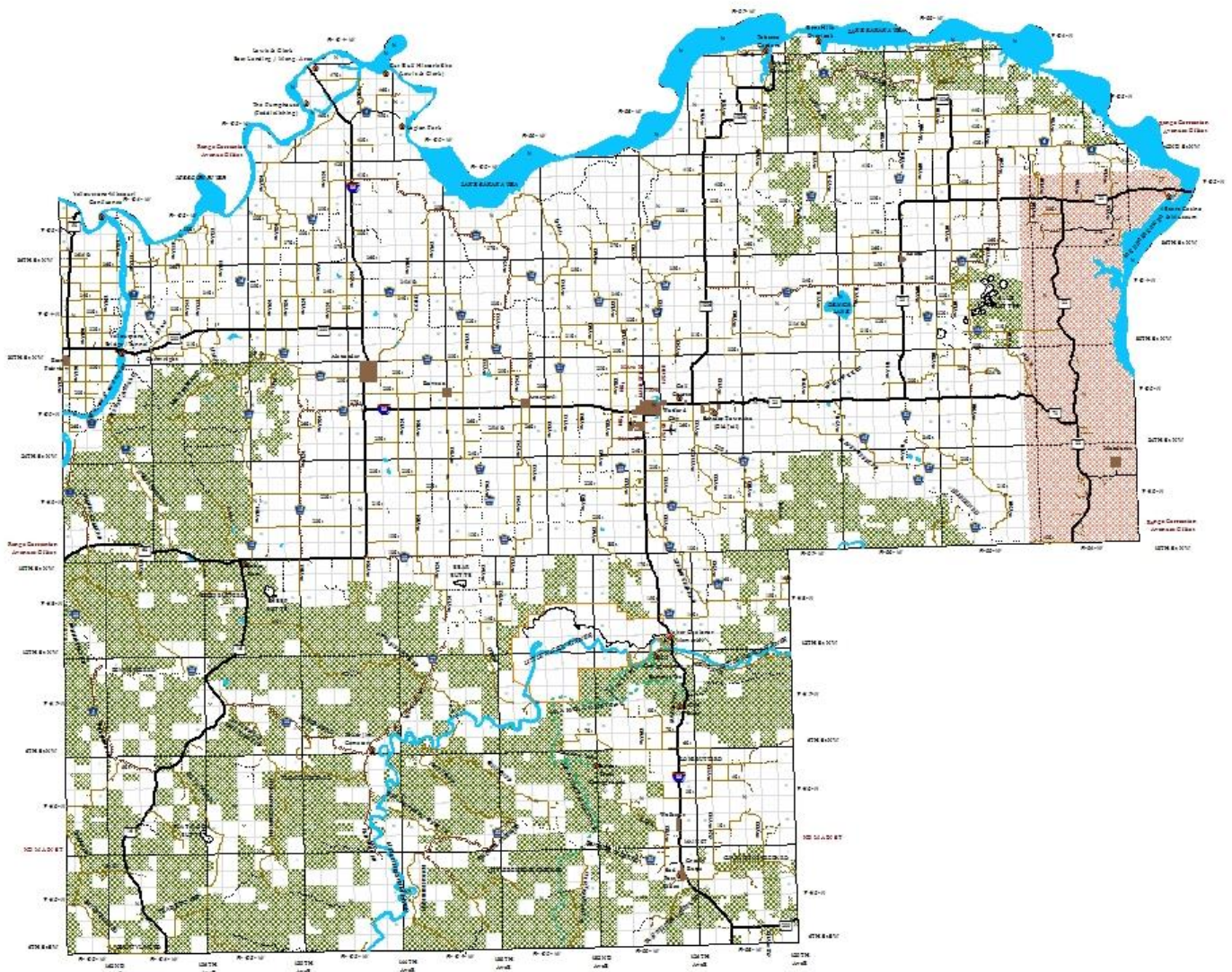


McKenzie County, North Dakota

Request for Proposals for Digital Imagery and LiDAR Data



Introduction:

McKenzie County is seeking project and cost proposals from selected qualified Vendors for an imagery and elevation mapping project in McKenzie County, North Dakota. This 2014 Digital Imagery and LiDAR Project will require LiDAR data and digital orthophotography for the entire county. The project may also require oblique aerial photography and elevation mapping in the form of digital elevation model (DEM) files and contour files for all or portions of the region. Metadata will be created for all datasets prepared for this project.

