



ASSOCIATION OF  
CENTRAL OKLAHOMA  
GOVERNMENTS



# REQUEST FOR PROPOSALS



## REGIONAL DIGITAL ORTHOPHOTO IMAGES AND ASSOCIATED DATA

ISSUED: 11/22/2024  
DUE DATE: 12/30/2024

# TABLE OF CONTENTS

Section 1: Purpose .....	2
Section 2: Award .....	2
Section 3: RFP Submittal .....	2
Section 4: Insurance or Other Required Documents .....	3
Section 5: Terms & Conditions .....	3
Section 6: RFP Status .....	5
Section 7: Exceptions, Omissions, and Alternatives .....	6
Section 8: Proposal Format and Contents .....	6
Section 9: Specifications .....	8
Section 10: Cost Proposal Forms .....	12
Appendix A: Potential Participating Communities .....	15
Appendix B: Project Deliverables .....	17
Appendix C: City of Edmond .....	19
Appendix D: City of Norman .....	38
Appendix E: City of Oklahoma City .....	59
Appendix F: Cleveland County .....	70
Appendix G: Forms .....	72
Appendix H: Metadata Requirements .....	73



# REQUEST FOR PROPOSALS FOR REGIONAL DIGITAL ORTHOPHOTO IMAGES AND ASSOCIATED DATA

(COAGA 2025 RFP # 2025-01)

**Date: November 22, 2025**

The Request for Proposal is part of a competitive procurement process which will facilitate a fair opportunity for qualified firms to offer their plans and services for consideration. The process of competitive negotiation being used should not be confused with competitive sealed bidding where goods and services can be precisely described, and price is generally the determination factor. The competitive Request for Proposal will provide the participating agencies of Central Oklahoma Alliance of Government Agencies 2025 (COAGA 2025) flexibility to negotiate with firms to arrive at a mutually agreeable relationship, where price alone is not the major determination factor; however, price will be a priority factor.

## Section 1: Purpose

- 1.1 The COAGA 2025 seeks proposals from qualified and experienced firms to collect and produce digital orthophoto images; and separately collect, detect changes, and update the participating agencies planimetric and topographic data for the project areas defined in the RFP. The goal is to have a complete up-to-date accurate digital orthoimagery data set for the entire project area as well as updated planimetric and drainage-enforced contour data sets for the specified municipal areas. Each participating agency may negotiate a separate agreement.

## Section 2: Award

- 2.1 The participating agencies of COAGA 2025 reserve the right to award this contract, not necessarily to the firm with the lowest cost, but to the firm that best meets the requirements and needs of the participating agencies of COAGA 2025 as determined by the participating agencies of COAGA 2025.
- 2.2 Upon submission of the responses to this RFP, the participating agencies of COAGA 2025 will evaluate and score the responses of the firms. The participating agencies of COAGA 2025 may conduct interviews with the finalists. The final evaluation and selection of a contractor will be made by the participating agencies of COAGA 2025 and submitted to each agency for approval.
- 2.3 All unsuccessful proposals will be notified in writing.

## Section 3: RFP Submittal

- 3.1 All proposals must be submitted to ACOG before the **final closing date and time of December 30, 2024, at 4:00 P.M. CST**. Proposals submitted **after** the time set for receipt of proposals **will not be considered**. An electronic copy of the response shall arrive no later than the closing date and time to the following:

**Jennifer Sebesta**

**Transportation Planning Services (TPS) Division Manager**

Email: [jsebesta@acogok.org](mailto:jsebesta@acogok.org)

Subject: COAGA 2025 RFP # 2024-01

- 3.2 All costs associated directly or indirectly with responding to this RFP including, but not limited to, preparation of a response, any oral presentation or meetings required to supplement and/or clarify a proposal, which may be required by the participating agencies of COAGA 2025, shall be the sole responsibility of and shall be borne by the respondent.
- 3.3 Facsimile, mailed, or hand delivered proposals will not be accepted.
- 3.4 The proposals shall be in the specific format prescribed herein. Proposals may contain promotional or display materials pertinent to displaying the quality of print publication to be expected, and all material shall pertain to the requirements set forth in this document. Proposals shall be straightforward, providing a concise description of the respondent's ability to meet the requirements of this RFP. Emphasis should be on completeness and clarity of intent. Submitted proposals are subject to release under the Oklahoma Open Records Act.
- 3.5 Failure to provide required data to allow for evaluation, failure to complete the RFP form(s) or failure to follow all directions within this RFP may be grounds for rejecting the RFP.
- 3.6 **Inquiries:** Inquiries should be submitted by email to Jennifer Sebesta at [jsebesta@acogok.org](mailto:jsebesta@acogok.org).
- 3.7 **Responses:** Responses to written questions will be posted to the ACOG website at: <http://www.acogok.org/about/solicitations/>. Only replies by formal written addenda (amendments) shall be binding.
- 3.8 **Schedule of Events:**

Proposal Issued	11/22/2024
Inquiries Due	12/13/2024 - 4:00 p.m. CST
Proposal(s) Due	12/30/2024 - 4:00 p.m. CST
Evaluation Completed	1/17/2025 - Approximate
Anticipated Date of Award	1/23/2025 - Approximate

**Section 4: Insurance or Other Required Documents** (if required)

- 4.1 **Permits:** The contractor shall procure all necessary permits and pay for same and shall obtain all official licenses for the work necessary. The contractor shall be responsible for all violations of the law for any cause in connection with the work caused by the contractor.
- 4.2 **Insurance:** The contractor will be responsible for all required insurance of property owned or services provided by the contractor.
  - 4.2.1 Comprehensive General and/or Public Liability with a minimum of \$1,000,000.00 Bodily injury, and Property damage, combined single limit.
  - 4.2.2 Automobile Insurance with a minimum \$1,000,000.00 per accident Bodily injury and Property damage, combined single limit.

**Section 5: Terms & Conditions**

- 5.1 Terms and conditions below will govern the submission and evaluation of proposals and the award. Respondents are requested to carefully review the following (5.2-5.13).
- 5.2 **Award Status:** After the award of the winning bid, each agency of COAGA 2025 will negotiate and execute a legal and binding contract.



