inspect for artifacts, blurring, stretching, blemishes, or noise. • Verify rectified imagery maintains or improves upon original image quality. • Ensure feature edges, seamlines, and radiometry match within specified tolerances. • Check for consistent color, tone, and contrast across the project area. • Document irregularities (e.g., warping, color balancing) using GIS tools.
Radiometry Balance	• Ensure smooth color transitions in mosaics, minimizing tonal differences. • Select seamlines to reduce radiometric inconsistencies.
Edge Matching	• Verify no excessive displacement along seamlines or image file boundaries. • Ensure well-defined linear features meet ASPRS standards.
Bridges and Overpasses:	• Accurately orthorectify bridges and overpasses to prevent offsetting or drooping. • Maintain correct ground location and geometry using control points as needed.
Feature Lean & Buildings	• Minimize building lean and radial distortion by utilizing the image center. • Increase overlap (if selected) when necessary to reduce shadowing and inconsistencies.

4.4.ii.) Quality Control Plan (QCP)

Our proven methods and extensive experience ensure that all project requirements, schedules, and deliverables are met with full satisfaction. DMI integrates comprehensive quality control methods throughout the production process to review and guarantee that the desired quality for the project is achieved. Our quality assurance process begins with a detailed quality control plan, which clearly outlines responsibilities, establishes sample control and documentation procedures, and specifies analytical methods, calibration techniques, and equipment maintenance routines. Additionally, it includes standardization methods and prescribes data assessment, reduction, and reporting procedures to ensure that every step of the project adheres to the highest standards.

Ground Surveying QA/QC
Establish a field observation schedule to ensure complete and timely data collection.
Verify all control and check points meet project design and contract requirements.
Repeat station occupations if GPS observations do not meet required accuracy standards.
Retain raw GPS data on receivers until data verification is complete.
Incorporate data from selected ground control frameworks where applicable.
Process GPS data the following day; re-observe if inconsistencies are identified.
Perform free and constrained horizontal and vertical adjustments to meet accuracy requirements.
Back up all digital survey data, including GPS RINEX files, to secure storage daily.
Imagery Data Acquisition QA/QC
In-Flight QA/QC
Verify atmospheric conditions and ground visibility.
Confirm GNSS satellite geometry and PDOP values meet acquisition requirements.
Review sun-angle requirements prior to flight.
Confirm all ground control and check points are set and available.
Validate sensor configuration and system settings prior to takeoff.
In-Flight QA/QC
Monitor sensor performance and acquisition parameters throughout flight.
Review low-resolution imagery in real time to identify abnormalities or coverage gaps.
Post-Flight QA/QC
Review flight logs, image coverage, and overlap.
Verify photo scale and image quality meet project specifications.
Identify gaps or deficiencies and plan reflights if necessary.
LiDAR Acquisition QA/QC
Pre-Fligh QA/QC
Verify atmospheric conditions and visibility.
Confirm GNSS satellite geometry and PDOP values.
Verify all calibration, control, and check points (NVA/VVA) are in place.
Validate LiDAR sensor configuration prior to takeoff.
In-Fligh QA/QC
Monitor acquisition parameters and sensor performance.
Review real-time data for inconsistencies or dropouts; flag areas for reflight if needed.
Post-Fligh QA/QC
Verify data integrity and perform daily backups.
Inspect LiDAR swaths for noise, dropouts, gaps, and AOI coverage.
Confirm required point density is achieved.
Review flight logs to verify proper data capture.
Schedule reflights promptly using identical equipment and acquisition parameters when required.