Scope of Work:

The project scope, specifications and requirements that are outlined in this RFP are subject to modification and final contract negotiations.

- 1.) Exhibit “A”
 - a. Exhibit “A” represents the entire County Boundaries approximately 2929 square miles including approximately 112 square miles of water and a ¼ mile “buffer” around the entire county. (See attachments)
- 2.) Exhibit “B”
 - a. Exhibit “B” represents the 600 square miles of the Watford City, Arnegard, Alexander and sections of Northwest McKenzie County. This area has had dramatic increases in population and urban sprawl. McKenzie County is interested in getting higher resolution Orthophotography and Oblique imagery for this 600 square mile area. (See attachments)
- 3.) Exhibit “C”
 - a. Exhibit “C” represents the remaining 2329 square miles that represents the entire county without the Exhibit “B” area. (See attachments)

LiDAR Data

A. LiDAR Specifications

- 1.) The LiDAR data will be delivered as LAS format files (“.las” file extension). The LiDAR data shall be fully classified according to ASPRS Standard LiDAR Point Classes to include bare-earth and all other types of classified points. The LiDAR may be collected at two different point spacings: 1) sufficient to support two-foot contour interval elevation mapping (approximately 1.0 meter or 3.28 feet spacing); or 2) sufficient to support one-foot contour interval mapping (approximately 0.7 meters or 2.30 feet spacing), as requested by the customer.

- 2.) The LiDAR data will need to meet the NSSDA/FEMA method specifications. This requires that accuracy should be reported at the 95% confidence level for data tested by an independent source of higher accuracy for horizontal and/or vertical using a user defined threshold.
- 3.) The horizontal and vertical datum's to be used for the DEM files are North American Datum of 1983 (NAD83) (NSRS2007) and the North American Vertical Datum of 1988 (NAVD 88) (Geoid03). The vertical Root Mean Square Error (RMSE) of the LiDAR data shall be 0.5 feet or better relative to NAVD88. The LiDAR points shall be reported to the nearest hundredth of a foot. The coordinate system for all products should be based on the North Dakota State Plane Coordinate System, North Zone, with units in US Survey Feet.

Elevation Data Deliverables

A. General

The project may acquire accompanying elevation data for all or a portion McKenzie County. Digital elevation data may include digital elevation model (DEM) grids, digital contour files, and other products as offered by the Vendor. McKenzie County will only pay for other products that have been agreed on between the Vender and the County.

B. Digital Elevation Model File Organization and Specifications

- 1.) The DEM files that may be prepared as part of this project shall be capable of supporting the creation of two-foot interval contour lines meeting NMAS at a scale of 1:2400 (one inch represents 200 feet), or capable of supporting the creation of one-foot interval contour lines meeting NMAS at a scale of 1:1200 (one inch represents 100 feet), as requested by the customer. One meter resolution DEMs should be produced (with no null values), referenced to the same horizontal, vertical, and coordinate systems as the LAS data.
- 2.) The DEM files shall be prepared in such a manner that all break line and random point data included in the file are capable of generating a triangulated irregular network model through the use of appropriate computer software. The DEM files shall be organized in such a manner that all data features can be selectively retrieved, manipulated, and displayed, either singly or in combination with other data features.
- 3.) The DEM files shall depict terrain features as break lines placed along water courses and shorelines and at major changes in the slope. Random points or mass points shall be used to supplement the break lines and water detail.

- 4.) The DEM files shall be prepared in AutoCAD 2014 or a comparable ESRI ASCII grid or ERDAS Imagine (.img) grid 8 bit floating point format. The consultant and the County will determine specific file names for the GIS data. The Tiling scheme for the AutoCAD shall be 2,000 x 2,000 meter tiles, edge joined and seamless to match an arbitrary grid supplied by McKenzie County. Tiles may be clipped to the project boundary.
- 5.) The horizontal and vertical datum's to be used for the DEM files are NAD 83 and NAVD 88 as previously described.