- 5.3 Contract Format/Requirements:** The resulting acceptance will incorporate this Request for Proposal. All additional agreement(s) and stipulations and the results of any final negotiations will be incorporated. Due to the nature of this request and the number of participating agencies, this may result in multiple contracts.
- 5.4 Contract Modification:** All modifications and/or changes to the contract must be agreed to in writing by both parties prior to executing any change.
- 5.5 Contract Termination:** The participating agencies of COAGA 2025 may terminate any resulting contract for cause by providing a Show Cause Letter to the contractor citing the instances of noncompliance with the contract. The terms of the contract between the contractor and agency shall control the terms.
- 5.5.1** If the noncompliance is not cured within 30 days, the participating agencies of COAGA 2025 may terminate the contract.
- 5.5.2** The participating agencies of COAGA 2025 reserve the right to terminate the contract for convenience upon sixty (60) day written notice.
- 5.6 Conflict of Interest:** In the event there is a potential or actual conflict of interest, the respondent(s) shall provide full disclosure to the participating agencies of COAGA 2025. The participating agencies of COAGA 2025 shall determine if the conflict, whether potential or actual, is material. COAGA 2025 has the right to determine if there is a conflict and reserves the right to disqualify the respondent if the conflict is material.
- 5.7 Contractor Liability:** The contractor shall hold the participating agencies of COAGA 2025 harmless and shall be liable in the event of injury to agency personnel or damage or loss of their property caused by the contractor's equipment, personnel, supplies, or material furnished. The participating agencies of COAGA 2025 will not be liable for loss or damage caused by fires, lightning, sprinkler leakage, earthquake, severe weather, smoke and smudge, aircraft or motor vehicle damage, strikes, riots and civil disturbance, or collapse of building or structures, etc. The participating agencies of COAGA 2025 and its personnel shall not be liable for any loss of or damage to contractor property unless due to their fault or negligence.
- 5.8 Resolution of Controversies:** An unsuccessful contractor may protest the procurement process by following the procedure specified in Article V of the ACOG Procurement Policy, available on ACOG's website at: <http://www.acogok.org/wp-content/uploads/2019/03/Procurement-Policy-Final.pdf>.
- 5.9 Liens:** The contractor shall keep the participating agencies of COAGA 2025 free and clear from all liens asserted by any person or firm for any reason arising out of the furnishing of services or materials by or to the contractor.
- 5.10 Indemnification:** The contractor shall indemnify and hold the participating agencies of COAGA 2025 harmless from all claims and related expenses arising out of the contractor's performance or failure of performance under the resulting contract.
- 5.11 Public Access to Procurement Information:** Procurement information shall be a public record to the extent provided by the Oklahoma Open Records Act, as applicable, and shall be available to the public as provided therein. If a proposal contains information that the bidder considers proprietary and does not want disclosed to the public or used for any purpose other than the evaluation of the offer, all such information must be indicated and clearly marked on each page of the proprietary or confidential document(s).

The information submitted during a procurement process is protected from disclosure until a contract is awarded. All proposals are open for public inspection after the contract is awarded, but proprietary and confidential information in the proposals is not open for public inspection.

- 5.12 Choice of Law and Venue:** The resulting contract shall be construed under the laws of the State of Oklahoma and venue in any action and/or litigation commenced to enforce the contract shall be instituted in the appropriate courts in Canadian, Cleveland, Grady, Logan, McClain, or Oklahoma County in the State of Oklahoma.
- 5.14 Federal, State, and Local Laws and Regulations:** The contractor will comply with all laws and regulations including taxes, licenses, and permits.

## Section 6: RFP Status

### 6.1 COAGA 2025 Rights:

- 6.1.1** The participating agencies of COAGA 2025 reserve the right to determine whether a proposal is responsive and has the ability and resources to perform the contract in full and comply with the specifications.
- 6.1.2** The participating agencies of COAGA 2025 reserve the right to reject proposals that incorporate counter proposals and conditions in the form of vendor's pre-printed clauses.
- 6.1.3** The participating agencies of COAGA 2025 reserve the right to accept or reject all or part of any proposal, waive informalities, minor irregularities, or substitute items as desired if deemed in the best interest of the participating agencies of COAGA 2025, therefore selecting the optimum proposal or issue a new RFP.
- 6.1.4** The participating agencies of COAGA 2025 reserve the right to reject proposals when procedures stated within are not followed.
- 6.1.5** Should the proposal include any work of a subcontract nature, the participating agencies of COAGA 2025 reserve the right to approve or disapprove the engagement or use of the subcontractor as it relates to services provided to the participating agencies of COAGA 2025 as described in this RFP. COAGA 2025 reserves the right to reject any subcontractor.
- 6.1.6** The participating agencies of COAGA 2025 reserve the right to negotiate separately if deemed necessary.

- 6.2 Effective Period:** Proposals submitted must remain in effect for a period of ninety (90) days after the closing date. An award will be signed and issued within that time or at a negotiated later date.
- 6.3 Withdrawal of Proposals:** Unless a Proposals contains a material mistake, it may not be withdrawn or canceled by the bidder/offeror, without the written permission of COAGA 2025, for a period of 90 days following the date designated for the receipt of bids. The bidder/offeror so agrees upon submittal of the bid/offer.
- 6.4 Examinations:** Before submitting a proposal, the contractor shall thoroughly examine the RFP as well as location and otherwise be fully informed as to all existing conditions and limitations.
- 6.5 Modifications of RFP:** Oral modifications will not be considered. Proposals may not be altered or amended after the submission deadline. However, before a proposal is opened COAGA 2025 may waive a non-material omission or error if the omission or error: (a) relates to a matter of form, not substance; (b) has merely a negligible effect on price, quantity, delivery, or other contractual conditions; and (c) does not otherwise prejudice the other bidders/offerors. Any respondent may modify his/her proposal in writing prior to the date and time of RFP closing. Only modifications received in sealed envelopes with the RFP number, closing date, and the project name clearly marked on the outside will be accepted.

Written confirmation of the modification must be received under the same signature as the prior submitted proposal. All modifications are to be clearly numbered and dated as to determine the final one.

- 6.6 Sales Tax Exemption:** All proposals must be submitted exclusive of Federal Excise Tax and Oklahoma State Tax. The participating agencies of COAGA 2025 are exempt from Federal Excise Tax and Oklahoma State Tax. When proof of a tax exemption status is required, a notation should be made in the proposal and an Exemption Letter shall be furnished.
- 6.7 Clarification:** The participating agencies of COAGA 2025 reserve the right to request clarification of information submitted and to request additional information from any or all of the respondents.

