

REQUEST FOR PROPOSALS
MULTI-JURISDICTIONAL ORTHOPHOTOGRAPHY COOPERATIVE PURCHASE

October 10, 2012

Digital Orthophoto Imagery Services

Request for Proposal

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SECTION 1 – BACKGROUND

A. Introduction

The Atlanta Regional Commission (ARC), in coordination with local governments within the ARC 20-County non-attainment area, is soliciting qualifications and price proposals from organizations experienced in aerial survey, photogrammetry, LiDAR data collection, and GIS. This imagery is being acquired to support the operation of a local government GIS systems for use and access by county and city managers, local economic development authorities, planning departments, emergency services, and GIS staff.

The ARC and participating local governments intend to award a contract for work beginning during the 2013 calendar year. The contractor will collect Digital Orthophotography by March 15, 2013 with final data delivered by August 31, 2013. Any contract award for this data collection is contingent upon ARC receiving adequate funding for this purpose from the participating jurisdictions and United States Geological Survey (USGS).

B. Geographic Area

The total area of the contract area is approximately 1061 Sq. miles. This area includes the counties of Clayton, Coweta, DeKalb and Spalding. A scaled map of the project area has been included as appendix item “A.”

C. Statement of Work

Aerial Photography

The digital orthophotos are to be produced from new (winter 2013) natural color aerial photography of the counties specified. The orthophotos will be horizontally georeferenced to the Georgia West State Plane Coordinate System NAD83 and vertically georeferenced to the NAVD88 vertical datum. This photography must be captured at a scale sufficient for producing 1” = 100’ planimetric mapping meeting the **American Society for Photogrammetry and Remote Sensing (ASPRS) Class 1 Accuracy Standards for Large Scale Maps** and for production of color digital orthophotography at a resolution of 0.5 feet (6 inches).

All ESRI shapefiles and ArcGIS 10.x feature classes, orthophotos, or other data created during the project shall be in this coordinate system using distance units of survey feet.

The areas to be covered and designated products, scales, resolutions, and intervals are as follows:

Area	Product
Clayton, Coweta, DeKalb, and Spalding Counties and 2,000 feet beyond those County boundaries	0.5’ pixel resolution natural color digital photography



SECTION 2 – INSTRUCTIONS FOR PROPOSAL

A. Proposal Deadline

The response to this request is due no later than **4:00 p.m. Eastern Standard Time, Friday, November 16, 2012.**

Five (5) copies sent to:

**Atlanta Regional Commission
Tim Maguire
40 Courtland Street, NE
Atlanta, GA 30303
404-463-3155**

All respondents must furnish these **five (5)** copies of the proposal as specified above.

All proposals shall be delivered sealed and clearly labeled as:

“MULTI-JURISDICTIONAL ORTHOPHOTOGRAPHY COOPERATIVE PURCHASE”

Proposals received after the scheduled receipt time will not be accepted. Proposals will be marked “LATE” and will be returned unopened to the respondent. In addition, faxed or emailed proposals will not be accepted.

All proposals submitted shall become the property of Atlanta Regional Commission and will not be returned. Atlanta Regional Commission is not responsible for any cost incurred by the respondent in proposal preparation, presentations given, or benchmarks performed.

It is the policy of ARC that Disadvantaged Business Enterprises (DBEs) (49 CFR Part 26) have the maximum opportunity to participate, either as contractors or as subcontractors, in the performance of Commission contracts to the extent practical and consistent with the efficient performance of the contract. ARC’s DBE goal for 2013 is 15.8%.

B. RFP Timetable and Selection Schedule

The following is the schedule for this solicitation:



Milestone	Date
RFP Released	9:00 AM EST – Wednesday, October 10, 2012
RFP Questions Submittal Due Date	5:00 PM EST – Friday, October 19, 2012
Responses to Submitted Questions	5:00 PM EST – Friday, October 26, 2012
Proposal Due Date	4:00 PM EST – Friday, November 16, 2012
Preferred Vendor Selection and Notification	December 2012

**Note: the actual schedule may change after the submittal due date. All submitting firms will be notified via email about any schedule changes.*

C. Price Quotations

Proposals will include a price schedule that separately lists the cost per square mile for the digital orthophotography imagery. These per square mile costs will be tabularized with the individual cost for each county area for each data product.