C. Digital Contour Line File Organization and Specifications

- 1.) The contour line files that may be prepared as part of this project shall contain hypsometric features, consisting of contour lines, depression lines, and spot elevation locations. Alternatively, an enhanced version of the contour line files may additionally include annotation features consisting of contour and depression text and spot elevation text, as requested by the customer. All contour and depression line features and spot elevation point features shall contain the elevation of each feature encoded as an attribute value.
- 2.) The contour line files shall contain either 1) two-foot interval contour lines meeting NMAS at a scale of 1:2400 (one inch represents 200 feet), or 2) one-foot interval contour lines meeting NMAS at a scale of 1:1200 (one inch represents 100 feet), as requested by the customer.
- 3.) The digital elevation files shall be organized in such a manner that all data features can be selectively retrieved, manipulated, and displayed, either singly or in combination with other data features.
- 4.) All contour files will be continuous, connected line features. The contour files will not be broken or interrupted for text features, structures, or any other map features.
- 5.) The contour line files need to be created in such a way as to facilitate the symbolization of these lines in other digital map file formats.
- 6.) The contour line files shall be prepared in AutoCAD 2014 or a comparable ESRI vector data format such as shapefiles or file geodatabases. The consultant and the County will determine specific file names for the GIS data. The Tiling scheme for the AutoCAD shall be 2,000 x 2,000 meter tiles to match an arbitrary grid supplied by McKenzie County.
- 7.) The horizontal and vertical datums to be used for the LiDAR data are NAD 83 or NAVD88 as previously described.

Digital Orthophotography

A. General:

Color digital orthophotography shall be prepared for an area of approximately 2929 square miles in extent as shown on the map in Exhibit “A”. At least three types of digital orthophoto products may be prepared for all or portions of this project area. Within the project area, one or more of the following resolutions may be chosen.

- 1.) Color, 12-inch pixel resolution, one-inch-represents-200-feet scale digital orthophotography. This is the base product that may be prepared for all or a portion of the project area.
- 2.) Color, 6-inch pixel resolution, one-inch-represents-100-feet scale digital orthophotography. This is the enhanced product that may be prepared for all or a portion of the project area.
- 3.) Color, 3-inch pixel resolution, one-inch-represents-50-feet scale digital orthophotography. This is the high-resolution enhanced product that may be prepared for a portion of the project area.

Color digital orthophotography may be prepared at alternative resolutions in the range between 12-inch and 3-inch pixel resolution. Vendors may provide recommendations for preparing alternative resolutions (e.g. 9-inch or 4-inch resolution) at appropriate scales between one-inch-represents-200-feet scale and one-inch-represents-50-feet scale.

B. Specifications:

- 1.) Aerial photography for orthophoto preparation shall be collected in Fall of 2014, in leaf-off conditions, with sun angle no less than 30 degrees; imagery must be obtained when the sky is free of clouds, cloud shadows, haze, and smoke; ground and water features shall be free of ice, snow, and flooding.
- 2.) Delivered imagery shall be seamless, georeferenced, edge matched, and free of any pixel gaps. The final images shall be tonally balanced and uniform in appearance with no variation between adjacent flight lines or images. The images shall not contain noticeable building lean or distortion of structures.

C. File Format:

- 1.) The resolutions of orthophotography files will be prepared in uncompressed GeoTIFF file format (“.tif” extension), with accompanying “world” (“.tfw” extension) files for use in displaying and referencing the orthophoto files.

- 2.) The horizontal datum shall be the North American Datum of 1983 (NAD83) referenced to the North Dakota State Plane System, North Zone in US Survey Feet.

D. Vector File Specifications:

- 1.) All data shall be topologically correct: i.e. All polygons shall be closed, all lines shall be continuous with no overshoots or undershoot, intersection points shall be clearly defined, lines and polygons shall not be “broken” at map grid boundaries in the data, etc. New data shall conform to the existing county layer standards. Any discrepancies or issues related to the naming conventions shall be resolved between the county and the consultant prior to submittal for acceptance.
- 2.) The final data files should be delivered on an external USB hard drive in ESRI ArcGIS file geodatabase.

E. File Organization:

- 1.) The digital imagery should be organized according to USGS 3.75 minute Quarter Quadrangle Sheets.
- 2.) The orthoimagery shall be carefully edge matched and tone balanced, with brightness and contrast normalized among the images so that image edge lines (mosaic lines) are not apparent when two or more image files are tiled together.