Imagery Processing Steps QA/QC
Aerial Triangulation
Assign unique identifiers to all imagery to prevent duplication of control points.
Review residuals and triangulation statistics for systematic errors.
Verify alignment with project accuracy specifications using control and check points.
Evaluate RMSE values against project tolerances.
Document and correct any discrepancies prior to orthorectification.
Orthophotography
Verify consistent color balance and radiometric quality.
Perform histogram checks to confirm appropriate contrast and tonal range.
Inspect seamlines and mosaic transitions; manually refine where necessary.
Inspect for ortho artifacts such as smearing, warping, or DEM-related distortions.
Confirm positional accuracy meets project RMSE requirements.
Verify seamless tile edge alignment and radiometric consistency.
Confirm proper alignment of roads, buildings, and other prominent features.
Verify DEM alignment and scale compatibility.
LiDAR Processing Steps QA/QC
LiDAR Data Calibration
Verify GPS/IMU accuracy using solution graphs.
Verify point density using automated tools and density rasters.
Validate relative accuracy using RMSE and swath difference rasters.
Ensure noise points are classified correctly.
Verify GPS standard time settings.
Confirm correct projection, datum, and units.
Verify absolute accuracy using calibration and check points (NVA/VVA).
LiDAR Point Classification
LiDAR Point Classification
Verify complete project coverage and tile integrity.
Review automated classification results and correct misclassifications.
Verify class codes, flags, overlap, and withheld points per USGS standards.
Confirm ground surface continuity and required point density.
Validate absolute accuracy using check points.
LiDAR Point Classification (Optional: powerline)
Verify accurate classification of poles, wires, and structures.
Inspect files individually using standardized QA/QC checklists.
Verify Points of Attachment (POAs) and classification levels.
Confirm continuity of wire networks with no gaps or breaks.
Digital Elevation Model QA/QC
Perform visual inspections using hillshades to identify artifacts or misclassification.
Verify complete coverage and correct tiling scheme.
Confirm hydro-flattening where required.
Ensure seamless transitions across tile boundaries.
Verify vertical accuracy against check points (NVA/VVA).
Inspect for over-smoothing or terrain loss.
Confirm compliance with USGS and project specifications.
Verify DEM properties (CRS, resolution, extents, compression).
Load DEMs into Global Mapper to confirm coverage and data integrity.
Correct identified issues and regenerate DEMs as needed.
Breaklines (QA/QC)
Breaklines (General)
Perform completeness, variance, and automated QA/QC checks per block.
Verify consistent feature capture across tile boundaries.
Confirm horizontal and vertical placement accuracy.

Verify Z-value consistency and natural terrain flow.
Ensure proper attribution and labeling.
Validate hydrologic flow direction.
Remove redundant or overlapping breaklines.
Breaklines (hydro-Flattening) - Optional
Verify completeness of hydrographic features.
Inspect intensity imagery for missing features.
Confirm horizontal and vertical placement accuracy.
Ensure water features maintain a single elevation.
Verify downstream flow continuity.
Confirm seamless transitions across tile boundaries.
Validate attribution per USGS LBS standards.
Intensity Images
Verify histogram normalization and dynamic range.
Ensure consistency across tiles with no visible seams.
Inspect for artifacts or distortions.
Verify projection, format, and coverage completeness.
Planimetric Data QA/QC
Stereo Compilation Method:
Review project specifications with compilation staff prior to production.
Calibrate stereo instruments regularly.
Generate and review stereo model setup reports.
Vector Data QA/QC:
Verify completeness of all required features.
Confirm proper snapping, topology, and layer assignment.
Validate positional accuracy using orthophotos as a backdrop.
Ensure correct feature representation and spatial relationships.
Final Delivery QA/QC
Confirm completion of all prior QA/QC steps.
Verify:
Correct coordinate system
Accurate file formats and headers
Complete and compliant metadata
Confirm tiling and naming conventions.
Verify file integrity and accessibility.
Ensure consistency across all datasets (orthos, LiDAR, DEMs, vectors).

4.5.) Deliverables

Deliverables	
Aerial Data Acquisition	• Exposure Points / Flight Lines and Swaths • Flight Reports
Ground Surveying	• Ground Control Point Locations and Project Control Report
Aerial Triangulation	• Aerial Triangulation Report (pdf)
Orthophotography	• Uncompressed 3-inch 4-band (NIR, R, G, B) Imagery in GeoTIFF format w/ .tfw files ArcGIS File Geodatabase Raster Dataset • Seamless orthophoto mosaic dataset in the requested format
LiDAR Dataset	• USGS QL1 Classified LiDAR point cloud data in LAS format (v1.4) • USGS QL1 Bare-earth (ground) filtered LiDAR point cloud in LAS format (v1.4) • Digital Elevation Model (DEM) in GeoTIFF format • Contour data at 1-foot interval in AutoCAD DXF and ESRI feature class formats
GIS Features	• File Geodatabase containing the pavement, buildings, and water feature classes
Other	• Project and Accuracy Report • Metadata
All deliverables will meet specifications set forth in the RFP	

Delivery Method: External hard drive and/or digital file transfer.