D. Disclaimers

The Atlanta Regional Commission reserves the right to withdraw this RFP at any time for any reason, and to issue clarifications, modifications, and/or addenda, as it may deem appropriate. Unless the proposer specifies in its proposal, the ARC may award the contract for any items/services or groups of items/services in the RFP and may increase or decrease the quantity specified. ARC reserves the right to waive minor variances in proposals, provided they are in the best interest of the region. Any such waiver shall not modify any remaining RFP requirement. No portion of the work to be awarded under this contract shall be sublet, assigned, or otherwise disposed of, except with the written consent of ARC. Consent to sublet, assign or otherwise dispose of any portion of the work awarded under this contract shall not be construed to relieve the Contractor of any responsibility for the fulfillment of any contract agreements. A subcontractor shall not subcontract any portion of its work under this contract.

E. Rejection of Proposals

The Atlanta Regional Commission reserves the right to accept or reject in part or in whole, any or all proposals submitted.

F. Project Contact Information

Technical issues regarding response to this request shall only be addressed by ARC when directed to the following email address of the ARC project contact at:

Tim Maguire
tmaguire@atlantaregional.com

All questions must be received by 5:00 PM on Friday, October 19, 2012 and answers will be posted on ARC's website by Friday, October 26, 2012.



SECTION 3 – PROPOSAL CONTENT

A. Executive Summary

An Executive Summary shall provide a brief description of the contractor’s approach to accomplish the requested services.

B. Vendor Profile

The contractor must provide the following information relative to their firm. Similar information must be provided for each subcontractor or each member of a joint venture.

1. Contact Information, including Firm Name, Address, and Telephone Number
2. Type of ownership, indicate if the firm has done business under a different name or ownership as well as the name and location of any parent company or subsidiaries
3. Verification of A.S.P.R.S. active Certified Photogrammetrist status
4. Statement of current vendor equipment to be used, by make, model and year, including aircraft, digital aerial cameras, data processing equipment and general computer equipment.
5. Statement of current software to be used for this proposal.

C. Experience and References

Proposals shall include the names of three (3) client project managers whom have received similar product. In addition to the firm’s references, also provide the following information on the experience of key personnel assigned to this project:

1. Name and Title
2. Project Assignment
3. Years of Experience with this firm, with other firms
4. Education: Degree(s) /Years of Specialization
5. Active Registrations
6. Other relevant experience and qualifications to the proposed project complete with client name, phone number, and contact

D. Implementation Plan

Description of the implementation plans for all project phases must include the elements detailed below. The implementation plan must identify the project team and include persons and/or organizations responsible for each phase of the work. The implementation plan must include a schedule of events in narrative and / or chart form. The schedule must include but is not limited to the following milestones:

1. Aerial mission and ground control
2. Computations and photo lab products
3. Scanning complete
4. Completion of aerial triangulation
5. Map compilation and cartographic completion
6. Delivery schedule of final digital data files



E. Cost Proposal

Proposals will include a price schedule that separately lists the cost per square mile for the digital orthophotography imagery. These per square mile costs will be tabularized with the individual cost for each county area for each data product.



SECTION 4 – EVALUATION AND SELECTION CRITERIA

A. Evaluation Methodology

The following criteria will be used to evaluate proposals. The criteria are listed in their relative order of importance in the selection process.

- a. **Firm Background** The proposal will be evaluated based on the respondent's background, including the number of years in business, size, and financial stability.
- b. **Similar Project Experience** The proposal will be evaluated based on project experience that is of a similar technical nature and complexity, for clients that are similar in size, location, and type as ARC.
- c. **Technical Approach and Expertise** The proposal will be evaluated on the methods and technical details that will be used to complete the project.
- d. **Equipment Ownership** ARC prefers that the respondents own all the equipment and own or license all the software to be used for the project. This preference increases the likelihood that the equipment will be properly calibrated and well maintained.
- e. **Digital Camera System** Specific detail on camera system or systems to be used in the capture of information for this contract should be included for the review.
- f. **Quality Control** The proposal will be evaluated based on the apparent effectiveness of the respondent's proposed quality control program.
- g. **Cost** The proposal cost will be a significant consideration in the choice of contractor.



SECTION 5 – AERIAL PHOTOGRAPHY SPECIFICATIONS

A flight plan map shall become part of any contractual agreement. The flight plan presented by the vendor for 2013 fly-over shall be based on Appendix A map area and will be submitted to the ARC for approval.