Oblique Aerial Photography

- 1.) The project may acquire oblique aerial photography for all or a portion of the McKenzie County. Where requested, color digital oblique imagery shall be prepared at a scale and resolution to complement the accompanying color orthophotography. The Vendor will provide the appropriate software for viewing the oblique photography in concert with the orthophotography. The viewing software should include an option for viewing the obliques and orthos on an individual workstation and on an Internet application such as a county land information website. The viewing software should include measurement and other image analysis tools.

Proposal Requirements:

A. General:

The intent of this request for project and cost proposals is to evaluate Vendor qualifications and obtain cost estimates for the deliverable products described herein. Minimum product specifications have been provided for each deliverable, and it is

expected that responses to this request will provide significant information about how the Vendor proposes to prepare each product. Vendors should explain how they propose to conduct this project and carry out the procedures necessary to deliver each of the described products. It is in the Vendor's best interest to provide as much information as possible.

B. Proposal Specifics:

The project proposal and cost proposals should address the deliverable products of orthophotography, oblique photography, and LiDAR data.

1.) Digital Orthophotography

- a. Provide cost proposal for 12-inch resolution orthophotography for the entire 2,929 square mile County project area.
- b. Provide cost proposal for 6-inch resolution orthophotography for the entire 2,929 square mile County project area.
- c. Provide cost proposal for multiple resolution orthophotography (e.g. 3-inch resolution, 6-inch resolution, 9-inch resolution, etc.) for the 600 square mile Exhibit "B" Area within McKenzie County.
- d. Provide cost proposals for multiple resolution orthophotography for the remaining 2,329 square mile area, Exhibit "C" Area within McKenzie County.
- e. Provide cost proposals for alternative resolutions (e.g. between 12-inch and 3-inch resolution) for multiple areas and appropriate scales of digital orthophotography, if such alternatives are offered or recommended by your firm.
- f. Provide information about digital camera to be used, including manufacturer, model, lens and focal length, flight altitude(s) and any other camera information important to this project.
- g. Provide information about horizontal photo control, aero-triangulation, and other ground control procedures.
- h. Provide information on flight altitude and other image collection information that may be important to this project.
- i. Indicate possible cost savings for committing to a multiple-year orthophotography program. For example, describe approximate cost savings for a commitment to preparing 6-inch resolution imagery for Watford City and Outlying areas under these two scenarios: 1.) image collection for three flights (e.g. flights in 2014, 2016, 2018); and 2.) Image collection for two flights (e.g. flights in 2014 and 2018).

2.) Digital Oblique Photography

- a. Prepare cost proposals for the creation of oblique aerial imagery comparable to each resolution of orthophotography (e.g. 6-inch resolution oblique images to complement 6-inch resolution orthophoto images.)
- b. More specifically, provide cost proposals for each resolution of oblique photography for the entire 2,929 square mile County Project area.
- c. Provide cost proposals for each resolution of oblique photography for the 600 square mile Exhibit “B” area, and the 2,329 square mile Exhibit “C” area.
- d. Provide information about procedures used to collect and prepare oblique imagery, including any technical or other information that may be important to this project.
- e. Provide information about the software that will be used to view and analyze the oblique imagery. Include information about functionality such as distance measurement, area measurement, slope calculation, and other tools.
- f. Describe and explain if the accompanying software is intended for workstation use, such as with ArcMap and other ESRI products. Indicate compatibility with ESRI products.
- g. Describe and explain if the accompanying software is a web application suitable for inclusion on a municipal land information web site.

3.) LiDAR Data

- a. Prepare cost proposals for LiDAR collected at a point spacing sufficient to support two-foot contour interval elevation mapping (approximately 1.0 meter or 3.28 point spacing), and also collected at a point spacing sufficient to support one-foot contour interval mapping (approximately 0.7 meters or 2.30 feet point spacing).
- b. Provide cost proposals for each point spacing of LiDAR data for the entire 2,929 project area. Do not provide cost proposals for the 600 square mile exhibit “B” area within McKenzie County.
- c. Describe LiDAR collection and processing procedures
- d. Describe LiDAR data classification level, such as bare-earth classification only or fully classified data. Provide classification categories and codes.

4.) Digital Elevation Model Files

- a. Prepare cost proposals for the creation of DEM files capable of supporting the creation of two-foot interval contour lines meeting the National Map Accuracy Standards at a scale of 1:2400 (one inch represents 200 feet), and the preparation of DEM files capable of supporting the creation of one-foot interval contour lines meeting National Map Accuracy Standards at a scale of 1:1200 (one inch represents 100 feet).