## **Section 7: Exceptions, Omissions, and Alternatives**

- 7.1 Exceptions:** If any exceptions are taken to any portion of the RFP, the respondent must clearly indicate the exceptions taken and include a full explanation as a separate attachment to the proposal. The failure to identify exceptions or proposed changes with a full explanation will constitute acceptance by the Respondent of the RFP as proposed by the participating agencies of COAGA 2025.
- 7.2 Omissions:** Add descriptions of any possible omissions from the RFP.
- 7.3 Alternatives:** Provide descriptions of any alternative or optional functionality that the respondent deems advantageous or beneficial to the participating agencies of COAGA 2025.

## **Section 8: Proposal Format and Contents**

- 8.1 Contents:** All proposals shall include the following information at a minimum:
  - 1. Cover Letter
  - 2. Project Overview
  - 3. Project Approach
  - 4. Management Proposal
  - 5. Exceptions to the RFP
  - 6. Additional Pertinent Information
  - 7. Fee Proposal
- 8.2 Cover Letter:** The Cover Letter shall identify the project manager and any persons in the respondents' organization who will respond to questions or additional requests by the participating members of COAGA 2025.
- 8.3 Project Overview:** The Project Overview should highlight the major features of the Respondent's company and proposal. It should also include information about the firm and any proposed subcontractors. A summary of the project approach should be presented in this section.
- 8.4 Project Approach:** This section is intended to be the core of the proposal and should demonstrate the respondent's knowledge of the data conversion/update process. This section shall clearly show the respondent understands the scope of work (9.2) as presented in the Technical Specifications (9.3). A detailed explanation of the process methodology to be used on this project shall be thoroughly defined.

- 8.4.1 Respondents shall develop and present in their proposals a technical plan of operations for providing aerial photography for use in the production of digital orthophotography and the compilation/update of the geodatabase as defined in the appendices. The respondent's proposed plan shall clearly demonstrate a complete understanding of the project. The respondent shall use accepted map compilation and conversion procedures and equipment to achieve the levels of accuracy, detail, and quality required by the RFP.
- 8.4.2 The technical plan of operations shall detail the methodology, equipment, and proposed techniques to be used to capture the aerial photography and the production of digital orthoimagery. The plan shall detail the sequence of operations to be performed for the entire project, emphasizing steps taken to ensure meeting quality and accuracy standards. It shall also clearly indicate any additional information pertinent to this project.
- 8.4.3 All proposed equipment to be used by the respondent shall be specified. The contractor is required to deliver products in a format as stated in the specifications and appendices in this RFP. The contractor shall be able to deliver Digital Orthoimagery as uncompressed TIFF formatted file associated with a TIFF World header file (.TFW), MrSID, and JP2000.
- 8.4.4 All aerial photography shall be accomplished with such equipment as to afford photographs meeting all precision requirements for aerotriangulation and map compilation conforming to National Map Accuracy Standards. The respondent's hardware and software shall have the capability to digitize; perform graphic editing; use automated techniques to match edges of automated map sheets (edge matching); create topological relationships of the digitized points, lines, and polygons automatically; provide for the automatic creation and storage of attributes for point, line, and polygon features; and also have the capabilities for error analysis and DVD output.

**8.5 Management Proposal:** This section should include available resources for completing this project, as well as an anticipated project schedule. Include relevant experience of the company and project team. This should include, at a minimum, three comparable customer references. The same information and relevant experience should be included for subcontractors of the respondent.

The Management Proposal shall include at a minimum the respondent's description of how they propose to satisfy the following requirements (8.6-8.13):

- 8.6 **Coordination with the participating members of COAGA 2025:** Communication between the participating members of COAGA 2025 and the contractor is critical. A designated staff person from each participating member of COAGA 2025 will be responsible for the coordination of each agency with the vendor for the duration of the contract. The respondents shall indicate how they will arrange and monitor communication and document ensuing decisions and resolutions. A description shall be provided of the proposed questions and resolution procedures to be used for this project
- 8.7 **Overview of Proposed Schedule:** Indicate the schedule for completing the deliverables indicated in the RFP. The COAGA 2025 reserves the right to negotiate a different schedule from that proposed.
- 8.8 **Project Tracking and Reporting:** The Contractor shall maintain procedures throughout the project for tracking and reporting progress in the data conversion and update process.
- 8.9 **Staffing:** The respondent will identify the essential staff resources assigned to this project and will provide their resumes. Essential staff includes at a minimum the project manager and the quality assurance specialist assigned to this project. The respondent shall indicate

the role of these individuals in this project and what percent of their overall time this project shall represent. The participating members of COAGA 2025 reserve the right to approve any reassignment of these essential staff resources.

- 8.10 Resolution of Source Anomalies:** It is anticipated that inconsistencies and anomalies between source materials and specifications will occur. It shall be the responsibility of the contractor to bring such issues to the attention of each of the participating designated project managers. The contractor and the participating members of COAGA 2025 shall work together to resolve issues and problems that arise. Techniques for communicating such problems to the project manager for each participating agency shall be addressed in the respondent's proposal. Procedures and guidelines for the resolution of problems shall be included in the proposal, with procedures being formalized during the project initiation phase and reviewed and modified as necessary during the project.
- 8.11 Exceptions to the RFP:** List any exceptions to the RFP. Elaborate on the reasons for the exceptions and proposed alternatives.
- 8.12 Additional Pertinent Information:** Add descriptions of any possible omissions from the RFP.
- 8.13 Fee Proposal:** The COAGA 2025 is seeking firm fixed prices for the performance and delivery of regional digital orthoimagery and updates to planimetric and topographic data in specific areas. Refer to the Appendices B-H for detailed information on deliverables. Section 9 of the RFP contains specifications that apply to all data collected as a part of this project. Forms that must be completed include the cost worksheets in Section 10 and Appendix E of the RFP, and the Appendix F: Forms.

## Section 9: Specifications

- 9.1 Project Background:** The RFP is being coordinated by the Association of Central Oklahoma Governments (ACOG) to support the data acquisition needs related to digital orthoimagery, planimetric mapping, and topographic mapping of its member governments and agencies participating in the COAGA 2025. The total area of the base project is approximately 956 square miles, depending on selected option. Appendix A provides a summary map of the potential participating agencies. Appendix B contains the overall list for deliverables needed for the orthoimagery portion of this project. Appendix G contains the standards for the metadata that will be collected as a part of this project.