A. Existing Monumentation and Ground and Photo Control

The ARC, in conjunction with the participating local governments, will provide all available monumentation network data covering the contract area. To the maximum extent both possible and practicable, vendors are strongly encouraged to make use of this monumentation network when establishing ground control and photo control in their proposals. The vendor shall provide the location and identification of all ground control and photo control points established and used during the flyover in ArcGIS™ Personal Geodatabase format.

B. Conditions

Vertical, natural color aerial photography shall be accomplished between January 1, 2013 and March 15, 2013, during the period when deciduous trees are without leaves. Photography will not be undertaken when the ground is obscured by snow, haze, fog, or dust, when streams are not within their normal banks, or when cloud shadows will appear on more than 5 % of the area in any one photograph. The photographs shall not contain objectionable shadows caused by relief or low solar altitude.

C. Flight Plan and Scale

The vendor shall prepare a proposed flight plan based on Appendix A, which shall show the flight lines to be utilized. Each flight line will be flown continuously across the project area. The principal points of the first two (2) and last two (2) frames of each flight strip shall fall outside the boundaries of the project area, and all side boundaries shall be covered by a minimum of 25 % of the photo frame. This flight plan shall be submitted as part of the proposal. The final accepted flight plan to be developed after any potential contract award shall be submitted in ArcGIS™ Personal Geodatabase format to the ARC upon completion of the photography. In this digital flight plan, a point shall be digitized to represent the principal point of each individual photographic frame. The attribute table of the principal points database shall indicate a unique ID for each point, the frame number, the flight line number to which the frame belongs, the starting and ending flight line segments to which the frame belongs, the state plane coordinates of the principal point of the photo frame, the three dimensional (Airborne GPS) coordinates of the sensing platform at the time of frame exposure, and the attitude (roll, pitch and yaw angles) of the sensing platform at the time of frame exposure.

Each flight line shall be digitized as a chain of individual line segments representing the flight line segments connecting the principal points of the consecutive photo frames. Each flight line shall be digitized in the order and direction that the frames are flown. The attribute table of the flight line segments shall indicate a unique ID for each segment, the flight line number to which the segment belongs, the IDs of the “From” and “To” principal points defining the segment and the straight-line (planar) distance of each segment in feet. Unacceptable aerial photography shall be reflown by the vendor at no additional cost to the ARC, with the reflight coverage overlapping the accepted photography by at least two stereo models.



Natural color aerial photography shall be obtained at an appropriate scale to produce the specified 1" =100' color digital orthophotography. Respondents should specify the aerial photographic scales they plan to use for this project in their response and should include justification for said scale.

D. End lap, Side lap, Crab, Tilt

Consecutive photos in each flight line shall have an average forward overlap of 60 % (± 2 %) to ensure full stereoscopic coverage. End lap of less than 55 % or more than 65 % in one or more exposures will be cause for rejection of the flight strip, or a portion thereof. Side lap between adjacent parallel flight lines shall be a minimum of 30 %. Any parallel flight lines having side lap of 25 % or less will be rejected and reflown. Crab in excess of three degrees (3°) measured with respect to both lines of flight may be cause for rejection of a flight strip or any portion thereof in which the excess crab occurs. This includes relative crab between any two successive exposures. Tilt of the camera from vertical at the instant of exposure shall not exceed 3 %, nor shall it exceed 5 % between successive exposure stations. Average tilt over the entire project shall not exceed 1 %.

E. Aerial Camera

The vendor must use a digital aerial camera. The aerial camera shall be a precision aerial mapping camera equipped with a low distortion, high-resolution lens. Camera characteristics shall be such that the aerial photographs taken can be satisfactorily used with the vendor's proposed photogrammetric compilation equipment and environment. The camera shall be equipped with and utilize electronic Forward Motion Compensation. The digital aerial images shall be clear and sharp in detail and of high radiometric quality. The camera shall capture the images in an uncompressed "lossless" image format. The camera shall, at minimum, utilize a 12-bit per pixel radiometric resolution. The images shall also be free from image blurs, image artifacts, and "cold" or "hot" pixels, color distortion, color balance, or tonal problems, or any other kind of "digital blemish". All fiducial mark images shall be visible, clear, and sharp.