4.6.) Optional Deliverables

In addition to the base project deliverables, Digital Mapping, Inc. (DMI) also proposes optional orthophotography products at 2-inch and 1-inch resolution, if requested.

4.7.) Contingency Plan

4.7.i.) Risk Management

Item	Event	Procedure / Mitigation Strategy
Aerial Acquisition	Flight Restrictions	• Pre-flight coordination with FAA and local airspace authorities. • Daily communication for air traffic updates and NOTAMs. • Contingency flight planning for alternative flight windows.
	Weather Delays	• Daily monitoring of weather forecasts. • Standby at the airport for immediate deployment when conditions improve. • Buffer time is built into the project schedule to accommodate delays
	Aircraft Availability	• Deploy backup aircraft if the primary aircraft is unavailable. • Regular maintenance checks to minimize unexpected issues.
	Wildfire Smoke / Reduced Visibility	• Continuous monitoring of wildfire activity, smoke forecasts, and visibility conditions using FAA advisories and regional fire monitoring resources. • Adjustment of daily flight schedules to avoid periods of excessive smoke and reduced visibility that could impact imagery radiometry or LiDAR data quality. • Flexible deployment of aircraft to alternate project areas or rescheduling of flights within the approved acquisition window as conditions allow. • Coordination with the partners to communicate impacts and revised acquisition plans, if required.
Accuracy & Data Quality	Ground Control Errors	• Ground surveying will be performed by a Licensed Land Surveyor. • Validation against control points to ensure accuracy.
	Processing Errors	• Automated and manual QA/QC checks at each processing stage. • ASPRS Certified Photogrammetrists will review and approve processing workflows and final deliverables.
Schedule & Resources	Resource Availability	• DMI has already allocated necessary resources for this project. • Staffing plan ensures backup personnel are available.
	Unexpected Delays:	• Additional resources can be allocated to recover from schedule setbacks. • Extended work shifts if needed to meet deadlines.
Data Security & Delivery	Data Loss or Corruption	• Daily backups of acquired data to secure storage. • Cloud-based redundancy to prevent data loss
	Delayed Delivery:	• Incremental deliveries of processed data to the partners to ensure timely access. • Dedicated personnel for final data validation and packaging

Section 5.) Relevant Project Experience

Digital Mapping, Inc. (DMI) has extensive experience delivering high-resolution aerial imagery and LiDAR datasets across large geographic regions, including projects for multi-agency consortiums, municipalities, utilities, and state agencies. DMI's team brings proven capabilities in managing complex deliverables, coordinating across multiple jurisdictions, and meeting strict accuracy, resolution, and delivery requirements.

5.1.) Mountainous terrain experience

In recent years, DMI has acquired and delivered aerial imagery and LiDAR datasets across mountainous, heavily forested, and high-relief environments. Representative projects include the following:

- **2025 - Town of Mammoth Lakes – Aerial Imagery**
  2 Inch resolution four-band orthophotos covering 44 sq miles
- **2025 - County of San Bernardino – Bridge and Line Fires - Aerial Imagery and LiDAR**
  3-inch resolution four-band orthophotography; USGS QL2 and QL3 LiDAR datasets covering approximately 210 square miles
- **2025 - San Bernardino Valley Municipal Water District – Line Fire LiDAR Acquisition and Processing**
  USGS QL1 LiDAR dataset covering approximately 225 square miles
- **2024 - City of Aspen – Aerial Imagery, LiDAR Acquisition and Processing**
  3-inch resolution four-band orthophotography; USGS QL1 classified and colorized LiDAR point cloud; oblique imagery covering approximately 20 square miles
- **2021 - Digital Orthophotography and LiDAR Services for the Town of Truckee and partners (CA, NV)**
  1-inch and 3-inch resolution orthophotography; USGS QL1 LiDAR dataset; planimetric feature extraction covering approximately 188 square miles
- **2020 - Aerial Imagery and LiDAR Acquisition for San Bernardino National Forest**
  3-inch resolution four-band orthophotography; USGS QL1 datasets covering approximately 1,000 square miles
- **2019 - County of Tuolumne and Stanislaus National Forest Lidar Acquisition Project**
  USGS QL1 LiDAR dataset covering approximately 2500 square miles of County of Tuolumne and Stanislaus National Forest.