- b. Provide cost proposals for the two different accuracies of DEM files for the entire 2,929 project area. Do not provide cost proposals for the 600 square mile exhibit “B” area within McKenzie County.
- c. Describe DEM Collection and processing techniques, including mass point and break line feature preparation.

5.) Contour Line Files

- a. Prepare cost proposals for digital contour and depression line files prepared to two different accuracies 1.) two-foot interval contour lines meeting the National Map Accuracy Standards at a scale of 1:2400 (one inch represents 200 feet, or 200-scale), or 2.) one-foot interval contour lines meeting National Map Accuracy Standards at a scale of 1:1200 (one inch represents 100 feet, or 100-scale). For each accuracy also prepare cost proposals for contour line files without annotation features and contour line files with annotation features.
- b. Provide cost proposals for the two different accuracies and two different feature sets of contour line files for the entire 2,929 project area. There will be four costs. 1.) 200-scale without text; 2.) 200-scale with text; 3.) 100-scale without text; 4.) 100-scale with text.
- c. Describe contour file collection and preparation procedures.

6.) Other Products

- a. The Vendor may provide information on additional imagery or elevation mapping products that may complement the 2014 McKenzie County Orthophotography Project.
- b. Describe additional products in detail and include any information that may be important to this project.

Terms and Conditions:

1.) Selection Criteria and Process:

The proposals will be judged on the completeness and quality of content. Only those consultants who supply complete information as required by the material contained herein will be considered for evaluation. The County is seeking to contract with a firm that has the appropriate qualifications using appropriate technology and methodology to ensure delivery of high quality products and who has demonstrated extensive experience with, and an understanding of, similar projects. After initial screening of the proposals, the top ranked candidates may be invited to an oral interview for further evaluation.

The county may invite three or more prospective consultants to respond to the selection committee in person or writing during the proposal evaluation. Failure to provide additional information, if requested, may disqualify proposal from further consideration.

The evaluation of proposals and the determination of conformity and acceptability shall be the sole responsibility of the County and will be based on information furnished or identified in the proposal as well as on other information available to the County.

McKenzie County reserves the right to reject the proposal of any person/firm who previously failed to perform properly to the satisfaction of McKenzie County, or complete on time agreements of similar nature, or to reject the proposal of any person/firm who is not in a position to perform such an agreement satisfactorily as determine by McKenzie County.

McKenzie County reserves the right to determine the best qualified consultant and negotiate a contract with another consultant if an agreement cannot be reached with the first selected consultant, or reject all proposals. The successful consultant will be required to enter into a professional services contract with McKenzie County, which will incorporate the consultant's scope of service and work schedule as part of the agreement.

McKenzie County and the individuals serving on the selection committee assume no liability or responsibility for costs incurred by firms in responding to the request for interviews, additional data, or other information with respect to the selection process, prior to the issuance of an agreement, contract or purchase order.

2.) The Criteria for Evaluation of Proposals:

The award will be made to the most qualified and responsible Consultant. The selection will be based on the following criteria, listed in no particular order:

- a. Demonstrated understanding of the project.
- b. Quality, completeness, and thoroughness of the proposal.
- c. Cost of proposal.
- d. Past experience of the firm and proposed team members with projects of similar scope and nature.
- e. Proposed work schedule and timeline for completion of the project.

- f. Availability of resources to deliver goods/services specified herein.

3.) Acceptance of Proposals:

The County reserves the right to accept or reject any and all proposals for any reason; to add or delete items and/or quantities; to amend the RFP; to waive any minor irregularities, informalities, or failure to conform to the RFP; to extend the deadline for submitting proposals; to postpone award for up to 30 days; to award one or more contracts, by item or task, or groups of items or tasks, if so provided in the RFP and if multiple awards are determined by the County to be in the public interest; and to reject, for good cause and without liability therefore, any and all proposals and upon finding the doing so is in the public interest, to cancel the procurement at any time prior to contract execution.

4.) Withdrawal of Proposals:

Proposals submitted may be withdrawn by written request if received before the hour set for the opening. After that time, proposals may not be withdrawn for a period of fifteen (15) days and at no time after award.

No responsibility shall attach to a county employee for the premature opening of a proposal not properly addressed and identified in accordance with these documents.