A USGS camera calibration report, no more than two years old, shall be submitted with the response to these technical specifications for each aerial camera to be used to assure that the camera lens, focal length, light filter, shutter, image format, and its platen (for film) or CCD array (for digital) are all photographically adequate and within acceptable accuracies.

The absence of a calibration report verifying that the camera meets the specified requirements may be cause for disqualification of the vendor. The combination of camera, cone, lens, camera body, and magazine(s) submitted for approval shall be, if acceptable, the only combination used for this project. The entire project area will preferably be flown using one type of camera assembly. If the dimensional stability of the camera has been disturbed since its last calibration, the vendor should have the camera recalibrated prior to acquisition of photography. The vendor will be ultimately responsible for errors caused because of incorrect calibration of the camera.

F. Airborne GPS (ABGPS)

In the acquisition of the aerial photography, airborne GPS data shall be captured using an onboard dual frequency GPS receiver and an equivalent ground base station receiver. The photogrammetric camera must have an event marker to send and receive the returning pulses from the geodetic survey grade receiver. Base station receivers shall also accept dual frequency receivers. The receivers shall collect the GPS data at one-second intervals and post-processed using on-the-fly (OTF) ambiguity resolution techniques to obtain positions



on each exposure station within an RMSE of 5 cm. To reduce potential errors, the base stations receivers and the airborne receiver should be of the same make and airborne GPS compatible. To maintain quality, the PDOP should not exceed 4, the satellite configuration should be a minimum of five (5) satellites when collecting data during the flight mission, and the mask must be a minimum of ten degrees (10°). The number of base stations required should be a minimum of two (2) with each baseline being no more than 30 miles from each other. It is preferable to have at least one base station located within the project site. Each base station must be positioned over a first order point (such as a HARN point).

The vendor will be responsible for post-processing the airborne and base station data and prepare this data for aerial triangulation processes. The processing should be performed daily to ensure the recordings for each flight are acceptable. Any flight lines with unsatisfactory recordings shall be re-flown at the earliest opportunity. A hardcopy and digital format may be required for delineating the nadir point on each exposure (easting, northing, and elevation). The accuracy of each point must meet the mapping requirements as noted in this document. Supporting ground-based GPS surveys shall be conducted with sufficient accuracy to support production of the final orthophotos and planimetric/topographic mapping to meet ASPRS Class 1 Accuracy Standards for $1'' = 100'$.

G. Labeling and Photo Index

Each digital exposure shall be clearly labeled at the edge of the each, just inside the image area, on the north edge. This labeling shall include the following information at a minimum:

1. Date of photography
2. Scale of photography
3. Camera focal length
4. "ARC"
5. Flight strip number
6. Exposure number

The scale of photography shall be given in inches and feet. Flight strip numbers are not to be repeated anywhere within the photographic coverage of the contract and will be numbered consecutively, starting with Strip No. 1, and continuing sequentially over all flight lines.

H. Digital Frames Deliverable

One set of digital photo frames will be prepared from the original digital exposures. These digital frames shall be in uncompressed TIFF image format containing the full 12-bit radiometric pixel values for each wavelength that is collected, and shall be sent to the ARC for evaluation purposes within two weeks after the date of aerial photography. All digital photo frames will remain the property of the ARC.



SECTION 6 – DIGITAL ORTHOPHOTO REQUIREMENTS

This Section describes the specifications for the production of the digital orthophotography. Vendor proposals shall clearly state and explain the compliance, or non-compliance with these requirements. Appropriate documentation shall be included to describe fully system features and capabilities and shall be identified through a cross reference.

A. General Specifications

Color digital orthophotos shall be produced for all the entirety of all tiles specified within the project area (see Attachment A). The digital image shall be digitally rectified to an orthographic projection on a pixel-by-pixel basis. It is a requirement that the color digital orthophotos be created directly through the procedures described above, not through the scanning of a hard copy orthophoto.

B. Equipment and Production Requirements

The proposals should include a discussion of the procedures and equipment used in the production of the digital orthophotos including scanning and rectification procedures. Special consideration should be given to the following production requirements:

Camera pixel resolution - Include in the proposal the specific camera pixel resolution(s) that will be used in production. Pixel resolution shall not be interpolated to a finer resolution than that developed through the original digital camera exposure.

