

4. Always Maintain the integrity of the barricade.
 5. Ensure the barricade is promptly removed once the hazard(s) have been abated.
- ii. Watchman/Flagman: An employee whose sole responsibility is to monitor the hazard area in lieu of or in addition to a barricade tape barrier to eliminate or minimize exposure of others to the hazard. Due to the potential transient nature of work activity, instructions from a watchman/flagman supersede that of posted barricade tape/signs.
- h. General work procedures involving barricade tape.
- i. Barricading areas where a hazard exists which could threaten the safety and health of employees entering an area shall be accomplished as follows:
 - ii. Contractors shall supply the required barricade tape for their jobs.
 - iii. Barricade signs shall include information on when the barricade is in effect, the employee responsible for barricading the area, the employee's supervisor (or Contractor's project manager), the employee's department (or Contractor's company) and phone number, the reason for barricading the area, and special comments or precautions. Required personal protective equipment should be identified in the comments section of the barricade sign.
 - iv. Post enough barricade signs with the completed information on all sides of the roped off area. There shall be 360-degree coverage with the barricade tape, and barricade signs shall be posted on all sides and at all normal entrances to the area. The barricade tape and signs shall also cover entrances to the barricaded area by stairs or ladders from above or below.
 - v. Barricade only the minimum area necessary to protect safety and health. When the barricade will interfere with a regular pedestrian or vehicular thoroughfare, or access to equipment, coordinate the barricading with the operating area supervisor to preserve the thoroughfare or identify an alternate thoroughfare, or means of access.
 - vi. As soon as the hazard no longer exists, all barricade tape and signs shall be removed.
 - vii. The condition for which the barricade tape was installed shall be corrected as soon as possible. Barricade tape shall not be left to mark hazardous conditions/areas for more than 15 days. After this duration, the responsible first line supervisor shall review the hazard and barricaded area for either a more permanent long-term barrier or continuation of the barricade tape procedure. If the barricade tape is determined to continue past the 15 days, the first line supervisor will inform the Superintendent and Plant Manager of the status.
- i. Work Practices Inside a Barricade
- i. Employees shall evaluate all potential hazards when working inside a barricade. They shall take the necessary precautions to protect themselves from the hazards or eliminate the hazards.
 - ii. Precautions need to be taken to assure employee protection as identified and appropriate for the specific hazards inside the barricaded area.
- j. Exceptions
- i. Very short durations of potential exposure to a hazard or a change in the hazards within

a barricaded area may require posting a watchman/flagman to warn passersby and other personnel working in the area. An adequate number of watchman/flagman shall be posted to stop pedestrian and vehicular traffic in all access routes to the potentially hazardous area.

- ii. While barricading according to this procedure may be used to temporarily identify operating equipment with guards removed, structural, rigid barriers shall be installed as soon as possible.
- iii. For repetitive postings, operating departments may elect to install and utilize more durable barricade components such as chain and fiberglass signs in lieu of the standard barricade tape and paper sign. However, the markings of these alternative barricade components shall be consistent with the requirements of this procedure (e.g., yellow chain with a caution sign or red chain with a danger sign).

ATTACHMENT A - COMPETENT PERSON DESIGNATION FORM

Contractor:	Project:
Competent Person:	Contact #:
Authorizing Employee:	Contact #
<p>29 CFR 1926.32(f) <u>Competent Person</u> means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, <u>and</u> who has the authorization to take prompt corrective measures to eliminate them</p>	
Instructions	
<ul style="list-style-type: none"> • Each Contractor shall appoint, as a minimum, one competent person (C/P) for key activities, as applicable to their respective scope(s) of work. • A separate form shall be completed for each competent person • Affected work shall be completed under the supervision of the competent person(s). • Provide documentation of training, and/or experience that qualifies the individual as a competent person for each activity 	

DISCIPLINE	C/P	N/A
Site Safety Representative		
Excavation & Trenching		
Electrical		
Scaffolds		
Fall Protection		
Cranes and Derricks		
Rigging, Lifting		
Lift Slab Operations		
Steel Erection		
Asbestos Abatement		
Industrial Diving Operations		
Blasting and Explosives		
Confine Space:		
Other:		
Other:		
Other:		

Designee Signature	Competent Person Signature	Date

ATTACHMENT B - PROJECT INFORMATION & EMERGENCY CONTACT LIST

Name of Project: _____
 Address / Location of Project: _____

Contractor Information	
Prime Contractor:	_____
Street Address:	_____
Main Office Phone #:	_____
Emergency Office Phone #:	_____
Project Manager:	_____ Cell Phone #: _____
PM Email:	_____
Project Superintendent:	_____ Cell Phone #: _____
Superintendent Email:	_____
Alternate Emergency Contact 1:	_____ Cell Phone #: _____
Alternate Emergency Contact 2:	_____ Cell Phone #: _____

Colorado Springs Utilities Information	
Project Manager:	_____ Cell Phone #: _____
PM Email:	_____ Office #: _____
Alternate Project Manager:	_____ Cell Phone #: _____
Alternate PM Email:	_____ Office #: _____
Project Manager Supervisor	_____ Cell Phone #: _____
Site / Facility Main Contact:	_____ Office #: _____
Procurement Specialist:	_____ Office #: _____
Procurement Specialist Email:	_____
Primary Safety Representative:	_____ Cell Phone #: _____
Safety Representative Email:	_____
Safety Engineering Supervisor:	_____ Cell Phone #: _____
S&H on Call (24/7 Coverage):	CSU Dispatch 719-448-4800 Option 1 request On Call S&H Support
Environmental Representative:	_____ Cell Phone #: _____
Env. Representative Email:	_____
Security Control:	719-668-7867 (STOP) for Roving Security Guard or Response and Support
Site / Facility Security Desk:	_____ Phone #: _____
Electric / Water / Gas Control:	<i>Identify the applicable one</i> Phone #: 668-XXXX

Sub-Contractor Information	
Sub-Contractor:	_____
Street Address:	_____
Main Office Phone #:	_____
Emergency Office Phone #:	_____
Contact Name:	_____ Cell Phone #: _____
Contact Email:	_____
Alternate Emergency Contact 1:	_____ Cell Phone #: _____
Alternate Emergency Contact 2:	_____ Cell Phone #: _____

- Type of Work:
- | | | | | |
|--|--|--|--|---|
| <input type="checkbox"/> Brick / Masonry | <input type="checkbox"/> Carpentry | <input type="checkbox"/> Concrete | <input type="checkbox"/> Drywall / Plaster | <input type="checkbox"/> Electrical – Low Voltage |
| <input type="checkbox"/> Electrical – High Voltage | <input type="checkbox"/> Excavation | <input type="checkbox"/> Fire Protection | <input type="checkbox"/> Flooring | <input type="checkbox"/> Heavy Civil Construction |
| <input type="checkbox"/> HVAC | <input type="checkbox"/> Landscaping | <input type="checkbox"/> Painting | <input type="checkbox"/> Plumbing | <input type="checkbox"/> Paving |
| <input type="checkbox"/> Sheet Metal | <input type="checkbox"/> Steel / Metal | <input type="checkbox"/> Window | <input type="checkbox"/> Wrecking / Demolition | <input type="checkbox"/> Material Supply |
| <input type="checkbox"/> Other (List): _____ | | <input type="checkbox"/> Other | | |

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<input type="checkbox"/> Other (List):		<input type="checkbox"/> Other																											

ATTACHMENT C - Emergency / Medical Preparations and Response

JOB LOCATION / ADDRESS:			
LATITUDE:		LONGITUDE:	
CREW LEAD:		CREW LEAD PHONE #:	

Does the crew have a first aid kit? Yes No (If yes, where is it located?) _____

Does the crew have eye wash bottles? Yes No

Is there a need to have an EMT on site due to recognized hazards or remote location? Yes No

(If yes, this employee shall have their EMT / Medical bag. Plan as far in advance as possible to ensure EMT is available)

NEAREST LOCAL RESPONDING FIRE / EMS					
NAME OF FIRE / EMS	LOCATION / ADDRESS OF NEAREST STATION	PHONE NUMBER	RESPONSE TIME		
MEDICAL AID STATIONS, CLINICS, TRAUMA CENTERS OR HOSPITALS – PROVIDE MAPS AND DIRECTIONS TO EACH IDENTIFIED					
NAME OF MEDICAL CARE FACILITY	PHYSICAL ADDRESS	TRAVEL TIME (MINUTES) AIR / GND.	PHONE NUMBER	MEDICAL TRAUMA LEVEL / SPECIALTY	HELIPAD (Check Y or N)
1					
<i>Directions:</i>					
2					
<i>Directions:</i>					
3					
<i>Directions:</i>					

Description of job / Project:	
--------------------------------------	--

Objective of job:	
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REQUIRED NOTIFICATIONS: (Only have appropriate notifications based on the location or project)

<i>Agency</i>	<i>Phone</i>	<i>Notified Y / N</i>	<i>Date / Time Notified</i>
Colorado Springs Utilities PM / S&H	719-		
City of Colorado Springs Fire Department Dispatch	719-444-7623		
City of Colorado Springs Police Department	719-444-7000		
El Paso County Sheriff's Office	719-390-5555		
American Medical Response (AMR) Ambulance	719-597-1277		
Fountain Fire Department	719-382-8555		
Security Fire Department	719-390-5555		
Colorado State Patrol	719-544-2424		
Ft. Carson Fire Department	719-526-0651		
Teller County Sheriff	719-687-9652		
Woodland Park Fire Department	719-687-1866		
Pueblo County Sheriff	719-583-6125		
Pueblo Police	719-553-2538		
Pueblo Fire	719-553-2830		

Attachment D - Contractor Safety Qualification Form (CSQF)

SECTION 1 - GENERAL INFORMATION			
Company Name:			
Address:		City/State:	Zip:
Telephone #:		Fax #:	
How many employees do you employ (approximately): Full Time		Part Time:	Seasonal:
Describe the nature of business your organization typically (or will) perform for Colorado Springs Utilities:			
Check the appropriate box or boxes for the areas your organization typically works with or on:			
<input type="checkbox"/> Power Plant Operations & Maintenance	<input type="checkbox"/> Substations Operations & Maintenance	<input type="checkbox"/> Electric T&D Operations & Maintenance	
<input type="checkbox"/> Electrical Operations (low voltage)	<input type="checkbox"/> Water/Waste Water Treatment Plants	<input type="checkbox"/> Water/Waste Water Construction	
<input type="checkbox"/> Facility Maintenance / General	<input type="checkbox"/> Facility / Building Construction	<input type="checkbox"/> Gas Operations & Maintenance	
<input type="checkbox"/> Other (list):			
Are you a division of a corporation? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If Yes, provide name and address of parent corporation:			
Are you self-insured for Worker's Compensation Insurance? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If no, who is your third-party insurance organization:			
Is your company OSHA VPP Certified: <input type="checkbox"/> Yes <input type="checkbox"/> No Date of Certification:			
Form completed by: (Name)			Date:
Title:	Ph:	Email:	Fax:
SECTION 2 – SAFETY & HEALTH INFORMATION			
Do you have a dedicated fulltime safety & health professional within your company? <input type="checkbox"/> Yes <input type="checkbox"/> No			
<u>Name / Title:</u>	<u>Telephone Number:</u>	<u>Location:</u>	
If you do not have a dedicated safety & health professional, who is responsible for safety & health within your organization?			
<u>Name / Title:</u>	<u>Telephone Number:</u>	<u>Location:</u>	
SECTION 3 - SAFETY & HEALTH PROGRAMS AND PROCEDURES			
Does your company have a written comprehensive S&H program? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Does your written S&H program cover all types of work activities which you will perform while on a Springs Utilities Project? (Full list of topics on following page) <input type="checkbox"/> Yes <input type="checkbox"/> No			
Does your S&H program address the following elements:			
• Management commitment and expectations?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
• Accountabilities and responsibilities for managers, supervisors, and employees?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
• Hazard recognition and control?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
• Workplace analysis?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
• S&H training for employees?	<input type="checkbox"/> Yes <input type="checkbox"/> No		

SECTION 3 - SAFETY & HEALTH PROGRAMS AND PROCEDURES - Continued

Under Column "A", answer "Yes" or "No" if your work for CSU will fall under each topic. In addition, identify if your company has a written program (Column "B") and any OSHA Citations in the last 5 years (Column "C") for each Column "A" "Yes" topic