The following central Oklahoma municipalities are participating in the project: Blanchard (via ACOG), Choctaw, Edmond, Moore, Oklahoma City, and Yukon. Special attention needs to be paid to the coordinate system and datum which the mapping products will be delivered in as the divide between Oklahoma State Plane North and Oklahoma State Plane South occurs in the project area. All of the products will be delivered in a version of the State Plane Coordinate System; however, each jurisdiction will give the specifics of their projection system within the Appendix which details their individual requirements. Different jurisdictions use different adjustments to the datum. These adjustments include both NAD83 and HARN. It is the responsibility of the contractor to convert the final deliverables to the coordinate system used by the jurisdiction taking final possession of the products in a manner that will meet all map accuracy requirements. The orthoimagery delivered to each jurisdiction will match the coordinate system and datum of their base map. See Appendices C - F for overview maps of the coordinate systems and datum used by the participating entities. A brief synopsis of each of the participating communities including the appendix in which you will find a more detailed description of the scope of work required by each community follows.

**Appendix C** details the requirements of the **City of Edmond**.  
**Appendix D** describes the requirements of the **City of Norman**.  
**Appendix E** details the requirements of the **City of Oklahoma City**.

**Appendix F** describes the requirements of **Cleveland County**

Respondents are directed to refer to the following sections and Appendices C - F of this RFP for technical specifications and a clear definition of the features and attributes which are considered deliverables, and therefore the responsibility of the contractor to provide.

- 9.2 Scope of Work:** The contractor shall produce and deliver to each of the participating agencies digital orthoimagery, flight plan map including ground control, and a Full Analytic Aerial Triangulation (FAAT) report, to the standards stipulated in this section, Appendix C - D and elsewhere in this Request for Proposals.

All work required by the contract will be performed in conformance with these specifications and any contractual modifications to these specifications. Any deviation from the specifications, unless specifically authorized in writing by the Technical Project Manager overseeing the part of the project in question, shall be sufficient cause for rejecting any part or all of the work performed.

The technical specifications in the main body of the RFP apply to all of the work completed as a part of the project unless waived in writing by the committee administering the project. The additional specifications in each of the appendices will be administered by the Technical Project Manager designated by that agency in the final contract/s.

- 9.3 Technical Specifications:** The imagery shall be flown in color. The respondent shall clearly detail the scale or scales needed to accomplish the digital orthoimagery. While the most recent aerials followed the National Map Accuracy Standards (NMAS), the COAGA 2025 understands that there is the American Society for Photogrammetry and Remote Sensing (ASPRS) Accuracy Standards as well. It is expected that the deliverables from this contract shall have an overall average accuracy of +/- 2.5 feet or better. In the areas where 3-inch pixel resolution is specified, the accuracy should meet the appropriate standards for 1" = 50' scale mapping (6-inch pixel = 1" = 100'). The respondent shall address the issue of the different accuracy between NMAS and ASPRS as it relates to this project, and whether it is feasible to increase the accuracy of the current datasets.

- 9.4 Flight:** The respondent shall detail flight and equipment specifications for the flight, including such information as endlap, sidelap, tilt, and crab. The respondent shall also clearly indicate the process to ensure the accuracy of the data compiled.

- 9.5 Project Area:** See Appendix A for the project limit. Aerials shall be taken to obtain complete coverage of the designated flight areas with a minimum of a 200-foot buffer outside of the designated flight areas. In areas where City limits are in a portion of a PLSS section, the deliverables shall include the complete section.

- 9.6 Conditions During Imagery:** The aerial photography must be obtained when the sky is clear of clouds, haze, smoke, dust, or any other aerial particles that may degrade the image. Ground features must be free of snow and ice. All unmanaged water bodies (lakes and streams) must not be at flood levels - photo acquisition must not take place within 2 days after a rainfall of 0.5 inches or greater or within 5 days after a rainfall of 2 inches or greater. Further, all deciduous trees must be in a leaf off state to ensure minimum ground obstruction from the existing tree canopy. Sun angle will not be less than 35 degrees. Respondents should describe how they will ensure that these condition constraints will be managed and met as part of the data acquisition.

- 9.7 Flight Plan:** The strips of imagery shall be flown in conformance with a plan developed by the contractor and approved by the COAGA 2025. All strips shall be flown as straight as possible and shall be void of crab, tilt and altitude variation to the extent that they afford good stereoscopic coverage of the entire minimum areas. The project shall be flown on or near the date agreed to by the Contractor and the COAGA 2025.



- 9.8 Re-Flights:** The contractor at no additional cost to participating COAGA 2025 agencies shall correct unacceptable aerial imagery with the re-flight coverage overlapping the accepted imagery by a sufficient amount to provide continuous stereoscopic coverage.
- 9.9 Aerial Sensor and Equipment:** Respondents shall include in their proposals detailed information on type of sensor and equipment used for aerial imagery and control, including airborne GPS equipment if applicable. Aerial sensors used to acquire data must have current USGS certification or USGS digital aerial sensor type certification.
- 9.10 Aerotriangulation:** Respondents shall include in their proposals detailed information on how the fully analytical aerotriangulation (FAAT) for control will be accomplished to meet accuracy guidelines outlined in this RFP, and whether Airborne GPS control points or ground control points will be used or if a combination of the two methods is suggested. Contractor must specify if additional ground control is needed or should be set. It is expected that the ground survey control will be performed under the supervision of a professional surveyor registered in the State of Oklahoma and experienced in geodetic control.
- 9.11 Scale and Accuracy of Orthophoto Images:** See Appendix B.
- 9.12 Format for this project,** all imagery will be output as tiled uncompressed TIFF formatted files associated with a TIFF World header file. Each primary image will cover an area approximately a PLSS section unless recommended otherwise. These images will be imported into SDE and other formats depending on community. The contractor shall also provide a project-wide MrSID image viewable by current versions of ArcGIS.
- 9.13 Pixel Resolution:** The maximum horizontal ground resolution of the base digital orthophoto pixel size shall be no larger than 6 inches (0.5 foot) except in those areas of the project requiring 3-inch (0.25 foot) pixels. The digital orthophoto pixels may be delivered in a multiple resolution format for viewing enhancement software or allow for an Image pyramid for Digital Ortho Display.
- 9.14 Quality Control:** The images and applicable reports will be examined to ensure that all processes and procedures used were adequate to meet the specifications agreed upon. Prior to authorizing full scale production, COAGA 2025 will examine sample images at each pixel resolution to ensure tonal quality in representative areas to be agreed upon by COAGA 2025 and the contractor. All images will undergo visual inspection to ensure the following:
- Completeness of data to cover the specified geographic extent, with no omissions or corrupt data
  - Tonal balancing problems across the block
  - Ground Sample Distance to ensure that it meets the specified resolution
  - Mis-joins between linear features
  - Cloud cover, smoke/haze, corrupt data, and void areas
  - Extreme tonal or color variation across seamlines
  - Extreme tonal or color variations in water features
  - Excessive horizontal displacement along seamlines in images
  - Excessive tilt in bridges, buildings, and other raised features
  - Transportation features obstructed by buildings or shadows.
  - Clipping of features (e.g. radio towers, water tanks, buildings) at tile boundaries
  - Building/structure warp that may indicate bad elevation data
  - Smearing