When discrepancies occur between words and figures, the words shall govern.

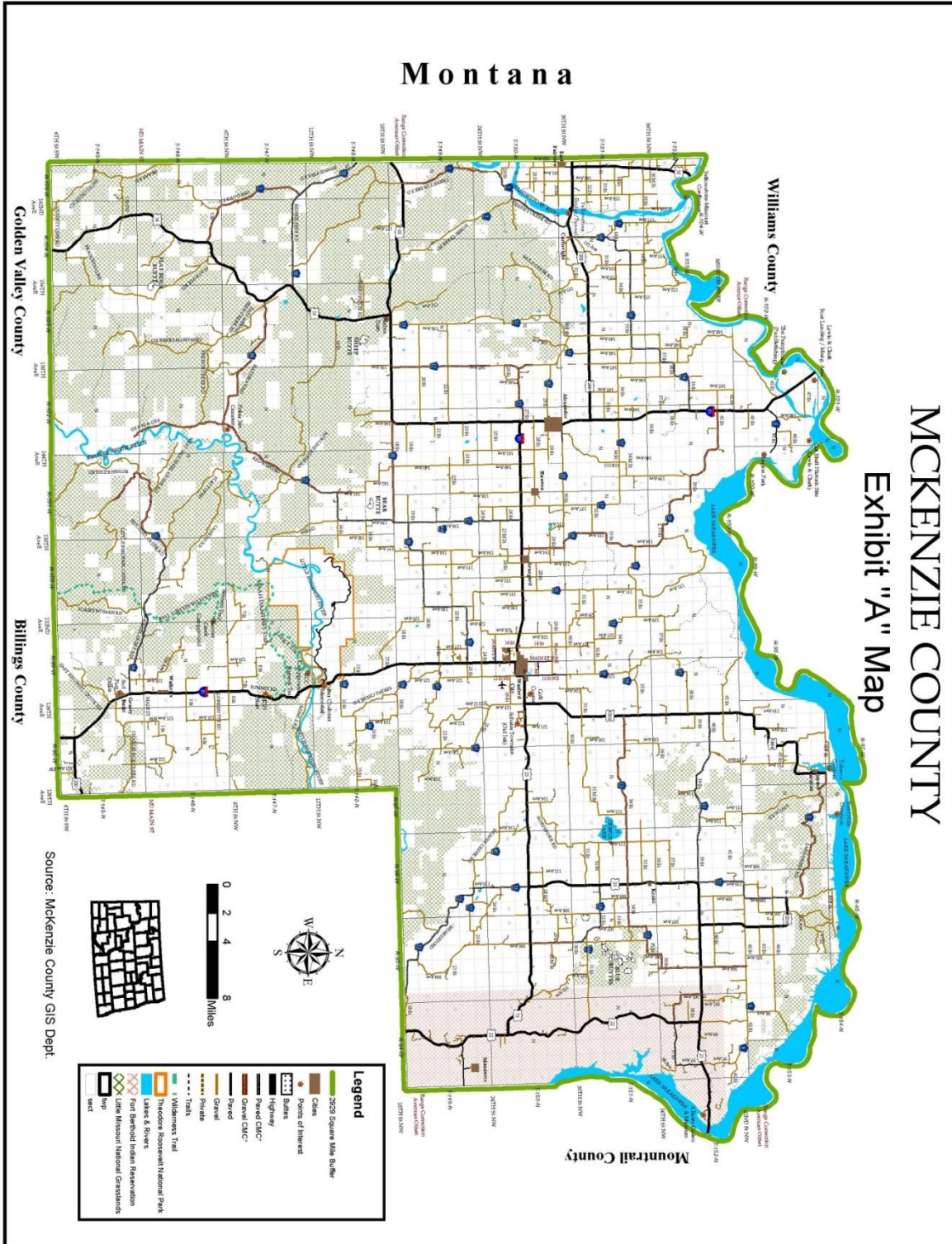
C. Document Instructions

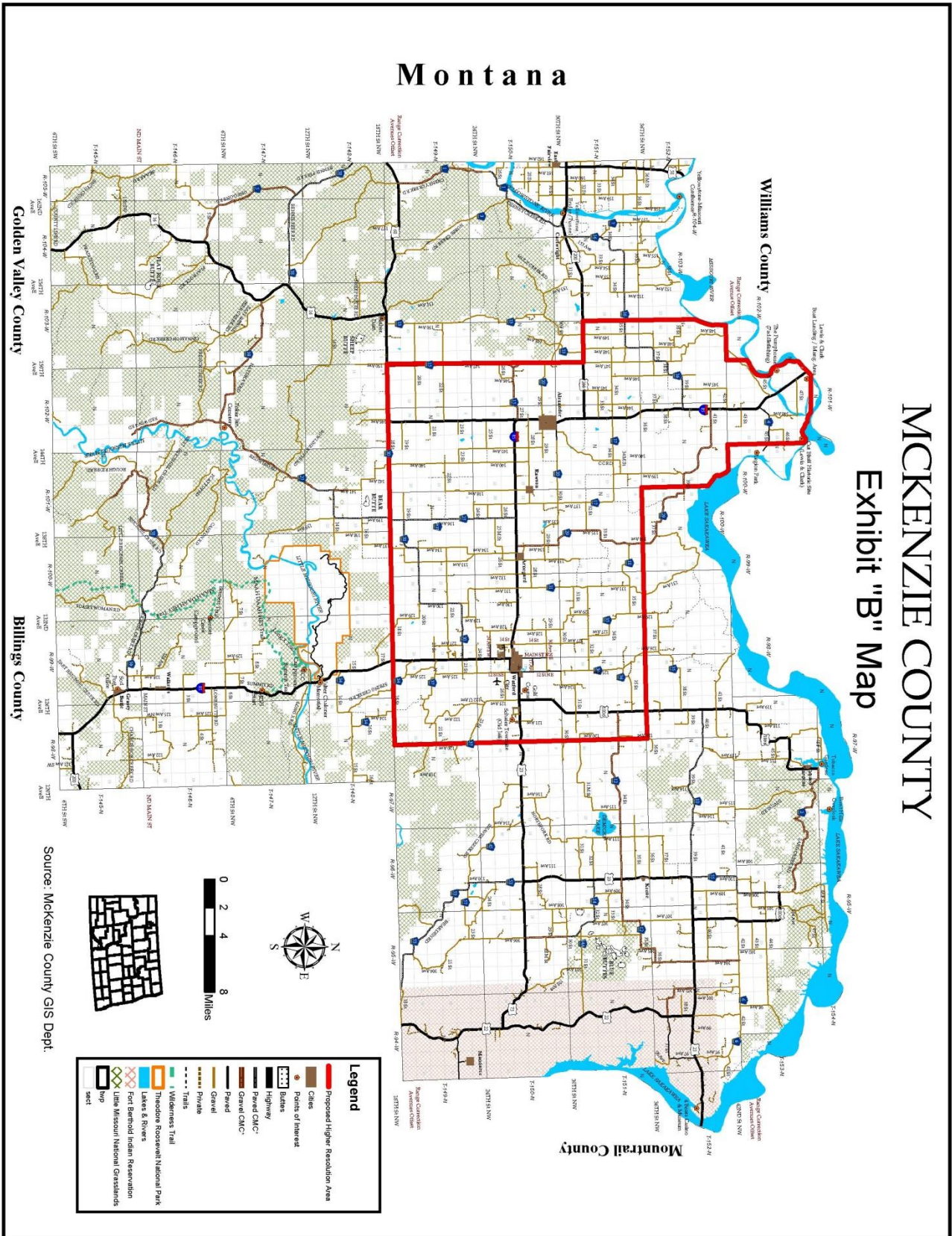
The cost proposals and product information provided by the Vendors will be used by the project participants to determine the scope of the project. The information will also help to determine Vendor selection for all or portions of the 2014 McKenzie County Orthophotography Project. The County may choose a Vendor based on product suitability, timing of delivery, product cost, and any other considerations. It is possible that multiple Vendors may be selected to complete portions of this project.

Please provide the project cost proposals by **4:00 PM on Wednesday, April 23, 2014**. The preferred format for the Proposals is a document in an un-editable PDF format delivered via email to achisholm@co.mckenzie.nd.us. If you prefer to deliver a hardcopy of the materials, please provide seven (7) copies of the materials to the address below.

Any questions pertaining to the Request for Project and Cost Proposals for the
2014 Regional Orthophotography Project may be directed to:

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MCKENZIE COUNTY
 Exhibit "C" Map

Montana