S&H TOPIC	"A" - Does your work fall under this topic?	"B" - If "A" is Yes, Do you have a Written Program	"C" - OSHA Citations in last 5 years	S&H TOPIC	"A" - Does your work fall under this topic?	"B" - If "A" is Yes, Do you have a Written Program	"C" - OSHA Citations in last 5 years
Atmospheric Hazards (Gases, Mist, Dust, Vapors, Silica)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Heat and Cold Stress	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Compressed Air	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Hot Work / Welding Operations	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Compressed Gas Safety (Handling and Storage)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Incident Reporting & Investigation	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Concrete / Cement / Masonry Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Material Handling (Manual)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Confined Space Entry	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Motor Vehicle Safety / Operations	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Control of Hazardous Energy (LOTO)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Personal Protective Equipment	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Cranes and Derricks	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Power, Transmission & Distribution	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Electrical Safety (low or High Voltage)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Powered Industrial Equipment	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Emergency Action Plans & Response	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Respiratory Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Excavation & Trenching Safety	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Rigging / Lifting	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fall Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Scaffolding	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Fire Prevention / Protection	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Stairs / Ladders (fixed - Portable)	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Flammable and Combustible Liquids	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Storage and Handling of LPG	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hand and Powered Tools	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Traffic Control and Barricading	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hazard Communication	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Ventilation	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No
Hearing Conservation / Noise Exposure	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	Walking / Working Surfaces	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No

If your company has received any OSHA citations in the last 5 years, please provide the citation and your response to correct the hazard

SECTION 3 - SAFETY & HEALTH PROGRAMS AND PROCEDURES - Continued

Do you have employees trained in First Aid / AED / CPR?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you have a substance abuse program (random drug and alcohol testing)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you employ persons with a Commercial Driver's License (CDL)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you hold site safety meetings? (If yes, what is the frequency)	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you conduct safety and health inspections / audits?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Do you have a disciplinary action process for addressing employee S&H performance and deficiencies?	<input type="checkbox"/> Yes <input type="checkbox"/> No

Do you use any subcontractors for work?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Do you use S&H Performance criteria in the selection of subcontractors?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
SECTION 4 – TRAINING			
Do you perform New Employee S&H Orientation Training?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Do you provide the necessary and OSHA required S&H training for your employees?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Are employees tested for their comprehension of the training materials?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Is your S&H Training documented (sign in sheets, formally scheduled, etc)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Are employees properly trained / certified / qualified to operate all machinery and industrial equipment they are asked or required to operate?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
SECTION 5 - JOB SAFETY ANALYSIS			
Are job observations, such as a job safety analysis (JSA) conducted and reviewed with employees?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Do your employees conduct pre-job safety briefings?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Do you have and require (as applicable) the following permits / checklist:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Confined Space Permit	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Daily Excavation Inspection Checklist	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Hot Work Permit	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Critical Lifts	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
Others:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA		
SECTION 6 – SAFETY & HEALTH PERFORMANCE			
List your company's Worker's Compensation Experience Modification Rate (EMR) for the three (3) most recent years:			
20	EMR		
20	EMR		
20	EMR		
Use your OSHA 300 log (or equivalent) to record the below data for the three (3) most recent years.			
Provide a copy of OSHA's 300A Form, Summary of Work-Related Injuries and Illnesses for the three (3) most recent years.			
Employers with 10 or fewer employees throughout the previous 3 calendar years do not need to submit copies of OSHA's 300A Form.			
Last 3 Years	20	20	20
Fatalities (Provide details if any)			
Number of OSHA Recordable Cases			
Number of OSHA Restricted Only Cases			
Number of OSHA Lost Time Cases			
OSHA Recordable Incident Rate			
OSHA Restricted Only Incident Rate			
OSHA Lost Time Incident Rate			
Number of Labor Hours Worked			
Use the following formulas for calculating the "OSHA Incident Rates"			
$\frac{\text{Number of Recordable Cases} \times 200,000}{\text{Number of Hours Worked}}$	$\frac{\text{Number of Restricted Only Cases} \times 200,000}{\text{Number of Hours Worked}}$	$\frac{\text{Number of Lost Time Cases} \times 200,000}{\text{Number of Hours Worked}}$	
I certify and warrant that I am authorized to represent my company and provide the information above and that the information provided is complete and accurate.			
Signature:	Title:	Phone #:	

**Attachment E - Contractor Site Safety Plan (SSP)
Template and Checklist of Inclusion**

- 1) Contract Scope of Work Narrative
 - a) List of self-performed activities
 - b) List of Sub-Contracted activities
 - c) List of Sub-Contractors performing each activity
- 2) General Requirements
 - a) List of General Rules of S&H Conduct by Contractor and Sub-Contractor employees
 - b) Describe procedures for Public safety and protection of property if applicable by Contractors operations.
 - c) Procedures for Utility Damage Prevention
 - i) Underground and Overhead
 - d) Training - Describe S&H Training for site personnel
 - i) Site orientation / SSP review
 - ii) Ongoing S&H Training (Frequency and topics)
- 3) Contractor Responsibilities
 - a) Incident Reporting and Investigation requirements and procedure
 - b) Safety Inspections process
 - c) Stop Work Authority
 - d) Required Safety Permits and Procedure
 - e) Contactor Safety and Health Roles and Responsibilities
 - i) Project Manager
 - ii) Superintendent / Supervisor / Crew Forman
 - iii) Safety Representative
 - iv) employees
 - f) Enforcement of the SSP
 - g) Competent Persons process and forms - Attachment A
 - h) Project Information and Emergency Contact List - Attachment B
- 4) Work Planning
 - a) Hazard Assessments Process and requirements
 - b) Applicable Permits and Required Inspections
 - c) Job Hazard Analysis Program Requirements
 - d) Working alone Protocol
 - e) Site Communications
- 5) Emergency Planning, Response and Medical Services
 - a) Project Emergency Plan
 - i) Emergency Alert System
 - ii) Emergency Communications
 - iii) Site Specific Emergency / Medical Preparations and Response Plan Form – Attachment C
 - b) Response to hazardous Materials release
 - c) Site First Aid Kits
 - d) Emergency Medical Services (onsite and offsite)
- 6) Site Safety Specifics (Colorado Springs Utilities Requirements)
 - a) Statement on the prohibited use of Colorado Springs Utilities equipment, tools, etc.
 - b) PPE – list project minimum and task specific PPE

- c) Control of Hazardous Energy Coordination requirements
- d) Fall Protection - Describe how fall protection of employees shall be managed for each specific exposure
- e) Fire Prevention and Protection Measures
- f) New Chemical Reviews
 - i) Describe the process to request CSU approval of chemicals to be used on CSU Property (per the CSR)
 - ii) List all known chemicals that will need approval
 - iii) List of known chemicals and their Safety Data Sheets to be used on the project
- g) Respiratory Protection - Identify any task or specific hazards requiring respiratory protection and the type to be used.
- h) Confined Space - Describe confined space entry, management and rescue plans
 - i) Welding in a Confined Space – if applicable, describe the process and development of a JHA
 - j) Vertical Confined Space Entry – Provide a narrative or JHA for manhole entry
- k) Pipelines - Provide a narrative or JHA for Pipeline entry
- l) Critical Lifts
 - i) Identify project Critical Lifts
 - ii) Process for Critical Lifts
- m) Mechanized Equipment – Policy and Procedure for operation of mechanized equipment
- n) Barricade Tape Procedure



Colorado Springs Utilities
It's how we're all connected

Exhibit G

CONTRACTOR ACCESS SECURITY POLICY

For

Contract 202119286

2022 Pikes Peak Geospatial Alliance Orthoimagery Project

EXHIBIT G
CONTRACTOR ACCESS SECURITY POLICY

1. General Information

The day to day security management of the Contractor Access Security Policy is the Security Operations Supervisor and the Security Operations Specialist (SOS). This policy does not pertain to vendors, delivery personnel or consultants. Any security issue shall be reported immediately to Utilities' Security Operations Center (SOC) at 668-STOP (7867).

Project Contractors and their designated subcontractors are external personnel who work on behalf of Colorado Springs Utilities hereinafter referred to Project Contractors. The management of project contractor's employees and their subcontractors is the responsibility of Colorado Springs Utilities Project Managers hereinafter referred to as CSU PM.

CSU PMs are required to meet and coordinate with SSOS and SOS before any project work is started to ensure all security requirements are addressed.

Most Project Contractors will have physical access only, to specific work site(s). Project Contractors who require physical and cyber access will have to complete a background investigation before access is granted to their work site(s).

Project Contractors who will require physical access only and will be working on any Utilities' site for 9 days and less will be treated as a visitor and be escorted at all times in performance of their work.

Project Contractors who require physical access only and will be working on any Utilities' site for 10 days or more will be required to obtain a CSU Contractor ID badge (ID Badge) with limited access to specific work site(s).

Only Project Contractors in a supervisory role within their company may have the ability to escort other project contractor personnel. Those designated as escorts, will receive an (E) on their ID badge and are allowed to escort up to 10 project contractor employees and their designated subcontractor personnel at their designated work site Those contractor visitors will be seen as visitor and will have to be sign into (VMS) Visitor Management System and be escorted by designee. See NERC Restricted areas for escort requirements into those designated areas.

All Project Contractors shall read and sign a Security Awareness Form prior to receiving an ID badge.

All Project Contractors shall comply with all Utilities' security measures and requirements for personnel and access to Utilities' sites. Security measures vary by site and include the following provisions.

Repercussions of violating Utilities' Security policies could result in denied access.

- Utilities reserves the right to request additional security measures (e.g. background investigations for access to designated critical infrastructure assets) or to further control access to the site as conditions dictate.
- Utilities reserves the right to implement new technology improvements in the management of Project Contractors (e.g. Visitor Management System or enhanced government ID requirements including secure storage of PII information).
- Utilities may refuse access to any Project Contractor for misconduct or illegal activity. Notifications of any changes or any other nature will be made to the CSU PM who will contact their Project Contractor Manager.

2. Military Installation Access

Colorado Springs Utilities will follow all military installation access procedures and will comply with all government regulations when operating on the local military installations. All local military installations require 72 hours (3 business days) processing time of their required forms before a contractor(s) are granted access, to their installation.

- CSU PM shall contact the SSOS for all questions and the required forms needed related to local military installation access. If unavailable, secondary contact is SOS.

3. Sharing ID Badges

Sharing an ID Badge with anyone else for any reason (i.e. to gain access to a Utilities' site or facility) is strictly prohibited. Any project contractor(s) who commits this act is subject to the disciplinary actions:

- Project Contractors shall wear their issued Utilities' Contractor ID badges on an external garment, above the waist while on Utilities' property. The only exception to this policy is if wearing the ID badge creates a safety concern. If wearing the ID badge creates a safety concern the badge may not be worn but must be kept on the person while on site and, if asked, must be shown.

4. Piggybacking

Piggybacking is defined as following a person through an entry gate or door without coordinating entry with the onsite Security Officer or following another person through an entry gate or door without using an individual's access card. Piggybacking into any Utilities' site or facility is strictly prohibited. Any Project Contractor(s) who commits this act is subject to the following disciplinary actions: First Offense, a written warning and discussion with CSU PM; Second Offense, is access denial and removal from contract. Any damage done to Utilities' site/facility/property due to piggybacking shall be the sole responsibility of the Project Contractor(s).

5. Reporting Criminal Activity

If, at any time while on Utilities' property, a criminal act of any type is suspected, Project Contractor(s) shall immediately report the incident to the onsite Security Officer or call the Utilities' Security Control Center (SOC) at 668-STOP (7867). If the observed incident is life threatening, Project Contractor(s) shall immediately call 911 and then notify Utilities' Security Operations Center.

6. Reporting Suspicious Activity

If, while working on any Utilities' site or facility, Project Contractor(s) observes someone performing an act of Sabotage (Known or Suspected), Project Contractor(s) shall immediately report the observation to Utilities' Security Operations Center (SOC) at 668-STOP (7867). Utilities defines Sabotage as:

Known Acts of Sabotage

- There are known or confirmed sabotage events where there is no question that a deliberate act has been committed to disrupt operations or damage facilities or equipment. Some of the obvious acts may include:
- Tampering with transmission towers, poles, facilities, equipment, vehicles or other Utilities' facilities
- Disrupting operations by false or real threats (bomb, fire, etc.)
- Causing intentional failure of critical systems or machinery
- Deliberate damage to, and/or, interference with communications sources (including, but not limited to, Energy Management System (EMS), Supervisor Control and Data Acquisition (SCADA), Remote Terminal Units (RTUs), essential communications, and/or other IT Security Devices, networking infrastructures, and servers
- Multiple and coordinated attempted physical intrusions to a Restricted, No Trespassing, and/or "Authorized Individuals Only" identified area

Suspected Acts of Sabotage

- Suspected sabotage events can look like every day abnormal operations, such as:
- Loss of a line or major piece of equipment
- Trip of a major unit
- Relay miss-operation
- Significant interruption or impairment of a function of an energy facility
- Loss of RTU communications circuitry and/or infrastructure services
- Large number of unauthorized cyber or physical attempts to access critical facilities or systems
- Intelligence gathering - unauthorized people requesting information about operations, software, telecommunications, etc.
- Unauthorized physical and/or cyber surveillance activities
- Verbal or written threats to security, operations or facilities by employees or persons not directly associated with the company
- Acts of vandalism on substations or transmission and distribution lines that support critical government agencies or power system operation facilities
- A series of acts of vandalism at numerous substations (within Utilities' service area, or reported across interconnections) within a short period of time that demonstrate a possible plan to disrupt the bulk electric system
- Social engineering- the art of manipulating people into performing actions or divulging confidential information such as: spear-phishing and impersonation of another person on the phone
- Damage to facilities, equipment or vehicles at various facilities effecting operations

7. Securing Utilities' Buildings and Vehicles

If working at a Utilities' Building, Project Contractor(s) shall always ensure the building doors are secure upon entering or exiting the building. If operating any Utilities' vehicle on or off Utilities' sites, Project Contractor(s) shall always secure the vehicle anytime it is left unattended.