- Evidence of over saturation or under saturation as a result of image processing or histogram manipulation
- Evidence of image compression

**9.15 Attribute Data:** All required nongraphic attributes for the geodatabase are identified in Appendices C - F of this RFP. In the event that necessary attribute data is missing, confused, or unreadable on any source material, the contractor will contact the appropriate Technical Project Manager designated in the final contract(s) for assistance. In cases concerning minor irregularities in the data or source maps where the answer is obvious or defined by precedent, the contractor may act to resolve the problem on his own initiative thereby reducing work stoppages and interruptions. When this occurs, the appropriate Technical Project Manager shall be informed of the action that the contractor took within 24 hours and the contractor will document how the problem was resolved.

**9.16 Graphic Standards:** Graphic component placement shall follow good cartographic practices so as to ensure aesthetic presentations of displays and plots. It is the responsibility of the Contractor to ensure that no overshoot or undershoot (closure and snapping) errors go unresolved and that proper topology exists. COAGA 2025 will leave the exact setting of the snap tolerances to the discretion of the Contractor, knowing that different map areas sometimes require different tolerances to be set. The Contractor is hereby informed that any data submitted that is shown to contain dangles, overshoots, or any other errors that result from the incorrect setting of tolerances will be unacceptable.

**9.17 Feature Placement Methods:** Unless otherwise specified in this RFP, Respondents shall include in their proposals suggested placement methods for positioning all features that are to be captured from the source materials. Respondents shall detail those methods, as well as the accuracy that they expect to achieve by employing those methods.

COAGA 2025 recognizes that there are different methods of data conversion. Deviations from standard accepted methods of conversion such as coordinate geometry and controlled graphic placement, which do not detract from the intended scope, quality and accuracy of data conversion may be accepted at the approval of the appropriate Technical Project Manager(s).

**9.18 Digital Construction Requirements:** The Respondent must adhere to the following digital graphic construction requirements:

- Edge-matching — All digital conversion units (maps) must be both visually and coordinate edge-matched with adjacent sheets. No edge-match tolerance will be allowed. Attributes for splittable features must also be identical.
- Common Boundaries — All features that share a common boundary, regardless of map layer, must have exactly the same digital position of that feature in all common layers.
- Point Duplication — No duplication of points within a data string is permitted.
- Connectivity — Where graphic elements visually meet, they must also digitally meet. All confluences of line and point or node data must be exact; that is, no “overshoots,” “undershoots,” or “offsets” are permitted.
- Line Quality — A high quality cartographic appearance shall be achieved. Transitions from straight lines to arcs and other curvilinear elements shall be smooth, with angular inflections at the point of intersection. The digital representation must not contain extraneous data. There should be no jags, hooks, or zero length segments. Any lines that are straight, or should be straight, should be digitized using only two points that represent the beginning and ending points of the line.
- Polygon Closure — Polygons and regions must be topologically correct per the Geodatabase data model and should contain no duplicate arcs.

- **Graphic Precision** — All graphic elements must contain positional coordinates significant to one ten thousandth (0.0001) of a foot. Specification of Deliverables: The Contractor will deliver formatted Geodatabase, orthophoto data in TIFF, MrSID formatted files (transparent backgrounds) and JP2000, and topographic data in both an ESRI formatted Geodatabase and AutoCAD format, all of which are agreed upon by the participating agency and the Contractor.

**9.19 Topographic data:** Data collection methods must support the development of a digital terrain model (DTM) sufficient to attain a horizontal and vertical accuracy to support 1' contour generation at 1" = 100' scale (or better) or 2-foot contours (or better) depending on the requirements of the requesting agency. The methods must conform to the latest version of the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014). All digital elevation models (DEM) must be hydro-flattened and breaklines used for this process must be maintained as part of final deliverables. If lidar is used to develop the topographic data the collection of the lidar must comply with the standards put forth in Lidar Base Specification Version 1.0 published by the USGS: Chapter 4 of Section B, U.S. Geological Survey Standards, Book 11, Collection and Delineating of Spatial Data published in October 2014.

A report on the assessed absolute vertical accuracy of the bare earth-surface surface in accordance with the guidelines set forth in the ASPRS Positional Accuracy Standards for Digital Geospatial Data (2014) is required.

The respondent must identify all equipment and methods used to collect the topographic data and how they meet ASPRS/USGS Standards.

**9.20 Accuracy:** The Contractor shall use accepted map compilation procedures and equipment to achieve the levels of accuracy, detail, and quality required by these specifications. Based on the source documents and proven past performance, the Contractor shall prepare statements of achievable levels of absolute and relative accuracy for the compiled features.

**9.21 Acceptance Procedures:** The participating agencies of COAGA 2025 will report any problems encountered in a timely manner, and in a standard format agreed to with the Contractor.

**9.22 Ownership of Deliverables:** The participating agencies will retain ownership of all source data and documents; database schema components; custom software; and digital and hard copy products procured, created, or generated in the development of the document database. These records, data, programs, and other materials shall be surrendered to participating agencies upon completion or termination of the project.

Respondents, the Contractor or subcontractor shall not make any claim or right of ownership under patent or copyright law to any of the materials, data, or programs created specifically for this project. The Contractor may not reveal, share, or sell any of these products without written permission of the agency or agencies for which it was written. These terms and conditions exclude any pre-existing conversion software the Contractor may have developed or commercial software acquired prior to beginning work on this project.

## **Section 10: Cost Proposal Forms**

The COAGA 2025 is seeking firm fixed prices for the performance and delivery of digital orthoimagery and flight plan map. Prices shall cover all necessary work, materials, supplies, data preparation, entry, translation and quality control, etc. Reproduction, travel, and other direct and indirect costs should also be included.