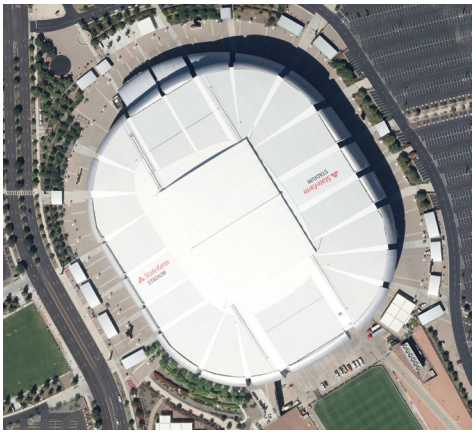
5.2.) Other Similar Projects

- **2025 - County of San Bernardino –Countywide Aerial Imagery Project**
  1 foot resolution 4 Band orthophotos covering 4800 sq miles
- **2025 – City of San Clemente– Aerial Data Collection Project**
  3 inch resolution 4 band orthophotos, QL1 LiDAR dataset and 1' contours covering 20 sq miles
- **2024 - Aerial Photography Services for Kern County (CA)**
  6 Inch resolution 4 Band orthophotos covering 9,522 sq miles
- **2023 - Pima Association of Governments 2023 Regional Orthophotography (AZ)**
  6 inch resolution 4 Band orthophotos covering 3,391 sq miles
- **2020 -LiDAR and Orthophoto Data Collection for Confederated Tribes of the Umatilla Indian Reservation**
  6 inch 4 Band orthophotography and QL1 LiDAR dataset covering 740 sq miles in Oregon

5.3.) Project Examples / References

Project 1. ***Multi-Year Aerial Imagery Services for Maricopa County, AZ (2022-2025)***

Digital Mapping, Inc. (DMI) was contracted by Maricopa County in 2022 to conduct **three annual aerial imagery** projects for the County and its consortium partners. In 2025, the contract was renewed for an **additional five-year term**. The imagery datasets include 0.25-foot GSD three-band orthophotography for urban areas, 0.8-foot GSD three-band orthophotography for rural areas, and four-band orthophotography for select partner agencies.



StateFarm Stadium

Project scope varied annually based on partner agency requirements. The initial flight, conducted in Fall 2022, covered approximately 6,600 square miles. Following the successful completion of the 2022 effort, the project area expanded to approximately **11,250** square miles starting 2023.

In addition to orthophotography, DMI delivered multiple LiDAR datasets and contour products to consortium partners, including **QL0 LiDAR** and contours for the City of Tempe (2023), **QL1 LiDAR** and contours for the City of Gilbert (2023), **QL1 LiDAR** and contours for the City of Chandler (2024), and **QL0 LiDAR** and contours for the City of Phoenix (2025).

Deliverables:

- 0.25-foot GSD and 0.8-foot GSD four-band and three-band digital orthophoto tiles in GeoTIFF format
- LiDAR datasets including classified point clouds, digital elevation models (DEMs), and one-foot contours (for LiDAR project areas only)

Key Factors:

- Execution of aerial data acquisition within restricted and complex airspace, including daily coordination and required permissions (e.g., Phoenix metropolitan airport airspace)
- Flexibility to support over 20 partner agencies, including multiple datasets, varying specifications, and staggered delivery schedules

Outcome/Impact:

High-quality datasets were delivered on schedule and met the technical requirements of participating agencies. The data products continue to support regional GIS operations, infrastructure planning, and asset management efforts across Maricopa County and its partner jurisdictions.

Client Name	Maricopa County, AZ	Email	kacie.baker@maricopa.gov
Contact Name / Title	Kacie Baker, GISP Interim GIS Director	Phone	602-320-9819
Relevant Project	Aerial Imagery Services for Maricopa County, AZ (2022-2025)	Client Address	301 S. 4th Ave Phoenix, AZ 85003

Project 2. Digital Aerial Imagery and LiDAR Services for Las Vegas Valley (2025)

Digital Mapping, Inc. (DMI) was contracted by the Southern Nevada Water Authority (SNWA) and the Las Vegas Valley Water District to acquire four-band (R, G, B, NIR) aerial imagery at a 3-inch ground sample distance (GSD) and USGS QL1 LiDAR dataset covering approximately 570 square miles of the Las Vegas Valley.