8. Site Access Processes

Utilities has two ways for Project Contractor personnel to gain access to its sites; utilizing the CSU Contractor ID Badge process or being escorted as a visitor by a designated escort (E) of the Contractor.

- Those project contractor(s) that will be working on any Utilities sites for 9 days or less will be signed in as visitors daily and be escorted at all times.
- Those project contractor(s) that will be working on any Utilities' site for 10 days or more will require a CSU Contractor ID badge with limited access for specific work site. Only Project Contractor(s) in a supervisory role within their company may have the ability to escort other Project Contractor personnel. Those designated as escorts, will receive an (E) on their badge and are allowed to escort up to 10 project contractor employees and their designated subcontractor personnel at their designated work site.
- Project Contractor Manager/Supervisor will use the Security Operations Specialists (SOS) Project Management Spreadsheet to identify their personnel by filling in all of the required information. This form will be sent to the CSU PM. The CSU PM will send the form to the Project Contractor Manager/Supervisor who will identify all project contractors' employees who will work on the identified project (whether it is for one day or to the end of the contract). The Project Contractor Manager/Supervisor will send the spreadsheet to the CSU PM for review and validation. CSU PM will then send the SOS Project Management Spreadsheet via email attention FSS at: eal@csu.org or fss@csu.org. The spreadsheet should not contain any personal information.
- CSU PM's is/are responsible for maintaining their project contractor's access to the work site. This responsibility includes reviewing the Contractor spreadsheet.

If any of the Project Contractor's employees or subcontractor personnel terminate employment for any reason, the Project Contractor Manager or Supervisor, shall immediately call to notify the CSU PM and then call the Utilities Security Operations Center at 668-7867 to have the terminated employee(s) CSU ID badge deactivated. Project Contractor Manager/Supervisor shall immediately take possession of the CSU Contractor ID Badge and return it in person to onsite Security or the CSU PM if present during the termination. All CSU Contractor ID Badges are returned to the Security Operations Staff by the onsite Security Officer or direct to Security Operations Staff. Within 2 hours of termination, the Project Contractor Manager will follow up with an email to the CSU PM and FSS@csu.org with the persons full name and date and time of termination.

9. Weapons Policy

With the exception of Armed Security Officers or Law Enforcement Officers, open or concealed carrying of a firearm on Utilities' property is not permitted. Project contractor employees or subcontractor personnel may not have firearms on their person or in a vehicle while on Utilities' property.

10. Drug & Alcohol Usage and Drug Possession

Utilities conforms with Federal Law as it pertains to drugs, alcohol usage, drug usage and possession. Illegal drugs (to include marijuana) will not be brought onto or consumed on Utilities' property. Project contractor employees or subcontractor personnel that are under the influence of drugs or alcohol will be escorted off of Utilities' properties.

11. Site Operating Hours

Utilities normal business hours are Monday – Friday from 8 AM to 5 PM. If a project will require site access outside of these hours the CSU PM must specify each site requested by the hours that the Project Contractor employees or subcontractor personnel are authorized to be onsite. The CSU PM will provide the information in an email to FSS@csu.org with site location, contract number, after hours required at this site, and duration. CSU PM may contact for any questions.

12. Video/Photography on Utilities' Sites

If Project Contractor Manager requires any video or photography on a Utilities' site this must be coordinated with the CSU PM and Utilities' Corporate Communications Department. The CSU PM or a designated CSU sponsor must be present while any videos, drone activity and/or photographs are taken. Any drone operations must be coordinated with the Security Operations Supervisor. At this time, there is no drone activity on CSU sites and property. Has to be pre-approve by Security Operations for any activity on CSU sites and property.

13. Contractor Termination/Separation

When the Project Contractor's work agreement is complete or terminated, Project Contractor Manager shall collect and return all ID badge/access control cards, to include those used for military installations, to the CSU PM. These badges will be returned to the Security Operations Staff in person by the receiving CSU PM. A penalty of \$100.00 will be charged for each Utilities' badge not returned upon contract completion, termination or cancellation or for any lost badge. This penalty may be recovered from any remaining payment Utilities owes Contractor at the completion, termination or cancellation of the contract.

14. Right to Search

Utilities reserves the right to search all vehicles entering and exiting Utilities' sites. All personal containers, lunch boxes, brief cases, etc. are subject to search at Utilities' security entry points. Failure to submit to these searches will be grounds for Utilities to refuse access to the site or facility.

15. Theft/Stealing

Any Project contractor employee(s) caught in the act of stealing Utilities' property, or in possession of Utilities' property without prior approval, will be removed from said property and subject to legal recourse. In addition, the individual(s) will be banned from Utilities' property and Project Contractor's business relationship with Utilities could be jeopardized, including, but not limited to, termination of existing contracts, suspension and debarment.

16. Verbal/Physical Altercations

Project contractors involved in verbal or physical altercations with Utilities' employees or another contractor will be subject to removal from Utilities' property, losing contractual associations with Utilities, and possible criminal charges, depending on the severity of the altercation.

17. Other Security Requirements

Depending on the project other security requirements than those outlined in this document may be required when performing work on Utilities' sites/facilities. If required these additional security requirements will be stipulated in the project contract.

- Contractors who require access to Colorado Springs Utilities critical infrastructure will be required to meet the criminal background investigation requirements as provided on award of contract. Contractors requiring only perimeter access may not be subjected to conduct criminal background investigations on award of contract.
- NERC Restricted Areas: CSU has implemented a Visitor Control Program for NERC Restricted Areas Physical Security Perimeters (PSP's). Visitors (vendors, contractors and/or those CSU employees that have not been granted unescorted access to the specific PSP) may only enter a PSP with an authorized CSU PSP escort (someone with authorized unescorted access granted to PSP (NERC Restricted areas). CSU PSP Escorts may only escort up to six visitors at one time and escort must maintain visual contact with all visitor(s) at all times. Please contact the Physical Security Compliance Coordinator for further information in regard to NERC PSP Visitor Access processes and procedures.
- Damaged or defective Utilities' ID badges shall require a new ID badge be issued. The CSU PM will contact Security Operations Staff to schedule a time for a badging appointment. Lost or stolen Utilities' ID badges present a security risk to the organization and it is imperative that all Project Contractor employees and subcontractor personnel take all precautions to ensure Utilities' ID badges are secured. Notification must be made immediately to Utilities Security Operations Center at 668-STOP (7867) and to the CSU PM and the Project Contractor Manager or Supervisor when a Utilities' ID badge has been lost or stolen. A \$100 replacement fee will be imposed to any Project contractor employee or subcontractor personnel that is required to replace its badge if lost or stolen.

18. Prohibited Articles

Any person who possesses, transports, or uses prohibited articles on any Utilities' site is subject to immediate site removal. Prohibited articles include but are not limited to:

- Dangerous weapons
- Explosives, ammunition, and incendiary devices
- Controlled substances and drug paraphernalia (e.g., illegal drugs and associated paraphernalia, but not prescription medication)
- Alcoholic beverages (includes "near" and "non-alcoholic" beer and wine)

- Contraband (includes other items prohibited by law)
- Marijuana (in all forms)

Project Contractor employees and subcontractor personnel discovered on the site in possession of any prohibited article will have the prohibited article confiscated and the CSU PM will be notified. If the prohibited article is illegal, local Law Enforcement will be contacted. In all cases, the person in possession of a prohibited article is subject to disciplinary action review to include access denial to the site.

Example of SOS Project Management Spreadsheet

FSS PROJECT MANAGEMENT SPREADSHEET									
CSU PROJECT MANAGER:					PROJECT NAME:				
Company Name:					Subcontractor Name:				
<u>Last Name</u>	<u>First Name</u>	<u>Middle Initial</u>	<u>Type of I-9 Documentation (ID) and Expiration Date</u>	<u>Company Name</u>	<u>Designated as an Escort (Supervisor)</u>	<u>Contract Start Date</u>	<u>Contract End Date</u>	<u>Internal Use - Badged</u>	<u>Internal Use - Access</u>

Exhibit I
Minimum Insurance Requirements

1. Minimum Insurance Requirements - Nothing in this Contract shall limit Utilities' access to the minimum required types and limits of Insurance in this Section.

1.1 Contractor shall maintain insurance coverage for financial protection from and against claims arising out of Contractor's activities and the performance of this Contract. Such insurance will be through policies placed with commercial insurance companies approved or authorized to conduct insurance business in the state of Colorado and having a minimum A.M. Best rating of "A- / VII" or equivalent from alternate rating agencies which may be acceptable to Utilities' Risk Management Department.

1.2 Insurance shall be of the required types and minimum limits as follows:

<p>Workers' Compensation Workers' Compensation coverage shall include a waiver of subrogation in favor of Utilities, endorsement required.</p>	<p>Statutory limits for where work is performed and/or where benefits can be claimed.</p>
<p>Employers Liability Bodily Injury by Accident – Each Accident Bodily Injury by Disease – Each Employee Bodily Injury by Disease – Policy Limit</p>	<p style="text-align: right;">\$1,000,000 \$1,000,000 \$1,000,000</p>
<p>Commercial General Liability Each Occurrence Policy Aggregate Including but not limited to coverage for: i. Products and Completed Operations ii. Contractual Liability iii. Independent Contractors iv. CCC exclusion removed</p>	<p style="text-align: right;">\$1,000,000 Per Occurrence \$2,000,000 Aggregate</p>
<p>Aircraft Liability Insurance – Unmanned Aircraft</p>	<p style="text-align: right;">\$5,000,000 Combined Single Limit for Bodily Injury and Property Damage</p>
<p>Automobile Liability All owned, hired and non-owned vehicles</p>	<p style="text-align: right;">\$1,000,000 Combined Single Limit</p>
<p>Umbrella/Excess Liability Excess Liability coverage above the Following Policies: i. Commercial General Liability</p>	<p style="text-align: right;">\$1,000,000 Per Occurrence</p>

Exhibit I
Minimum Insurance Requirements

ii. Automobile Liability iii. Employers Liability	
Pollution Liability Including but not limited to coverage for: i. Coverage for bodily injury, property damage (including natural resource damage) and cleanup costs ii. New on-site and off-site releases iii. Transportation of hazardous substances	Not Applicable
Professional Errors and Omissions Liability Including but not limited to coverage for: i. Economic damages arising out of negligent acts, errors or omissions in professional services rendered ii. No exclusion for punitive damages (Where allowed by law)	\$1,000,000 Each Claim

1.3 [Reserved for Cyber Liability if required in Section 1.2]

1.4 Except for Contractor policies of Workers' Compensation, Employers Liability and Professional or Cyber Liability (if required), Utilities, the City of Colorado Springs, their officers, and including its directors, City Council, Utilities Board, employees, successors and assigns, shall be included as Additional Insureds on all other policies required herein by specific policy endorsements. Commercial General Liability policies and Umbrella / Excess Liability policies as applicable, shall specifically include Utilities as an Additional Insured for products and completed operations liability coverages, which coverages and Additional Insured status shall be continued for a period not less than two (2) years after final completion.

1.5 In any policy where Utilities is an Additional Insured, Contractor policies of insurance required herein shall state that such policies are specifically primary and shall not require contribution from any other insurance maintained by Utilities. Any insurance maintained by Utilities shall apply excess of any Contractor insurance required herein and shall be for the sole protection of Utilities only.

1.6 All Contractor policies of insurance required herein shall waive rights of subrogation against Utilities, including its directors, officers, employees, successors and assigns.

Exhibit I
Minimum Insurance Requirements

1.7 Liability insurance policies providing coverage as required in this Section shall be written on an "occurrence form" basis. For policies traditionally written on a "claims-made form" which may be required in this Section, Contractor shall provide an extended reporting or "tail" provision for each policy, allowing potential claims to be discovered and reported for a period of not less than two (2) years after final completion of this Contract.