It is the responsibility of the Respondent to verify any count information used in estimating the cost of conversion. These estimates are based on the most current information available.

The following firm fixed cost worksheet should be filled out as a minimum. Cost proposals should include pricing for both on-shore and off-shore processing as well as pricing for a hosted image service option, if applicable. The worksheet must be accompanied by the non-collusion affidavits found in Appendix F: Forms.

**10.1 Firm Fixed Unit Costs: Appendix B – Digital Color Orthoimagery (TIFF)**

City of Edmond (127 square miles @ 3”) \_\_\_\_\_

City of Norman (92 miles @ 3” and 164 square miles @ 6”) \_\_\_\_\_

City of Oklahoma City

    2025 Leaf-Off (781 sq. miles @ 6-inch) \_\_\_\_\_

    2026 Leaf-On (781 sq. miles @ 6-inch) \_\_\_\_\_

Cleveland County (ACOG) (678 miles @ 12-inch) \_\_\_\_\_

Note: Overlap exists with these entities’ project areas and should be considered when calculating pricing.

**Optional Mosaic Products:**

MrSID and JP2000 of City of Edmond \_\_\_\_\_

MrSID and JP2000 of City of Norman \_\_\_\_\_

MrSID and JP2000 of City of Oklahoma City \_\_\_\_\_

MrSID and JP2000 of Cleveland County \_\_\_\_\_

MrSID and JP2000 of Entire Project Area (ACOG) \_\_\_\_\_

**10.2 Optional Mapping Deliverables**

**City of Edmond** (See Appendix C for Collection Areas and Features)

Planimetric change detection and collection,  
Pilot Study Area \_\_\_\_\_

Planimetric change detection and collection,  
Remainder of the City \_\_\_\_\_

LiDAR collection and interpolation of the  
HE-DTM into 1-foot contours, Pilot Area \_\_\_\_\_

LiDAR collection and interpolation of the  
HE-DTM into 1-foot contours, Remainder of the City \_\_\_\_\_

**City of Norman** (See Appendix D for Collection Areas and Features)

Planimetric change detection and collection, Pilot Study Area	_____
Planimetric change detection and collection, Remainder of the City	_____
LiDAR collection and interpolation of the HE-DTM into 1-foot contours / 2-foot contours, Pilot Area	_____
LiDAR collection and interpolation of the HE-DTM into 1-foot contours (82 square miles) / 2-foot contours (115 square miles), Remainder of the City Raw Lidar Point Cloud, Breaklines, spot elevations	_____
FEMA compliant Vertical Accuracy Report (60 check points)	_____

**City of Oklahoma City** (See Appendix E for Collection Areas and Features)

Complete the cost worksheets in Appendix E in addition to those listed in Section 10 above.

In addition, the Respondent may propose alternative pricing methods per Section 8.13. The participating agencies of COAGA 2025 reserve the right to limit the scope of the project.

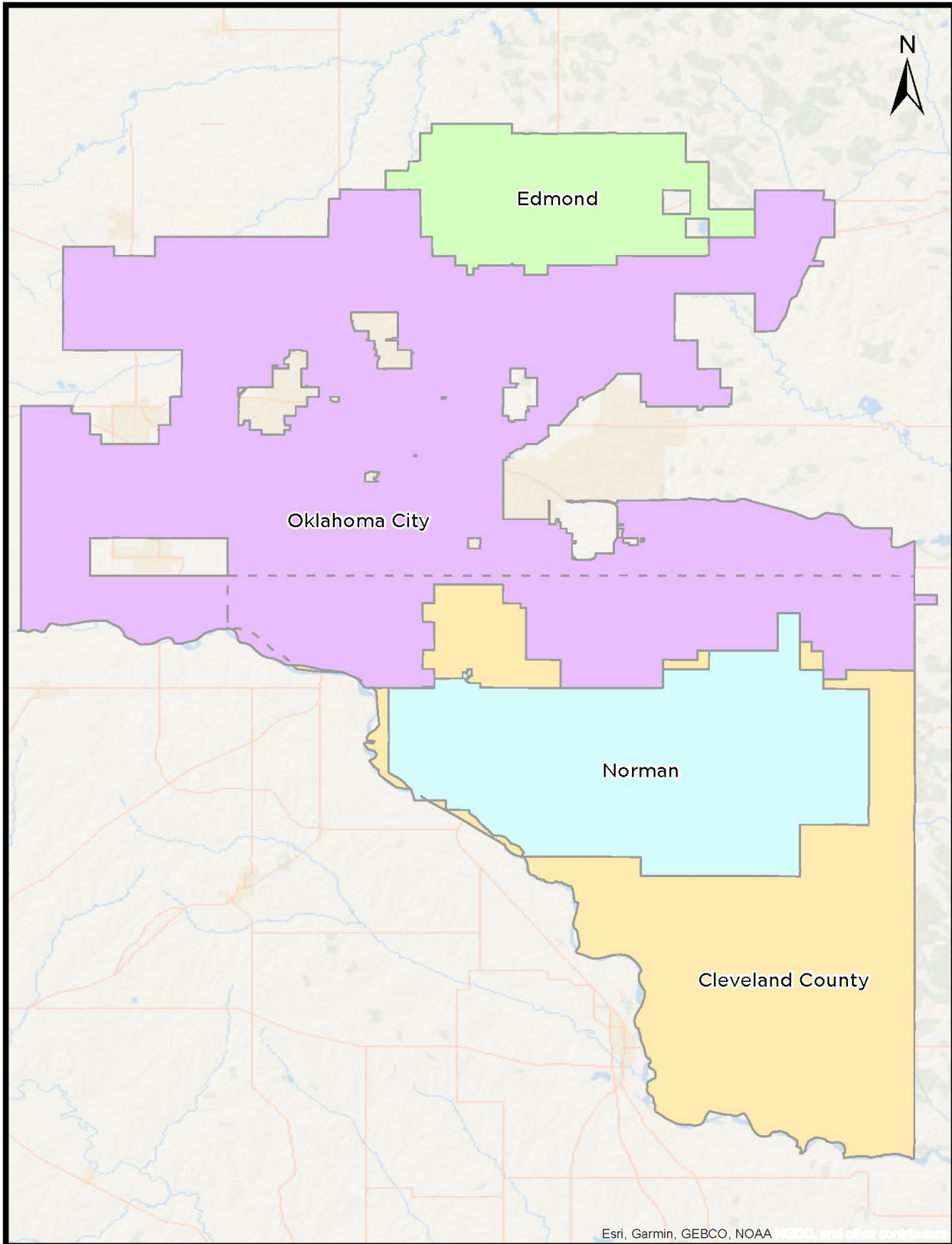
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# APPENDICES