Processing - In the proposal, the respondent should give a detailed explanation of the methods proposed for the creation of the digital orthophotos such as the types of inputs, which will include the scanned images.

Ground Resolution - Digital orthophotos will be delivered at a resolution of 0.5 feet. The respondents should explain the methods used to reach the desired resolution.

Image Mosaicking and Quality - The image with the best contrast shall be used as a reference image when the color digital orthophoto images are mosaicked. All other images shall have their brightness values adjusted to that of the reference image. The delivered color digital orthophotos will not contain defects such as out-of-focus imagery, blurs, whorls, twists, color blemishes, or inconsistencies in tone and density between individual orthophotos and/or adjacent sheets.

C. Orthophoto Check Files

One set of digital orthophotos at 1" = 100' for the project area shall be provided for the project area (see Attachment A) and delivered in GeoTIFF format using either a lossless image compression or no compression. The orthophoto files must be produced directly from the digital data. Any orthophoto check file that is rejected and returned to the vendor for corrections will necessitate a new replacement file. The vendor should set up a tracking application to track the quality control status of each delivery.



D. Digital Orthophoto Deliverable

The final data delivery shall consist of a complete set of digital orthophoto files in GeoTIFF image format on portable HDD. The orthophoto files must be produced directly from the digital data. All orthophoto files will be georeferenced by the vendor prior to delivery. World coordinate files (.tfw) files for each orthophoto file shall also be delivered. Additionally, a set of MrSID™ format files, organized optimally for each county, and created with a 20:1 compression ratio, shall be provided. All digital orthophoto products shall be referenced horizontally to the Georgia West State Plane Coordinate System NAD83 and UTM, Zone 16 N or 17 N, horizontal datum NAD 83.

E. Accuracy Standards

The digital orthophotos produced through this procurement shall meet the ASPRS Class 1 Accuracy Standards for Large Scale Maps.

F. Quality Control

Quality control procedures shall be utilized by the vendor. The respondents should discuss the quality control procedures proposed for the production of digital orthophotos. The specific devices and procedures, the proposed methods for correcting errors, and the proposed level of support required by the Partnership should be detailed in the proposal.



SECTION 7 – INSPECTION, EDITING, AND ACCEPTANCE PROCEDURES OF DIGITAL FILES

A. Inspection

Unless specified elsewhere in this document, initial work unit deliveries will be checked within 7 days of delivery. Files will be subject to a combination of selective field and source inspections, which may include the following:

1. Mounting, manipulation, and display of digital files on existing system
2. Digital image quality and comparison of file content to the corresponding photography / imagery
3. Comparison of coordinated positions of well-defined features for the orthophotography and photogrammetrically compiled data

B. Editing

All edits or resubmissions required by ARC after quality inspection must be completed and new files submitted within 14 days of their return to the vendor

C. General Deliverables

All materials and data will be the property of Atlanta Regional Commission, delivered upon completion of the project, and will include:

1. Flight Report and digital images
2. Ground control survey report coordinates
3. Triangulation report and coordinates
4. Photo Center Index
5. Mosaic Breakline File
6. Sample/Pilot Products
7. One complete set of digital orthophoto tiles pertaining to the project (Images should be delivered in Geo-Tiff file format)
8. The Metadata File shall be delivered in XML file format and be fully and completely FGDC compliant. It shall contain the following information:
 - Date of photography by scale
 - Altitude of camera and camera focal length
 - Date of data set compilation by scale
 - Coordinate system for horizontal and vertical control denoting NAD83 or other
 - A list of the ground control points used for the project. The minimum data shown for each point shall include: physical attributes (i.e. iron rod, railroad spike, etc), X and Y grid coordinates, and elevation
 - A statement of accuracy of the orthophotos



All digital files delivered will have the following two projections: horizontally georeferenced to the Georgia West State Plane Coordinate System NAD83, Units Survey Feet, and vertically georeferenced to the NAVD88 vertical datum and UTM with appropriate Zone 16N or 17N, Horizontal Datum NAD83, Unit Meters, Vertical Datum NAVD88. Upon project completion, all digital data will be delivered on one portable storage device. Item 4 above will also have full and complete FGDC compliant metadata in XML file format.

D. Acceptance

The designated project manager will determine final acceptance.



APPENDIX A

Contract Area Map