1.8 Prior to the commencement of the Work and before Contractor or its subcontractors shall enter Utilities' property, and at all times during the course of the Work and any activities of Contractor related to Utilities business, Contractor shall provide Utilities with current Certificate(s) of Insurance evidencing continuous compliance with all insurance policy terms and limits as required in Sections above, and confirming that such coverages will not be cancelled except after 30 days written notice to Utilities. Replacement certificates shall be provided to Utilities at least 14 days prior to renewal of any insurance policies evidenced thereon. If requested by Utilities, specific endorsements confirming compliance with specifically required terms shall be included with the Certificate(s) of Insurance. In the event of any claim or potential claim against Utilities whereby Utilities may potentially be protected as an Additional Insured under any of the insurance policies required herein, Contractor agrees to provide a full and complete copy of any such policy if so requested by Utilities.

1.9 Contractor shall require each of its subcontractors to furnish evidence that the subcontractor has General Liability Insurance, Workers' Compensation, Employer's Liability, and Automobile Liability Insurance with the limits of liability appropriate to the risk of its scope of work, including appropriate endorsements, and in no event less than \$1,000,000 per occurrence.

1.10 Insurance requirements herein are only the minimum types and amounts required for compliance with this Contract, and shall not be construed as the full amount and types of insurance which may be necessary to adequately protect the Contractor for its full and complete obligations to Utilities and others as provided for in this Contract, or otherwise to any other party. Contractor shall be solely responsible for any deficiencies thereof. It is Contractor's sole obligation to determine and implement any other types or amounts of insurance necessary and sufficient to protect Contractor's obligations and interests. The types and amounts of insurance required herein shall not serve to in any way limit the liability of the Contractor, including under any warranty or indemnity provision of this Contract, or any other obligation whatsoever Contractor may have to Utilities or others.

Scope of Services

for

**2022 Pikes Peak Geospatial Alliance
Orthoimagery Project**

December 20, 2021

Revision History

Revision	Date	Description
1.0	07/01/2021	<i>Previous RFP scopes, managed by CSU, were revised to account for changing specifications and new requirements.</i>

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1.0 Introduction

The goal of the 2022 PPGA project is for the Pikes Peak Geospatial Alliance (PPGA), through Colorado Springs Utilities (UTILITIES), to receive high quality digital orthoimagery in a timely fashion for both El Paso and Teller counties. The CONTRACTOR shall take a conservative approach to the project to ensure that the accuracy and aesthetics of the final product are free from defects and meet or exceed PPGA expectations.

Because the desired product is to be created under “leaf-off” conditions, aerial flights are anticipated during typical summer months of June to August. Proper CONTRACTOR preparation and resource and asset management can result in acquiring and producing the product without major issues. CONTRACTOR shall approach this project in such a way as to be in the position to meet final delivery specifications without undue delays.

2.0 Background

The Orthoimagery Project 2022 addresses on-going needs for current digital aerial imagery by multiple governmental agencies in a two-county area of the Pikes Peak region. The following subsections describe the area of interest of each of the participants and the resulting project sub-areas. Four Band, Color/Infra-Red, digital orthorectified aerial imagery must be delivered for the entire project area. All four sub-areas may require some level of Digital Elevation Model (DEM) updating or development. As detailed in Section 3, it may also be necessary to establish additional survey control points in the sub-areas. Map accuracy requirements shall be specified in terms of standards set by the American Society of Photogrammetry and Remote Sensing (ASPRS).

UTILITIES is administering this project on behalf of the PPGA. The PPGA, for this project is comprised of the following participants:

- El Paso County
- Teller County
- El Paso - Teller E-911 (E911)
- Colorado Springs Utilities (UTILITIES)
- City of Colorado Springs
- The City of Fountain, Colorado

3.0 Scope of Services

3.1. Purpose

UTILITIES shall oversee this project and will designate an individual to act as the official Project Manager. The Project Manager shall, with the consent of the participating members of the PPGA Steering Committee, perform the following duties and functions relative to this project:

1. Interpret and define project specifications regarding the Contractor’s work activities
2. Direct and coordinate the (PPGA) responsibilities
3. Review Respondent’s performance
4. Manage deliverables from Respondent(s) to other PPGA participants
5. Approve payments to Respondent(s) in accordance with defined payment and deliverable acceptance terms
6. Perform such other activities as may from time to time be necessary in the performance of the terms of the contract

7. Issue final acceptance of all deliverable products and services
8. Issue any change orders or modifications to the scope of the contract.

3.2. CONTRACTOR Responsibilities:

1. At the time of contract Amendment execution and subject to UTILITIES approval, CONTRACTOR shall assign a Project Manager with at least *five years* of project management experience to the project. CONTRACTOR shall obtain written approval from the PPGA prior to any change to the assigned project manager.
2. Develop a complete and concise project schedule
3. CONTRACTOR Project Manager shall strictly adhere to developed project plans, schedules and communication agreements.
4. At the time of fully executed Amendment and subject to UTILITIES approval, CONTRACTOR shall retain all required subcontractors needed to complete the project as per the project schedule.
5. Develop and document procedures to meet specifications as contracted;
6. Produce required new digital orthophotography in accordance with specifications;
7. Implement stringent QA/QC procedures and maintain specified quality standards;
8. Deliver all deliverable products as per the detailed schedule;
9. Provide project management and support services, such as required reporting, demonstrations, data handling, progress reports, and others as required.

3.3. Contract Administration

CONTRACTOR shall be responsible for the professional quality, technical accuracy, timely completion, and the coordination of all digital files, specifications, reports, and other products and services required to be furnished by it under this Agreement. PPGA shall have full and complete authority to reject any work deemed unacceptable pursuant to this Agreement. CONTRACTOR shall, without additional compensation, correct or revise any errors or deficiencies in such products and services if products do not conform to the specifications. In cases of rejection of CONTRACTOR's work, UTILITIES may suspend further deliveries and payments until the work tasks (products and services hereafter defined) in question are redelivered and reclassified as accepted.

4.0 Tasks and Deliverables

4.1 Project Area and Sub-Areas

Historically, the total project has been divided geographically into four (4) sub-areas, each reflecting a change in the delivery date. The map in Appendix B-1 illustrates these boundaries as well as a tiling scheme in which the tiles are dimensioned at 4,000' x 4,000'.

Note that all areas are represented in terms of tiles. Tiles within each of the four sub-areas are further grouped into project deliverable areas. The project deliverable areas equate to the desired delivery sequence. Deliverables for the OP 2022 project shall therefore include fifteen (15) area deliverables (refer to Appendix B-2).

Digital data representing the area and sub-area boundaries, tile layout, and deliverable areas shall be made available to CONTRACTOR. **The total project area is approximately 2787 square miles.**

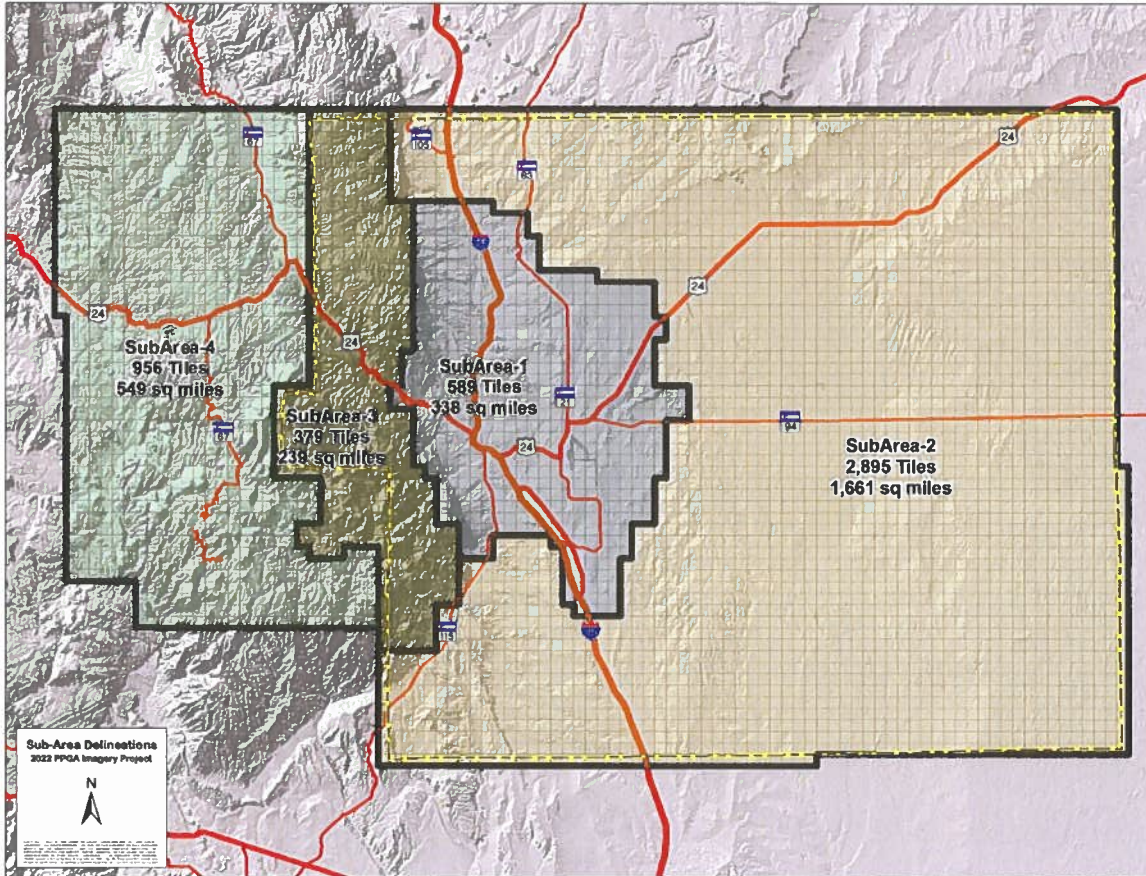


Figure 1 – 2022 Sub Areas

4.1.1 Sub-Area 1

Sub-Area 1 consists mostly of the Colorado Springs metropolitan area, including the US Air Force Academy and the City of Fountain (refer to Appendix B-1). The City of Colorado Springs, Colorado Springs Utilities and the City of Fountain have a primary interest in this sub-area with overlapping interests by E911 and El Paso County.

Sub-Area 1 must be flown in the spring of 2022 during leaf-off conditions. Depending on conditions, Sub-Area 1 flights must be conducted starting on or around March 15, 2022 and concluding on or around April 30, 2022. **Sub-area 1 is 338 square miles, comprised of 589 tiles.**

4.1.2 Sub-Area 2

Sub-Area 2 shall encompass Ft Carson and the majority of El Paso County east of the mountains; less Sub-Area 1 (refer to Appendix B-1). El Paso County and E911 have the primary interest in Sub-Area 2 with the City of Colorado Springs and Colorado Springs Utilities having an interest in portions of the area as well.