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**APPENDIX A:**  
**POTENTIAL PARTICIPATING COMMUNITIES**



## APPENDIX B:

### PROJECT DELIVERABLES

**Scope:** The project area covers approximately 956 square miles depending upon the options taken. Some cities participating in this project store their imagery in ArcSDE. Their delivery must be in a seamless format compatible with ArcSDE. The other entities have their requests in their specific Appendices. The cities have major investments in base maps and survey monuments that are tied to specific coordinate systems and datum. Because of the need to integrate the data collected by this project into the existing datasets, different coordinate systems will be used for final deliverables (see Appendices C – F for specific coordinate systems and datum for each participant).

**Projection:** Below are the coordinate systems and datum currently being used by participating agencies:

#### **Edmond and Cleveland County:**

Coordinate System: Oklahoma State Plane, North Zone 3501  
Horizontal Datum: NAD83  
Vertical Datum: NAVD88  
Ellipsoid: GRS 1983  
Map Units: US Survey Feet

#### **Norman**

Coordinate System: Oklahoma State Plane, South Zone 3502  
Horizontal Datum: HARN  
Ellipsoid: GRS 1980  
Map Units: US Survey Feet

#### **Oklahoma City**

Coordinate System: Oklahoma State Plane, North Zone 3501  
Horizontal Datum: NAD83 (CORS96)  
Ellipsoid: GRS 1980  
Map Units: US Survey Feet  
Projection: Lambert Conformal Conic

**Accuracy:** The final scale will be NMA 1" = 50', 1" = 100', or 1" = 200' based upon the alternative chosen. The respondent shall detail the possibility of meeting the ASPRS Standard for Class 1 Map Accuracy for such scale mapping. Otherwise, it shall meet the National Map Accuracy Standard for such scale mapping.

**Tiling Scheme:** The tiling scheme will be based upon the Public Land Survey System (PLSS) modified to make certain that it overlaps each individual city's boundary by at least 200 feet. It is the responsibility of the contractor to use the generic PLSS grid and the grids of the participating cities determine the best way to create a region-wide grid.

**Deliverables:** All imagery will be output as tiled uncompressed TIFF formatted files associated with a TIFF World header file at the resolution and accuracy selected. The images will follow the tiling scheme proposed by the contractor and agreed upon by COAGA 2025. These images will be imported into SDE, or other as stated. All tiles will also be delivered resampled to 1-foot resolution in uncompressed TIFF formatted files associated with a TIFF World header file. The contractor shall also provide a project-wide MrSID image viewable by current versions of ArcGIS. A summary



of major work products is below. Each city will be delivered a copy of the tiles which cover its extent and understand that there will be a 200-foot project buffer, unless specified otherwise.

**Required for selected alternative:**

- Flight line diagram
- Calibration report
- FAAT report
- MrSID of Project in NAD83

**Optional Products:**

- MrSID and JP2000 of Edmond
- MrSID and JP2000 of Norman
- MrSID and JP2000 of Oklahoma City
- MrSID and JP2000 of Cleveland County
- MrSID and JP2000 of Entire Project Area (ACOG)

## APPENDIX C:

### CITY OF EDMOND

#### BACKGROUND

The City of Edmond project covers an area of approximately 127 square miles. The City has a population of approximately 99,955. There are 832 miles of streets, 54,312 address points, and approximately 71,677 buildings. Elevations within the City limits range from 897 to 1,233 feet above sea level. The City of Edmond contracted with Sanborn Map Company, Inc in 2024 to update its orthophoto, planimetric and topographic data.

#### AERIAL PHOTOGRAPHY

3-inch (0.25 foot) pixels resolution color ortho photography (2024 date)

#### PLANIMETRICS (2024 Date)

Hydrography – linear and polygon features

Street centerlines

Railroads

Building footprints – to include building heights

Edge of pavement

Driveways

Sidewalks

Sidewalk Centerlines

Vegetation (Tree mass)

Single Trees in the Right-of-Way along section line roads

Parking Lots

Fences

#### TOPOGRAPHY (2024 Date)

1-foot elevation contours

Spot elevations

Hydrologically enforced Digital Elevation Model (DTM) – breaklines and mass points

The City of Edmond relies on a robust GIS to perform business operations. All data is currently stored in a 10.9.1 ArcSDE repository located in a MS SQL Server 2016. At this time, the City of Edmond is seeking to upgrade to 11.X in 2025.

Respondents are directed to refer to the RFP, the following sections and Appendices A and B of this RFP for technical specifications and a clear definition of the features and attributes that are considered deliverables, and therefore the responsibility of the Contractor to provide.

#### OBJECTIVES

Obtain updated color digital orthophotography according to NMAS 1" = 50' standards – 3" (0.25 foot) pixel resolution.

Obtain updated Hydrologically Enforced DTM and 1-foot elevation contours.

Update existing GIS base datasets according to NMAS 1" = 50' standards.

## SCOPE OF WORK

The Contractor shall produce and deliver to the City of Edmond photogrammetric change detection and update of the existing hydrological enforced Digital Terrain Model (HE-DTM) with 1-foot contour database with labels and spot elevations, photogrammetric change detection and collection of the planimetric features to the standards stipulated in this section and elsewhere in this Request For Proposals. The Contractor shall furnish all materials, equipment, labor, management, insurance, postage, and transportation necessary to complete this work. The Respondent should propose the best procedures and commonly accepted professional techniques in order to assure complete compliance with this RFP.

All work required by the contract will be performed in conformance with these specifications and any contractual modifications to these specifications. Any deviation from the specifications, unless specifically authorized in writing by the GIS Project Manager, shall be sufficient cause for rejecting any part or all of the work performed.

## TECHNICAL SPECIFICATIONS

The initial planimetric data and most recent aerials followed the National Map Accuracy Standards (NMAS). It is expected that the deliverables from this contract shall have an overall average accuracy of 1 inch = 50 feet. The respondent shall address the issue of the different accuracies of the other participating agencies as it relates to this project, and how they will maintain or improve the accuracy of the City of Edmond's current datasets.