DMI utilized Leica DMC-III and DMC IIe 230 large-format digital mapping cameras and an Optech Galaxy LiDAR sensor equipped with an integrated airborne GPS/IMU system for aerial data acquisition. SNWA provided 67 ground-based photo control points, including eight ghost points, to support softcopy aerial triangulation and LiDAR swath calibration. Aerial data acquisition was completed within eight days, and final deliverables were provided using a ¼-section tiling scheme with overlap, in accordance with project requirements.

Deliverables:

- 3-inch GSD Four-Band Digital Orthophotos
- QL1 Classified LiDAR point cloud in las format and DEM in GeoTIFF format

Key Factors:

- Conducting aerial flights in heavily trafficked commercial airspace

Client Name	Southern Nevada Water Authority	Email	megan.singleton@snwa.com
Contact Name / Title	Megan Singleton, PhD	Phone	702-862.3788
Relevant Project	Digital Aerial Imagery Services for Las Vegas Valley (2022)	Address	100 City Parkway, Suite 700 Las Vegas, NV 89106

Project 3. Mojave Water Agency 2024, 2023, 2022 and 2021 CIR Imagery San Bernardino County, CA

In 2021, Digital Mapping, Inc. (DMI) was contracted by the Mojave Water Agency to provide three annual orthophotography projects at 12-inch pixel resolution. For each flight cycle, DMI performed ground surveying, aerial imagery acquisition, and imagery processing services in support of the agency's mapping requirements.

The initial 2021 project area covered approximately 3,700 square miles of predominantly rural terrain across the western portion of San Bernardino County. Beginning in 2022, the project area expanded to approximately 5,346 square miles. In 2024, DMI was awarded a new contract to continue providing the same orthophotography services for an additional three-year term, reflecting the agency's continued confidence in DMI's performance and deliverables.

Deliverables:

- 12 inch GSD 4 Band Digital Orthophoto tiles in GeoTIFF format

Key Factors:

- Navigating mountainous terrain with steep elevation changes and conducting aerial flights in restricted airspaces with required permissions

Outcome/Impact:

The high-quality datasets were successfully delivered on time and met MWA's requirements for integration into their GIS system, providing a valuable resource to support the MWA's efforts to address the demands placed upon it as custodian of the adjudicated area as established by court order.

Client Name	Mojave Water Agency, CA	Email	resourcestrategies@usa.net
Contact Name / Title	Richard Schulman	Phone	(858) 735-7424
Relevant Project	CIR Imagery Services for Mojave Water Agency	Address	13846 Conference Center Drive, Apple Valley, CA 92307

Section 6.) Appendix

6.1.) Proof of Insurance

Sample certificates of insurance are attached on the following pages for reference. Upon notice of award, Digital Mapping, Inc. (DMI) will furnish the Town of Truckee with all required certificates of insurance in compliance with the RFP and contract requirements.

6.2.) Cost Proposal

The cost proposal is submitted separately in Excel (.xlsx) format as part of this submittal.

ITEMS	Area (sq miles)	Cost
Task 1. Mobilization	**272**	**$4,500.00**
Task 2. Orthophotography		
2.a. 3” pixel Orthophotos (4 Band)	**272**	**$44,950.00**
Task 3. Lidar Dataset		
3.a. QL1 LiDAR (Raw and Classified)	**272**	**$47,600.00**
3.b. DEM & 1’ Contours	**272**	**$9,800.00**
Task 4. Survey Control Network	**272**	**$4,500.00**
Task 5. GIS Feature Data		
5.a. Building Footprint (Polygon)	**272**	**$7,500.00**
5.b. Pavement Surface (Polygon)	**272**	**$8,500.00**
5.c. Water Surface (Polygon)	**272**	**$3,500.00**
TOTAL:		**$130,850.00**
6. Optional Pricing (Orthophoto Upgrade)		
6.a. 2” pixel Orthophotos (4 Band)	**272**	**$84,320.00**
6.b. 1” pixel Orthophotos (4 Band)	**272**	**$157,500.00**
6.c. Upgrade to 2" pixel Orthophotos (in addition to Item 2.a.)	**100**	**$33,000.00**
6.d. Upgrade to 1" pixel Orthophotos (in addition to Item 2.a or 6.a..)	**100**	**$60,000.00**