Sub-Area 2 must be flown during the spring of 2022. Depending on conditions, Sub-Area 2 flights must be conducted starting on or around April 15, 2022 and concluding on or around May 31, 2022. *Sub-area 2 is 1,661 square miles, comprised of 2,895 tiles.*

4.1.3 Sub-Area 3 & 4

Sub-Area 3 and 4 are comprised of the mountainous areas of the western portion of El Paso County and all of Teller County. E911, El Paso County, Colorado Springs Utilities, and El Paso County all have predominant interest in the sub-area. **Due to snow considerations, Sub-Area 3 and 4 must be flown during the summer of 2022. Depending on conditions, Sub-Area 3 and 4 flights must be conducted starting on or around June 1, 2022 and concluding no later than July 31, 2022. Sub-area 3 is 239 square miles and comprised of 416 tiles while Sub Area 4 is 549 square miles and comprised of 956 tiles.**

4.2 Sub-Area Specifications

Project Specification Overview				
Sub Area	SA-1	SA-2	SA-3	SA-4
Total Area / Tiles	338 sq mi / 589 tiles	1661 sq mi / 2895 tiles	239 sq mi / 416 tiles	548 sq mi / 956 tiles
Ground Sampling Distance	0.5'	1.0'	1.0'	1.0'
Ortho Resolution	Six Inch (6")	One Foot (1')	One Foot (1')	One Foot (1')
Orthoimagery Accuracy	ASPRS Class 1 for 1:1200 Map Scale (One Foot RMSE)	ASPRS Class 1 for 1:2400 Map Scale (Two Foot RMSE)	ASPRS Class 1 for 1:2400 Map Scale (Two Foot RMSE)	ASPRS Class 2 for 1:2400 Map Scale (Four Foot RMSE)
DEM Source	2018 LiDAR Data – Updated as needed to meet accuracy	2018 LiDAR Data – Updated as needed to meet accuracy	2018 LiDAR Data – Updated as needed to meet accuracy	Latest Available USGS NED data of 1/3 arc seconds (10 meters)
Coordinate System / Datum / Units	Colorado State Plane Central Zone, NAD 83 (HARN)	Colorado State Plane Central Zone, NAD 83 (HARN)	Colorado State Plane Central Zone, NAD 83 (HARN)	Colorado State Plane Central Zone, NAD 83 (HARN)
Control Source	CSU FIMS NAVD88 (DEM Update)	NGS, Colorado State Plane Central Zone, NAD 83 (HARN) NAVD 88 (DEM UPDATE)	NGS, Colorado State Plane Central Zone, NAD 83 (HARN) NAVD 88 (DEM Update)	NGS, Colorado State Plane Central Zone, NAD 83 (HARN) NAVD 88 (DEM Update)
Tiled Delivery Format	TIFF/TFW	TIFF/TFW	TIFF/TFW	TIFF/TFW
Mosaic Delivery Format	JP2	JP2	JP2	JP2
Imagery Type	RGBNIR	RGBNIR	RGBNIR	RGBNIR
Tile Scheme	PPGA 4000 x 4000	PPGA 4000 x 4000	PPGA 4000 x 4000	PPGA 4000 x 4000
Target Flight Window	Mar 15 – Apr 30	Apr 15 – May 31	Jun 1 – Jul 31	Jun 1 – Jul 31

4.3 Sub-Areas 1

4.3.1 Image Resolution

Image pixel resolution for Sub-Area 1 shall be six (6) inch.

4.3.2 Ground Sampling Distance

CONTRACTOR is not to exceed flying heights for the 6" pixel acquisition. CONTRACTOR shall not deviate from these requirements unless prior approval is obtained by the PPGA. Statistical sampling (RMSE) must show that these GSD values are achieved. **Offsets from the required ground sampling distances should not exceed ten percent (10%).**

Sub-area 1: Resolution = 0.5' GSD MAXIMUM

4.3.3 Horizontal Accuracy

All final image products must meet the horizontal accuracy specifications listed below:

- ASPRS Class 1 accuracy standard for 1:1200 mapping. This specifies a point coordinate accuracy requirement in which the horizontal Root Mean Square Error (RMSE) for a minimum of 20 well defined points is less than 1.0 '

4.3.4 Digital Elevation Model (DEM)

The existing 2018 DEM ground surface, originally derived from the 2018 LiDAR data, shall be used as the rectification source for the 2022 flight. CONTRACTOR shall update any tile or tiles of DEM data for the surface to be adequate for accurate orthoimagery rectification.

Should the DEM for an orthophoto imagery tile need to be updated, the PPGA requires that the DEM be re-delivered in tile format (4000'x4000') containing all DEM data used for that tile. This updated data shall be delivered in an LAS format.

4.3.5 Coordinate System

The coordinate system for this project shall be Colorado State Plane Coordinate System, Central Zone, Datum of NAD83 (HARN), units of US Survey Feet. Although limited to the DEM delivery, the Vertical Datum shall be NAVD88.

4.3.6 Flight Dates

Imagery shall be flown when deciduous foliage is generally under leaf-off condition. Thus, the target flight window shall be from March 15, 2022 to April 30, 2022. The appropriate flight dates are listed below and may be adjusted due to ground or weather conditions upon prior approval of UTILITIES.

Area	Start Date	Finish Date
Area SA-1	March 15, 2022	April 30, 2022

4.4 Sub-Area 2

4.4.1 Image Resolution

Image pixel resolution for Sub-Area 2 shall be one (1) foot.

4.4.2 Ground Sampling Distance (GSD)

CONTRACTOR is not to exceed flying heights for the 1' pixel acquisition. CONTRACTOR shall not deviate from these requirements unless requested by CONTRACTOR and approved by UTILITIES. Statistical sampling (RMSE) must show that these GSD values are being achieved. **Offsets from the required ground sampling distances should not exceed ten percent (10%).**

Sub-area 2: Resolution = 1.0' GSD MAXIMUM

4.4.3 Horizontal Accuracy

All final image products must meet the horizontal accuracy specifications listed below:

- ASPRS Class 1 accuracy standard for 1:2400 mapping. This specifies a point coordinate accuracy requirement in which the horizontal Root Mean Square Error (RMSE) for a minimum of twenty (20) well defined points is less than 2.0'

4.4.4 Digital Elevation Model (DEM)

The existing 2018 DEM ground surface, originally derived from the 2018 LiDAR data, shall be used as the rectification source for the 2022 flight. CONTRACTOR shall update any tile or tiles of DEM data for the surface to be adequate for accurate orthoimagery rectification.

Should the DEM for an orthophoto imagery tile need to be updated, the PPGA requires that the DEM be re-delivered in tile format (4000'x4000') containing all DEM data used for that tile. This updated data shall be delivered in an LAS format.

4.4.5 Coordinate System

The coordinate system for this project shall be Colorado State Plane Coordinate System, Central Zone, Datum of NAD83 (HARN), units of US Survey Feet. Although limited to the DEM delivery, the Vertical Datum shall be NAVD88.

4.4.6 Flight Dates

Imagery shall be flown when deciduous foliage is generally under leaf-off condition. Thus, the target flight window shall be from April 15, 2022 to May 31, 2022. The appropriate flight dates are listed below and may be adjusted due to ground or weather conditions upon prior approval of UTILITIES.

Area	Start Date	Finish Date
Area SA-2	April 15, 2022	May 31, 2022

4.5 Sub Area 3

4.5.1. Image Resolution

Image pixel resolution for Sub-Area 3 shall be one (1) foot.

4.5.2. Ground Sampling Distance

CONTRACTOR is not to exceed flying heights for the 1' pixel acquisition. CONTRACTOR shall not deviate from these requirements unless approved by UTILITIES. Statistical sampling (RMSE) must show that these GSD values are being achieved. **Offsets from the required ground sampling distances should not exceed ten percent (10%).**

Sub-area 3: Resolution = 1.0' GSD MAXIMUM

4.5.3. Horizontal Accuracy

All final image products must meet the horizontal accuracy specifications listed below:

- ASPRS Class 1 accuracy standard for 1:2400 mapping. This specifies a point coordinate accuracy requirement in which the horizontal Root Mean Square Error (RMSE) for a minimum of 20 well defined points is less than 2.0 '

4.5.4. Digital Elevation Model

The existing 2018 DEM ground surface, originally derived from the 2018 LiDAR data, shall be used as the rectification source for the 2022 flight. CONTRACTOR shall update any tile or tiles of DEM data for the surface to be adequate for accurate orthoimagery rectification.

Should the DEM for an orthophoto imagery tile need to be updated, the PPGA requires that the DEM be re-delivered in tile format (4000'x4000') containing all DEM data used for that tile. This updated data shall be delivered in an LAS format.

4.5.5. Coordinate System

The coordinate system for this project shall be Colorado State Plane Coordinate System, Central Zone, Datum of NAD83 (HARN), units of US Survey Feet. Although limited to the DEM delivery, the Vertical Datum shall be NAVD88.

4.5.6. Flight Dates

Imagery shall be flown when deciduous foliage is under leaf-off condition yet early enough to minimize shadows and reduce the chance of snow. Thus, the target flight window shall be from June 1, 2022 to July 31, 2022. The appropriate flight dates are listed below and may be adjusted due to ground or weather conditions upon prior approval of UTILITIES.

Area	Start Date	Finish Date
Area SA-3	June 1, 2022	July 31, 2022

4.6 Sub Area 4

4.6.1 Image Resolution

Image pixel resolution for Sub-Area 4 shall be one (1) foot.

4.6.2 Ground Sampling Distance

CONTRACTOR is not to exceed flying heights for the 1' pixel acquisition. CONTRACTOR shall not deviate from these requirements unless approved by UTILITIES. Statistical sampling (RMSE) must show that these GSD values are being achieved. **Offsets from the required ground sampling distances should not exceed ten percent (10%).**

Sub-area 3: Resolution = 1.0' GSD MAXIMUM

4.6.3 Horizontal Accuracy

All final image products must meet the horizontal accuracy specifications listed below:

- ASPRS Class 2 accuracy standard for 1:2400 mapping. This specifies a point coordinate accuracy requirement in which the horizontal Root Mean Square Error (RMSE) for a minimum of 20 well defined points is less than 4.0 '

4.6.4 Digital Elevation Model

Existing DEM data available from the USGS shall be used as the DEM data source. National Elevation Dataset (NED) available data of 1/3 arc-second, or approximately 10 meters, can be downloaded for free from the USGS using the National Map viewer. CONTRACTOR is responsible for downloading this publically available data to cover Sub-Area 4. Note that available data may be in multiple files and based on different collection years. CONTRACTOR is expected to update or supplement this DEM data, if necessary, to insure that final orthophotos for the area meet specified horizontal accuracy tolerances.

4.6.5 Coordinate System

The coordinate system for this project shall be Colorado State Plane Coordinate System, Central Zone, Datum of NAD83 (HARN), units of US Survey Feet.

4.6.6 Flight Dates

Imagery shall be flown in late spring to early summer, under leaf-off conditions if conditions make that possible, and early enough to minimize shadows and reduce the chance of snow. The appropriate flight dates are listed below and may be adjusted due to ground or weather conditions upon prior approval of UTILITIES.

Area	Start Date	Finish Date
Area SA-4	June 1, 2022	July 31, 2022

5.0 Overall Aerial Photography Requirements

5.1. Digital Aerial Camera

The aerial camera used shall be a precision large-format digital aerial camera equipped with low distortion, high-resolution optics and high pixel count charge-coupled device (CCD) sensors. It must be capable of:

- Ground resolution equal to or better than 6"
- Generating four-band imagery from separate red, green, blue, and near infrared bands
- Supporting high geometric accuracy through forward motion compensation and image stabilization
- Producing images that are compatible with existing softcopy photogrammetric environments (Image station)

A digital camera calibration report shall be submitted. If not, any available results of camera tests completed by the USGS or other organizations independent of CONTRACTOR shall be submitted. In addition, to be submitted are 1) the results of testing done by the camera manufacturer and/or CONTRACTOR and 2) detailed camera specifications. CONTRACTOR shall own the digital aerial camera and that there are spare cameras of the same make and model available should issues occur with camera performance.

5.2. Multi-spectral Image Acquisition

For all project areas, the color (RGB) and near-infrared (NIR) bands are to be acquired simultaneously such that a four-band image (RGBNIR) can be created for delivery. Any attempt to use image compression during image acquisition must be approved by the PPGA prior to the start of the project.

5.3. Flight Conditions

To ensure product uniformity, it is imperative that CONTRACTOR addresses adherence to the specific flight conditions. Flight time schedules, quality assurance of color balancing processes, continuity between flights and continuity from one sub area to the next are all conditions that must be addressed in CONTRACTOR responses.

The sun angle for all flights shall not be less than thirty (30) degrees and orthophoto imagery shall be acquired generally between 10:00 am and 2:00 pm local time. In no case shall orthophoto imagery be undertaken when the ground is obscured by snow; in the presence of obscuring fog or dust; when streams are not within their normal banks; or when cloud shadows appear on more than two percent (2%) of the area in any one image. Photographs shall not contain objectionable shadows (e.g., obscuring roads and other important features) caused by relief or low solar altitude. CONTRACTOR shall use photographic targets for use in establishing horizontal control during aerial triangulation, targets should be of an appropriate size to be easily recognizable within the aerial imagery.

Note: UTILITIES and the PPGA strongly prefers flights to be under sunny conditions and encourages CONTRACTOR to not fly during overcast conditions. CONTRACTOR should contact UTILITIES before flying under overcast skies.

5.4. Flight Plans

All flight lines shall be submitted digitally in a standard ESRI shape file format and in the coordinate system specified for the given project area. Flight line features shall be attributed with appropriate identification information. Flight lines may be broken up into flight segments to accommodate terrain changes, atmospheric problems, or military flight approval. Ground sampling distances shall be maintained throughout the flight line, which would be flown at the

same altitude. Each segment of a flight line shall be flown continuously, without interruption. The principal points of the first two (2) and the last two (2) exposures of each flight line shall fall outside the boundaries of the area to be covered by the flight, and all side boundaries shall be covered by a minimum of 25% of the photo stereo image format. The principal points of the first two (2) and the last two (2) exposures of each flight segment shall overlap. These flight plans shall be submitted for approval by the PPGA prior to the aerial photography imagery phase. Upon completion of the photographic missions, all revised, final flight lines shall be submitted with photo centers.

Note: There are several military reservations within the project area. Authorization for over flights of these areas and for flights within Traffic Control Zones associated with both military and civil air operations may have to be secured and shall be the responsibility of CONTRACTOR to do so. The PPGA, if requested, can set up a meeting with Colorado Springs municipal airport and Ft Carson officials (Ft. Carson absolutely requires overflight authorization) to assist with flight coordination and other communication requirements. All final arrangements shall be the responsibility of CONTRACTOR and must be reported to UTILITIES. Any issues securing clearance in these areas must be reported to the PPGA within twenty-four (24) hours.

5.5. Re-flights

Unacceptable orthophoto imagery shall be corrected, at no additional cost to UTILITIES. The re-flight coverage shall overlap the accepted orthophoto imagery by at least two (2) stereo models. Re-flights fall under the same quality control standards and guidelines as all other imagery in this project. Upon completion of the re-flight(s), CONTRACTOR shall submit a detailed quality control report to the PPGA project manager for approval based upon stated specifications.

5.6. Aircraft

Any aircraft to be used on the project shall be equipped with all essential navigational and photographic instruments, including Airborne Global Positioning Satellite (ABGPS) enhanced navigational systems. All aircraft must be operated by a well-trained and experienced crew. Performance of the aircraft shall be adequate to complete the proposed project in accordance with the technical specifications. All operations shall be in conformity with the applicable official regulations and ordinances. Appropriate Federal Aviation Administration documentation indicating that the aircraft used is within current requirements and operating specifications shall be submitted by CONTRACTOR prior to the first flight in which the aircraft is used on the project. CONTRACTOR shall provide evidence that all aircraft used for this project are properly insured.

The aircraft shall have a proven service ceiling with an operating load of not less than five percent (5%) above the highest altitude requirements to secure the specified orthophoto imagery. It is not mandatory, but it is preferred, that CONTRACTOR own the aircraft used for the OP 2022 project and that CONTRACTOR has access to a backup aircraft.

5.7. Spacing of Images

Overlapping images in each flight line and between flight lines shall provide full stereoscopic coverage of the area to be mapped in accordance with the end lap and side lap specifications.

5.8. End lap

Images used as stereoscopic pairs shall have overlap of between fifty-five percent (55%) and sixty-five percent (65%) in the respective frames. Consecutive images in each flight line shall have an end lap of approximately sixty percent (60%) to ensure full stereoscopic coverage.

5.9. Side lap

Side lap between adjacent parallel flight lines shall be adequate to satisfy the requirement for stereoscopic coverage, and shall be approximately thirty percent (30%), plus or minus five percent (5%).

5.10. Crab

Any flight or portion thereof in which crab is more than three degrees (3°) shall be cause for rejection of orthophoto imagery. CONTRACTOR shall describe how the proper crab shall be maintained and documented throughout the flight.

5.11. Tilt

Tilt of the camera from vertical at the instant of exposure shall not exceed three degrees (3°), nor shall it exceed five degrees (5°) between successive exposure stations. Average tilt over the entire project shall not exceed one degree (1°). CONTRACTOR shall describe how the proper tilt shall be maintained and documented throughout the flight.

5.12. Flight Height

Proper flight heights must be maintained to meet the ground sampling distance requirements as outlined in section 4 of this document. The departure above or below the flying height required to maintain the specified photo scale must not exceed five percent (5%). CONTRACTOR shall be responsible for maintaining proper flying height throughout the project.

5.13. Flight Data Tagging

CONTRACTOR shall provide a digital photo flight line index containing the geographic centers of each flight line in an ESRI shape file format. The index shall be in the coordinate system specified for this project and must include the following information.

- Flight line number
- Exposure number/IDTime of day of exposure (in the format: hr:min:sec)
- Date of flight line flight (in the format: mm/dd/yyyy)
- Elevation in feet above sea level
- Scale of orthophoto imagery
- Ground Sampling Distance

5.14. Disposition of the Original Imagery

The original orthophoto imagery and products provided shall be the property of the PPGA. Delivery of the original imagery to UTILITIES in TIFF format is required. UTILITIES prefers deliveries using portable hard drives with USB connectors. Any other type of delivery method must be approved by UTILITIES prior to delivery. CONTRACTOR shall not make, sell, or loan copies of this data except as approved in writing by UTILITIES.

5.15. Photo Point Index

CONTRACTOR shall provide a digital photo point index containing the geographic centers of each original image in an ESRI shape file format. The index shall be in the coordinate system specified for this project and must include the following information:

- Flight line number
- Exposure number/ID
- Date of exposure (in the format: mm/dd/yyyy)
- Time of day of exposure (in the format: hr:min:sec)
- Elevation in feet above sea level
- X Location of Point
- Y Location of Point
- Scale of orthophoto imagery
- Ground Sampling Distance

6.0 Survey Control and Analytical Triangulation Requirements

6.1 Ground Control Points

CONTRACTOR shall need to select and use enough ground control points as necessary to facilitate both Airborne GPS data capture and sufficient ground referencing. CONTRACTOR should identify the desired location of the ground control points as part of their operational flight map.

These points shall be delivered to the PPGA in a standard ESRI shape file format, in the coordinate system specified for this project and must include the following information:

- Point Name
- X Location of Point
- Y Location of Point
- Z Location of Point

6.2 Survey Control

Survey control points currently exist across a portion of the project area, generally within the Colorado Springs city limits. The Colorado Springs Utilities Land Base Services group

shall be available to CONTRACTOR as available to help identify survey control points within the Colorado Springs city limits as needed for this project. In addition, the City of Fountain can help identify control in the Fountain area, but if additional control is needed in any area, CONTRACTOR is responsible for collection. CONTRACTOR is responsible for control in all other areas. Sub area delineations can be found in Appendix B-1. Note that delivery area order must be maintained. Delivery area order shall not be changed without the consent of the PPGA.

6.2.1 Sub-Area 1

Portions of Sub-Area 1 have been photographed and mapped under several previous projects and therefore most of the area has sufficient control to ensure proper adjustment of new imagery. The PPGA shall work with CONTRACTOR to provide existing control point information within this area.

If new control is required within sub-area 1, if available, the PPGA may be able to provide survey services within the city limits and will provide reports of any survey efforts indicating the accuracy attained in capturing new control points. All surveying shall be conducted under the direct supervision of a licensed Colorado Professional Land Surveyor. The accuracy of any new control surveys shall meet or exceed the accuracy requirements for this project.

CONTRACTOR shall be responsible for collecting new control outside of the city limits. CONTRACTOR must fully justify any requirement for additional control to the PPGA. Upon completion of new survey control, a digital survey report shall be produced by CONTRACTOR and delivered to the PPGA project manager for approval. The accuracy of any new control surveys shall meet or exceed the accuracy requirements for this project.

6.2.2 Sub-Area 2

Portions of Sub-Area 2 have been photographed and mapped under many previous projects and therefore most of the area has sufficient control to ensure proper adjustment of new imagery. UTILITIES shall work with CONTRACTOR to provide existing control point information and for any additional control that may be needed to cover any new areas within Sub-Area 2. It is doubtful that any new control is needed within this area.

However, should new control be required in this area, CONTRACTOR shall provide all survey services. CONTRACTOR must fully justify any requirement for additional control to the PPGA. Upon completion of new survey control, a digital survey report shall be produced by CONTRACTOR and delivered to the UTILITIES project manager for approval. All surveying shall be conducted under the direct supervision of a licensed Colorado Professional Land Surveyor. The accuracy of any new control surveys shall meet or exceed the accuracy requirements for this project.

6.2.3 Sub-Area 3

Sub-Area 3 is the smallest of the sub-areas but is also the most remote. Sub-Area 3 has been photographed and mapped under many previous projects and therefore most of the area has sufficient control to ensure proper adjustment of new imagery.

Should new control be required in this area, CONTRACTOR shall provide all survey services. CONTRACTOR must fully justify any requirement for additional control to UTILITIES. Upon

completion of new survey control, a digital survey report shall be produced by CONTRACTOR and delivered to UTILITIES project manager for approval. All surveying shall be conducted under the direct supervision of a licensed Colorado Professional Land Surveyor. The accuracy of any new control surveys shall meet or exceed the accuracy requirements for this project.

6.2.4 Sub-Area 4

Sub-Area 4 consists of the entirety of Teller County that is not already part of another sub-area.

Should new control be required in this area, CONTRACTOR shall provide all survey services. Upon completion of new survey control, a digital survey report shall be produced by CONTRACTOR and delivered to UTILITIES project manager for approval. All surveying shall be conducted under the direct supervision of a licensed Colorado Professional Land Surveyor. The accuracy of any new control surveys shall meet or exceed the accuracy requirements for this project.

6.3 Control Point Data

Data depicting the control points utilized for this project shall be delivered to UTILITIES in a standard ESRI shape file format and shall be in the coordinate system specified for this project. Note that all points must also include elevation (Z) coordinate information as an attribute.

6.4 Aerial Triangulation Standards

Fully analytic aerial triangulation shall be used during this project to obtain high accuracy solutions for all project areas. Second generation orientation techniques are not to be used on this project. CONTRACTOR shall ensure UTILITIES that all equipment, software, and procedures used during the Aerial Triangulation process are acceptable to meeting this requirement.

The aerial triangulation solution shall adequately control all aerial imagery to facilitate accurate ortho-rectification of the imagery. At a minimum, the positional accuracy of pass and tie points established through the aerial triangulation process shall meet or exceed each of the following conditions:

- Root mean square error (RMSE) of the final block adjustment at all control and check points shall not exceed 1/7500 of the flight height.
- The maximum allowable error of any point shall not exceed $\pm 1/5000$ of the flight height.

CONTRACTOR should employ checkpoints to validate the accuracy of the aerial triangulated solution. CONTRACTOR should report the results of the check to UTILITIES before proceeding with any ortho-rectification. Should these results fail to meet project accuracy standards, UTILITIES reserves the right to halt project progress until corrective actions have been put in place to correct the situation.

6.5 Aerial Triangulation Check Points

Check points are horizontal/vertical control points that have been established by ground control procedures throughout the photo block for accuracy checking purposes. At the discretion of

CONTRACTOR, checkpoints may be used to improve the aerial triangulation results. CONTRACTOR shall notify UTILITIES of the locations of any check points used within the final solution. The positional values of these points may subsequently be used in the aerial triangulation adjustment once the checks have been evaluated and approved. Independent of these check points, UTILITIES shall use its own set of checkpoints to independently validate from the CONTRACTOR deliverable product.

6.6 Aerial Triangulation Report

Upon completion of all aerial triangulation work or for any required sub-block adjustments, CONTRACTOR shall deliver two separate reports for the PPGA to review. The first report shall be an overview report of flight, control, and exposure information, and shall include, but shall not be limited to, the following items:

- Control and flight line indexes
- Exposure stations
- Control points (properly labeled)

The second report shall be an Aerial Triangulation report outlining the results of the AT process.

This report shall include, but shall not be limited to, the following items:

- All geometric closure errors for survey control points
- Computed coordinates of all control, pass, and check point locations
- Identification of all points to include:
 - Points that were included in the AT solution
 - Points that were discarded from the AT solution
 - Explanation of why points were discarded
 - Weighting factors applied to all points used in the AT solution

Reports shall also include, at a minimum, a brief narrative that describes the overall AT process including equipment used, procedures, software, RMSE summaries, bundle adjustment solution results, and geometric closure errors. Also included should be significant issues (misfits) encountered at control points and the steps taken to analyze the problem and solutions to rectifying these discrepancies.

7.0 Digital Imagery Requirements

7.1. Delivery Areas

Orthophotos shall be delivered for each Sub-Area of this project, as described in Section 3 of this Statement of Work. Delivery areas are delineated in Appendix B-2. Delivery area order shall not be changed without the consent of UTILITIES.

7.2 Raw Imagery Review

UTILITIES expects the collection of Raw imagery to meet all specifications in this scope regarding clouds, shadows, snow, etc. However, as a simple check of the raw imagery, CONTRACTOR will

provide samples of raw imagery for each delivery area for UTILITIES to review. Parties will work out the details of data delivery prior to data collection.

7.3 Orthophotos

CONTRACTOR will process raw imagery at the highest bit depth possible to achieve optimum effectiveness. Orthophotos shall be delivered in the following formats listed below.

- 8-bit, 4 Band (Red, Green, Blue, Near-Infrared)
- GeoTiff, TFW

7.4 Image Quality

Orthophotos shall not contain defects such as missing pixels, pixel color anomalies, excessive color bleed, etc. CONTRACTOR is expected to correct any distortions caused by elevated or depressed structures such as bridges, railroad beds, overpasses, or steep terrain. Any images that are delivered to UTILITIES with these types of anomalies shall be rejected. In addition, visible image seams or sutures within a digital orthophoto shall also be rejected, including any with edge or feather effects. Furthermore, orthoimagery with evidence of imagery manipulation, such as copy/paste of pixels, shall be rejected by UTILITIES.

7.5 Image Mosaic Tiles

Creating image mosaic tiles is an essential part of producing a digital orthoimagery. The methods used to mosaic imagery are critical to the final product produced. Where digital mosaic orthoimages are created, it is essential that proper color, contrast and brightness be maintained across such areas so that visual effects are essentially eliminated. All radiometric correction processes must result in minimal radiometric seams within or between flight lines. Images must also be well edge matched such that tonal values are consistent across edges. Finally, CONTRACTOR should use advanced color balancing techniques to create an output dataset that has a seamless context across the entire project.

7.6 Data Structure

Digital orthoimagery data shall be delivered in a TIFF format with associated world (TFW) files. Files shall be named and sized (4000' x 4000') according to the tile layout provided by UTILITIES. Data should be transferred to UTILITIES using portable disk technology. If applicable, CONTRACTOR shall perform anti-virus software checking of all portable disks prior to any delivery to UTILITIES.

7.7 Quality Acceptance / Acceptance Standards

CONTRACTOR shall provide orientation to its employees assigned to this project so that all employees clearly understand the requirements and deliverable specifications of the project. CONTRACTOR shall also perform quality assurance checks of the data prior to delivery of the data to UTILITIES and shall provide evidence of such quality assurance checks by delivering feedback regarding each delivery. In addition to that undertaken by CONTRACTOR, UTILITIES shall perform its own quality acceptance check. Acceptability of deliveries of data shall occur when all digital files and digital orthophotos delivered meet all project requirements regarding file structure and conformity as per UTILITIES review. ***UTILITIES shall provide feedback on all orthoimagery deliverables within 21 days of receipt of data.***

7.8 Project Wide Mosaic

Upon completion and acceptance of orthoimagery tiles and completion of sub-areas, CONTRACTOR is to produce project wide mosaic datasets for the areas and formats listed below.

- One JP2 file covering SA1 (City of Colorado Springs area)
- Twelve JP2 files splitting SA1 into 12 pieces (Layout will be provided)
- One JP2 file covering PD Area 4 (City of Fountain area)
- One JP2 file covering SA1-SA3 (El Paso County Area)
- One JP2 file covering SA Area 4 and extended areas comprising all of Teller County boundary (Teller County)
- One JP2 file covering SA Areas 1-4 (Entire Project Area)

Compression parameters shall be discussed and agreed upon prior to delivery.

7.9 Labor Resources

UTILITIES will allow the major production work of Orthophoto production to be performed by CONTRACTOR subcontractors. However, UTILITIES *requires* that all final quality control steps be completed by CONTRACTOR within the United States by CONTRACTOR employees located at that site. Should CONTRACTOR need additional production resources from outside vendors or other CONTRACTOR offices to adhere to the project schedule, the PPGA must be notified and approve such changes prior to implementation.

8.0 Optional Products

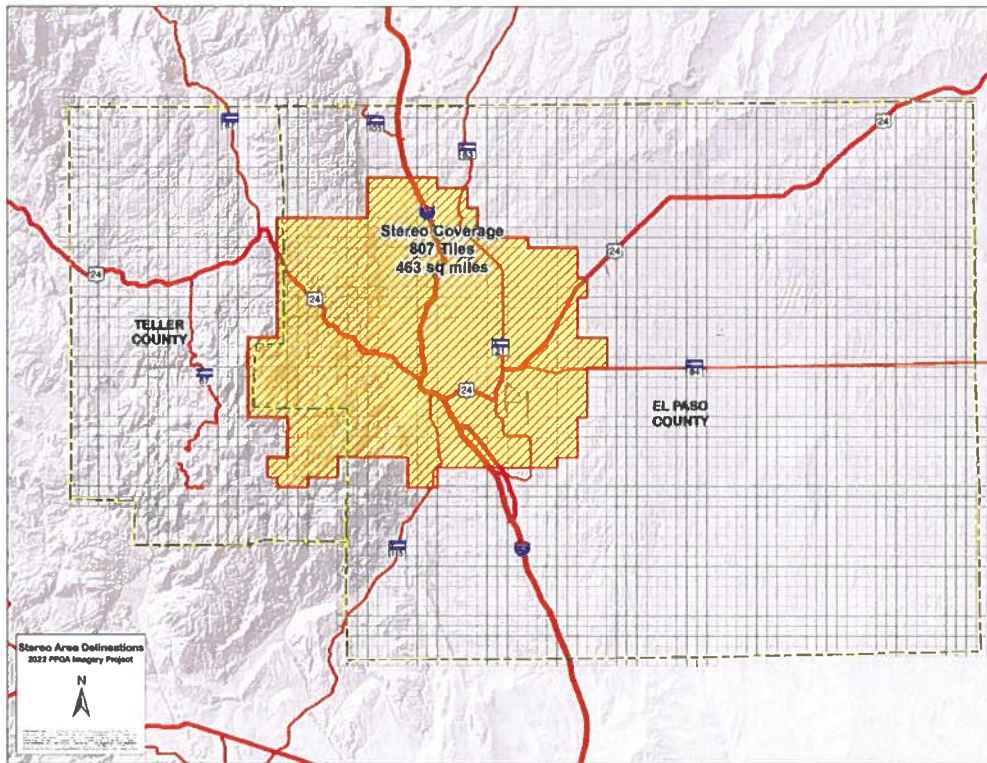
8.1 Digital Stereo Pair Requirements

This optional product was selected to be completed in the 2022 project.

Digital stereo pairs are a required deliverable for the area outlined below and covers approximately 463 square miles. Stereo pair delineations can be found in Appendix B-3. All digital stereo pairs for delivery shall be processed using DAT/EM Photogrammetry Suite.

As part of this delivery, the following information related to the stereo models shall also be included with the delivery to the UTILITIES:

- Photo Position – photo center x,y,z , with Z being the above ground average
- Omega, Phi, Kappa values
- Camera Calibration
- Photo Direction
- 6 Interior orientation coefficients
- 6 exterior orientation parameters



Deliverable Stereo Coverage Extents

8.2 LiDAR – General Requirements and Specifications

This optional product was NOT initially selected to be completed in the 2022 project. Verbiage is being left in the scope in case the PPGA partners decide to move forward with this option.

UTILITIES requests that the CONTRACTOR prepare a technical response for the creation of a LiDAR dataset for the areas within the PPGA mapping extent. The LiDAR data collected shall consist of elevation data sufficient to be used as input to support the rectification of imagery to 1" = 100' map scale accuracy (ASPRS Class I Specification). Furthermore, the mass point accuracy from the LiDAR data must be sufficient (when combined with breaklines) to support the generation of contours meeting 2 foot accuracy (ASPRS Class I Specification).

At a minimum the CONTRACTOR response must include a technical write up for the collection, processing, and quality control of full raw and classified LiDAR point clouds and associated raster digital elevation models. This response should also include, as deliverable options, a canopy classification, a building classification, a vegetation classification, and the benefit of utilizing Key Modal processing. UTILITIES is currently requesting a LAS v1.4 delivery format. It is requested that the contractor discuss alternative delivery formats as well as the pros and cons of each.

8.2.1 Project Area

The project area will potentially include all sub-areas but should be itemized separately for the review of all options.

8.2.2 Schedule

LiDAR should be flown prior to any orthoimagery missions. Preferably, the flight window should be in the March to May timeframe to minimize heavy canopy disruption by stress and inconsistent LiDAR returns caused by snow cover.

8.2.3 Coordinate System

The coordinate system for the LiDAR product shall be consistent with the orthoimagery as defined in section 4, "Colorado State Plane Coordinate System, Central Zone, Datum of NAD83 (HARN) using the vertical Datum of NAVD88. Measurements shall be given in units of US Survey Feet.

8.2.4 Data Collection

- The CONTRACTOR will clearly define planned flight procedures and control specifications in their work plan. The CONTRACTOR must demonstrate experience in performing LiDAR surveys covering terrain similar to that of the Pikes Peak Region.
- The CONTRACTOR will provide a proposed schedule plan for flight periods with detailed contingency plans for inclement weather conditions. The CONTRACTOR shall also provide an estimate of the number of collection days (flight days) needed to meet acquisition conditions.
- LiDAR acquisition should be completed when clouds and fog are absent between the aircraft and ground. During acquisition, no snow will be allowed on the ground unless prior approval is provided by the PPGA. No unusual flooding or water inundation will be allowed during the time of acquisition.
- Leaf-off acquisition is preferred, however as numerous factors will affect vegetative conditions at the time of any collection, the PPGA requires that penetration to the ground must be adequate to produce an accurate and reliable bare-earth surface suitable to produce digital elevation models.
- The CONTRACTOR will be required to gain the necessary aircraft clearances for flying over the project area (the Colorado Springs and El Paso County area have multiple military bases).
- Prior to data collection, the CONTRACTOR shall submit a written report that the total LiDAR system has been calibrated by the manufacturer, for the purpose of identifying and correcting system errors.
- The CONTRACTOR shall submit a quality control report that describes the methodology and processes for collecting and producing the delivered LiDAR data sets.
- The minimum deliverables for the LiDAR survey shall include, but not be restricted to the full data return in LAS format and a classified bare earth DEM in LAS or other selected format with the final structure to be determined by the PPGA.

8.2.5 Technical Specifications

8.2.5.1 Data Characteristics

- All processing on point products are required to be in a fully compliant LAS v1.4 format and shall meet the LAS v1.4 specification. Within each LAS file, points from a given swath shall be stored together and in their collected order.
- Vertical accuracy should exceed 15cm RMSE.
- Relative accuracy within a flight line should meet 7cm RMSE.
- Relative accuracy between each flight line should exceed 10cm RMSE.
- LiDAR should be collected to meet a 1.4 meter point density. Point data will be tested against first return data only and data void exceptions are excluded from these tests.

Data voids within each swath are unacceptable, except when caused by water bodies, low near infrared reflectivity, or where appropriately filled in by another swath. No Voids because of cloud cover or instrument failure are allowed.

8.2.5.2 Scan Angle and Swath Overlap Requirements

- 20 degrees of NADIR
- 40 degrees (total Field of View)
- Swath Overlap should exceed 30%. Any data with gaps between the geometrically usable portions of swaths will be rejected. A single non-overlapped, edge-matched tilting will be required for data delivery.

8.2.5.3 Point Classification

- All processing should be carried out with the understanding that all point deliverables are required to be in fully compliant LAS format v1.4. Data producers are encouraged to review the LAS specification in detail.

8.2.5.4 Classification Scheme (minimum):

- LAS Code Description (Processed but unclassified Bare-earth ground)
 - 3 – Low Vegetation
 - 4 – Medium Vegetation
 - 5 – High Vegetation
 - 7 – Noise (low or high manually identified, if needed)
 - 9 – Water
 - 10 – Ignored Ground
 - 11 – Withheld
- Note: Class 7 (Noise) is included as an adjunct to the “Withheld” bit. All “Noise” points are to be identified using one of these two methods.
- Note: Class 10 (Ignored Ground) is for points previously classified as bare earth but whose proximity to a subsequently added breakline requires that it be excluded during Digital Elevation Model (DEM) generation

8.2.5.5 Classification Accuracy

- 90% of artifacts removed
- 95% of all outliers removed
- 95% of all vegetation removed
- 98% of all buildings removed
- Point classification is to be consistent across the entire project. Noticeable variations in the character, texture, or quality of the classification between tiles, swaths, lifts, or other non-natural divisions will be cause for rejection of the entire deliverable.

8.2.6 Deliverables

8.2.6.1 Metadata

- Collection Report detailing mission planning and flight logs.
- Survey Report detailing the collection of control and reference points used for calibration and QA/QC.

- Processing Report detailing calibration, classification, and product generation procedures including methodology used for breakline collection and hydro-flattening.
- QA/QC Reports detailing the analysis, accuracy assessment, and validation of:
 - The point data (absolute, within swath, and between swath).
 - The bare-earth surface (absolute).
 - All breaklines
 - Other optional deliverables as appropriate.
- Control and Calibration points: All control and reference points used to calibrate, control, process, and validate the LiDAR point data or any derivative products are to be delivered.
- Geo-referenced, digital spatial representation of the precise extents of each delivered dataset. This should reflect the extents of the actual LiDAR source or derived product data, exclusive of Triangular Irregular Network (TIN) artifacts or raster NODATA areas. A union of tile boundaries or minimum bounding rectangle is not acceptable. ESRI polygon shapefile or feature class is preferred.
- Product metadata (FGDC compliant, XML format metadata). One file for each:
 - Project
 - Lift
- Tiled deliverable product group (classified point data, bare-earth DEM's, breaklines, etc.). Metadata files for individual tiles are not required.

8.2.6.2 Raw Point Cloud

- All returns, all collected points, fully calibrated, and adjusted to ground, by swath.
- Fully compliant LAS v1.4
- Geo-reference information included in all LAS file headers.
- GPS times are to be recorded as Adjusted GPS Time, at a precision sufficient to allow unique timestamps for each return.
- Intensity values (native radiometric resolution).
- 1 file per swath, 1 swath per file, file size not to exceed 2GB.

8.2.6.3 Classified Point Cloud

- Fully compliant LAS v1.4.
- Geo-reference information included in all LAS file headers.
- GPS times are to be recorded as Adjusted GPS Time, at a precision sufficient to allow unique timestamps for each return.
- Timestamps for each return.
- Intensity values (native radiometric resolution).
- Tiled delivery, without overlap based on tile scheme provided by the PPGA.

8.2.6.4 Bare Earth Surface (Raster DEM)

The CONTRACTOR shall be responsible for developing a professional, industry standard DEM for the entire study area. The CONTRACTOR shall perform the necessary Ground Survey and other steps necessary to meet the horizontal accuracy and quality of the delivered imagery. Deviations from industry standard procedures must be discussed with the UTILITIES and the PPGA Project Team in advance and the CONTRACTOR must receive written UTILITIES approval for such variations. The following outlines general requirements for this product.

- Deliverable shall be in accordance with the USGS LiDAR Base Specification V1.3, 2018.
- Cell Size no greater than 1 meter (3 feet).
- Product shall be in an industry standard, GIS-compatible, 32-bit floating point raster form.
- ERDAS .IMG preferred.
- Geo-reference information shall be included in raster file.
- Tiled product, without overlap based on tile scheme provided by UTILITIES.
- DEM tiles will show no edge artifacts or mismatch. A quilted appearance in the overall project DEM surface, whether caused by differences in processing quality or character between tiles, swaths, lifts, or other non-natural divisions will be cause for rejection of the entire DEM deliverable.
- Void areas (i.e., areas outside the project boundary but within the tiling scheme) shall be coded using a unique “NO DATA” value. This value shall be identified in the appropriate location within the file header.
- All QA/QC analysis materials and results are to be delivered.
- Depressions (sinks), natural or man-made, will NOT be filled. Water Bodies (ponds and lakes), wide streams and rivers (“double-line”), and other non-tidal water bodies will be flattened.

8.3 Building Representations – General Requirements

This optional product was selected to be completed in the 2022 project.

Building representations are planimetric features representing buildings that serve as a primary business government, residential function, and so forth. The following outlines general requirements for these features.

- Horizontal accuracy shall be consistent with Second Order, Class I, ninety-five percent (95%) confidence interval of 2cm base error and 20 parts per million linear errors.
- Data creation shall be constrained to American Society for Photogrammetry and Remote Sensing (ASPRS) accuracy standards for large scale class I maps for 1” = 100’ (Sub-Area 1) and 1” = 200’ (Sub-Areas 2 and 3).
- Vertical datum shall be NAVD88. All vertical stations set will be tied directly to NGS monuments shoes orthometric heights were determined by differential leveling and adjustment by the NGS on or after 1995.
- Each enclosed building representation will be a polygon and contain z-value (elevation) at the highest point of the building, but exclude flag poles, chimney, and other features smaller than 4-feet wide. These representations shall have unique ID’s and corresponding parcel numbers.
- Building representations shall be created for all buildings larger than either four-hundred square feet (400 sq. ft.).
- This dataset shall be in an ArcGIS Pro-compatible format and FGDC compliant with full metadata.
- All building representations shall conform to accuracy and quality established by the American Society for Photogrammetry and Remote Sensing (ASPRS) for large scale mapping 1” = 100’ (Sub-Area 1) and 1” = 200’ (Sub-Areas 2 and 3).
- There are approximately 250,000 parcels in the EL PASO COUNTY region.

9.0 Warranty

The PPGA requires that CONTRACTOR warrant the deliverable products and to repair, replace, or correct any deliverable product for a *two year period* following final acceptance of the data by the PPGA for any deliverable product that is defective, deviates from industry standards, or fails to meet all prescribed specifications set forth in this scope of work.

The PPGA retains the sole right to determine CONTRACTOR'S adherence to all specifications. If in the sole discretion of the PPGA, it determines that CONTRACTOR has seriously breached specifications, the PPGA may require CONTRACTOR to suspend production of additional work services until such time as CONTRACTOR can demonstrate that the problem has been remedied to the satisfaction of the PPGA. The PPGA may adjust the deliverable milestones of the project if necessary.

10.0 Deliverable Products and Acceptance

10.1. Deliverables

Deliverable products include information being exchanged from CONTRACTOR to the UTILITIES. ***A complete list of deliverable products can be found in Appendix A.***

10.2. Project Deliverable Acceptance

All products must meet the specifications agreed to in the resultant contract. All deliverable products shall be reviewed by UTILITIES to determine whether the products are acceptable.

An acceptance program shall be executed based on a thorough review of the prototype delivery and the proper completion of the above deliverables. The prototype calls for the early delivery of four (4) separate locations (representing each Sub-Area) that contain four (4) contiguous tiles each.

UTILITIES shall use all specification and requirement criteria outlined in this document and accompanying appendices to determine acceptance and rejection of all identified deliverables.

After acceptance checking, products shall be either:

1. ACCEPTED - Products that meet specifications and contain no errors, or so few errors as to be acceptable to UTILITIES, shall be formally indicated as ACCEPTED. UTILITIES shall notify CONTRACTOR of the products accepted. Payment for work completed shall not be made until the products are accepted by UTILITIES.

2. REJECTED - This means that the number and character of the errors detected by UTILITIES are such that the products are returned to CONTRACTOR. UTILITIES shall formally notify the CONTRACTOR of the REJECTED status of the products. CONTRACTOR must edit and correct the products for resubmittal to UTILITIES for its quality control edit. If, at the sole discretion of UTILITIES, there are an undue number of rejected products, the UTILITIES may require CONTRACTOR to suspend production until the problems contributing to the rejections are identified and corrected.

Execution of the correction procedure shall not affect the overall production schedule.

11.0 Schedule

UTILITIES expects the 2022 project to begin around March 15, 2022 and expects the project to be completed no later than March 15, 2023. UTILITIES understands that weather and seasonal conditions may influence the overall timing of the project and has attempted to build extra time into the schedule to accommodate for those possibilities. Should extensive delays occur during the project, UTILITIES shall review the schedule and make appropriate changes if necessary. *The preliminary schedule for this project can be found in Appendix C.*

12.0 Performance Requirements

The UTILITIES and CONTRACTOR recognize that time is of the essence concerning this agreement and that the UTILITIES shall suffer financial loss if the services provided by CONTRACTOR are not completed within the times specified in the schedules outlined in this scope, including any extensions thereof. UTILITIES and CONTRACTOR also recognize the delays, expense, and difficulties involved in proving the actual loss suffered by the UTILITIES if the services of this scope of work are not completed on time.

The PPGA reserves the right to terminate the contract with CONTRACTOR if the following project milestones or specifications do not occur according to schedule or are not met, respectively:

- Target flight windows are missed by CONTRACTOR (as noted above for each section, flight dates)
- Non-compliance of mapping specifications by CONTRACTOR
- Non-usage of specified DTM/DEM by CONTRACTOR
- Orthoimagery has been excessive manipulated by CONTRACTOR through copy/paste methods

13.0 Project Completion

Upon delivery and final acceptance of all data deliveries, the project shall be deemed complete.

At that time, the PPGA shall provide CONTRACTOR with a formal letter indicating final acceptance of the data and overall completion of the project. At that point, the data shall be considered under warranty as specified in section 9 of this document.

Exhibit 3

November 30, 2021		Cost Estimates						
		Colorado Springs	CSU	E911	EPC	Teller County	Fountain	
Product Description		Subtotal						
Base Aerial Product (Sub Areas 1-3 - El Paso County) Cost Share (%)		100%	23.75%	23.75%	23.75%	0.00%	0.00%	5.00%
8 Bit, 4 Band Ortho Imagery - 6 inch/1 Foot Resolution Survey Control		\$115,198.95	\$27,359.75	\$27,359.75	\$27,359.75	\$0.00	\$0.00	\$5,759.95
		\$6,600.00	\$1,567.50	\$1,567.50	\$1,567.50	\$0.00	\$0.00	\$330.00
		\$121,798.95	\$28,927.25	\$28,927.25	\$28,927.25	\$0.00	\$0.00	\$6,089.95
Base Aerial Product (Sub Area 4 - Teller County) Cost Share (%)		100%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%
8 bit, 4 Band Ortho Imagery - 1 Foot Resolution Survey Control		\$25,121.01	\$0.00	\$12,560.51	\$0.00	\$12,560.51	\$0.00	\$0.00
		\$1,500.00	\$0.00	\$750.00	\$0.00	\$750.00	\$0.00	\$0.00
		\$26,621.01	\$0.00	\$13,310.51	\$0.00	\$13,310.51	\$0.00	\$0.00
Secondary Product (Sub Areas 1-3 - El Paso County) Cost Share (%)		100%	23.75%	23.75%	23.75%	0.00%	0.00%	5.00%
Building Footprints - 100 Sq Ft		\$60,686.28	\$14,412.99	\$14,412.99	\$14,412.99	\$0.00	\$0.00	\$3,034.31
		\$60,686.28	\$14,412.99	\$14,412.99	\$14,412.99	\$0.00	\$0.00	\$3,034.31
Secondary Product (Sub Area 4 - Teller County) Cost Share (%)		100%	0.00%	50.00%	0.00%	50.00%	0.00%	0.00%
Building Footprints - 100 Sq Ft		\$9,777.69	\$0.00	\$4,888.85	\$0.00	\$4,888.85	\$0.00	\$0.00
		\$9,777.69	\$0.00	\$4,888.85	\$0.00	\$4,888.85	\$0.00	\$0.00
JPEG 2000 - PD Areas 1-13 (El Paso County)*		\$0.00	\$0.00	\$0.00	\$0.00	NA	NA	NA
JPEG 2000 - PD Areas 1-3 (City of Colorado Springs)*		\$0.00	\$0.00	\$0.00	\$0.00	NA	NA	NA
JPEG 2000 - PD Areas 14-15 (Teller County)*		\$0.00	NA	\$0.00	NA	\$0.00	\$0.00	NA
JPEG 2000 - PD Area 4 (City of Fountain)*		\$0.00	NA	NA	NA	NA	NA	\$0.00
		\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
		\$218,883.93	\$43,340.24	\$61,539.59	\$43,340.24	\$18,199.35	\$0.00	\$9,124.26

* Mosaics included in the overall price

Cost Comparison to Satellite Imagery

2022 Imagery Comparison - Aerial Project Pricing vs Satellite Pricing

Area	SQ Miles	SQ Kilometers
1	338	875
2	1661	4302
3	238	616
4	548	1419
	2785	7213

Specifications
< 2% Cloud/Snow
15/30cm resolution
4 Band Pan-Sharpned
ASPRS Class 1 Horizontal Accuracy (1.0'/2.0' accuracy)
No seamlines shown
No Smears due to terrain issues
Outright ownership of data/imagery
Stereo information required
Project Mosaic
El Paso County Mosaic
City of COS Mosaic
City of Fountain Mosaic
Teller County Mosaic

Aerial Acquisition (PPGA 2022 Pricing)

Resolution (in)	Resolution (cm)	Cost
6	15	\$38,941
12	30	\$59,015
12	30	\$23,843
12	30	\$26,621
Total Cost		\$1,48,420

High Res New Task Stereo Satellite Pricing

Resolution (in)	Resolution (cm)	Cost/ km2	Satellite Cost
20	50	\$59.88	\$52,420
20	50	\$59.88	\$257,603
20	50	\$59.88	\$36,911
20	50	\$59.88	\$84,989
Total Cost			\$647,885

Include as Part of Product	\$0	50% Add'l Charge (<5% Cloud/Snow)	\$215,962
Include as Part of Product	\$0	Not Available (50cm Resolution Only)	N/A
Include as Part of Product	\$0	Include as Part of Product	\$0
Include as Part of Product	\$0	Not Available (2m/4m accuracy)	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available (Licensed Product) one user only	N/A
Include as Part of Product	\$0	Include as Part of Product	\$0
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A
Include as Part of Product	\$0	Not Available	N/A

~\$500K in savings as opposed to purchasing standard commercial satellite Imagery