## PLANIMETRIC FEATURES

The planimetric data to be updated is road edges (paved, unpaved, trail centerlines, sidewalks, and driveways), parking lots, buildings, (minimum size is 12' x 10'), hydrology (including drainage features such as ditches), railroad centerlines, street centerlines, sidewalk centerlines, tree mass outlines, single trees in the R.O.W (of section line roads) and fences that follow along R.O.W lines and lots (parcels) to depict ownership. Sample digital data may be provided as an attachment. Respondents are also directed to refer to Appendix C - Attachment D of this RFP for a clear definition of the features and attributes that are considered deliverable, and therefore the responsibility of the Contractor to populate into the GIS database as part of the conversion effort. Respondents shall indicate in their technical plan of operations suggested data conversion techniques for the compilation of source map data.

Please see Appendix A - Attachment C for a map of building permits issued since the last flight in January 2024 to show where building has occurred. Since there continues to be development in the City, these areas should not be considered all-inclusive for the change detection portion of this RFP. The City has placed some building footprints from plans to depict construction in the building layer. These are identified by attributes. The contractor shall update these structures based on an accurate representation from the photography. If there are any physical changes to any existing structure, due to additions or modifications, the contractor shall update the geometry of those structures as part of the change detection.

**Pilot Study** For Planimetric data. The Pilot Study is necessary for the City of Edmond to evaluate the process of detecting change and updating the planimetric data. The Pilot will be used to refine the scope of the remaining data conversion project in terms of quality, accuracy and, timeliness. An important component of this phase will be to clarify, and test procedures used by the Contractor and the City to complete this project.

**Selected Pilot Area** The Pilot Study Area section (Section 12 Township 14 North, Range 2 West) was chosen to be the pilot in this conversion process because of its development. The Pilot Study Area is a one square mile section with approximately 209 parcels with approximately 21 building permits.

**Pilot Study Process** In the City of Edmond's conversion plan, the Contractor will be supplied with source data to use in the conversion process. The source material for this pilot will be a version of the planimetric feature dataset. The pilot study process will give the Contractor and the City of

Edmond the opportunity to work with the source data and to identify and resolve any questions or problems that arise as actual data conversion is initiated. It gives both parties, prior to full production, the time needed to implement procedures and resolve problems reducing delays and reworks.

**Scale and Accuracy of Planimetric Data** The final scale will be 1" = 50' and the respondent shall meet the National Map Accuracy Standard for such scale mapping. All spatial data shall conform to the following:

Coordinates/Projection:	State Plane Coordinate System,
Zone:	Oklahoma North, FIPS Zone 3501
Horizontal Datum:	NAD83
Map Units:	Feet

## **TOPOGRAPHIC DATA**

The existing one-foot contour topographic mapping data was collected LiDAR data. The City of Edmond's Stormwater/Drainage Engineering division requires a hydrologically enforced DTM to ensure a high level of detail with regards to the breaklines for the generation of one-foot contours and spot elevations at traditional locations. The contractor will provide 3D breaklines at abrupt changes in slope. Breaklines will be collected at appropriate areas, produced by either naturally or man-made features. The contractor will also digitize masspoints in addition to breaklines, taking careful note of high and low spots. Respondents shall indicate in their technical plan of operations suggested data conversion techniques for the compilation of source map data.

The City is requesting that respondents address the ability to support the update of 1-foot contours with the aforementioned requirements of it being drainage enforced, as well as it meeting the vertical accuracy of one-half of the contour level.

The respondents should refer to Appendix C - Attachment D for the data dictionary and required geodatabase and Autocad DWG formats of the topographic data.

### **Pilot Study** *For Topographic data.*

The Pilot Study is necessary for the City of Edmond to evaluate the generation of 1-foot contour from the Digital Terrain Model. The Pilot will be used to refine the scope of the remaining data conversion project in terms of quality, accuracy and, timeliness. An important component of this phase will be to clarify and test procedures used by the Contractor and the City to complete this project.

### **Selected Pilot Area**

The Pilot Study Area section (Section 12 Township 14 North, Range 2 West) was chosen to be the pilot in this conversion process because of its development. The Pilot Study Area is a one square mile section with approximately 209 parcels with approximately 21 building permits.

### **Pilot Study Process**

The pilot study process will give the Contractor and the City of Edmond the opportunity to work with the source data and to identify and resolve any questions or problems that arise as actual data conversion is initiated. It gives both parties, prior to full production, the time needed to implement procedures and resolve problems reducing delays and reworks.

### **Scale and Accuracy of Topographic Data**

The respondent shall detail how the contours will be generated and verified to ensure the vertical accuracy of one-half the contour level. The respondent shall also detail the possibility of meeting ASPRS Standard for Class 1 Map Accuracy for such scale mapping that supports 1-foot contour. Otherwise, it shall meet the National Map Accuracy Standard for such scale mapping. All spatial data shall conform to the following:

Coordinates/Projection:	State Plane Coordinate System,
Zone:	Oklahoma North, FIPS Zone 3501
Horizontal Datum:	NAD83

Elevation Datum:	NAVD88
Ellipsoid:	GRS83
Map Units:	US Survey Feet

### Attribute Data

All required nongraphic attributes for the geodatabase are identified in Appendix C – Attachment D of this RFP. In the event that necessary attribute data is missing, confused, or unreadable on any source material, the Respondent will contact the City of Edmond GIS Project Manager for assistance. In cases concerning minor irregularities in the data or source maps where the answer is obvious or defined by precedent, the Contractor may act to resolve the problem on his own initiative thereby reducing work stoppages and interruptions. When this occurs, the City of Edmond GIS Project Manager shall be informed of the action that the Contractor took within 24 hours and the Contractor will document how the problem was resolved.

The City of Edmond is seeking firm fixed prices for the performance and delivery of digital orthoimagery and flight plan map, optionally Planimetric Change Detection & Collection of Planimetric and Collection of LiDAR derived HE-DTM into 1-foot Contours. Prices shall cover all necessary work, materials, supplies, data preparation, entry, translation and quality control, etc. Reproduction, travel and other direct and indirect costs should also be included.

COE acknowledges that the proposer may be required to make some assumptions about the city’s environment and specific requirements and operations. Any assumptions made by the proposer in regard to this RFP shall be documented in this section.

It is the responsibility of the Respondent to verify any count information used in estimating the cost of conversion. These estimates are based on the most current information available.

### DELIVERABLES

*Cost Worksheet in Section 10 of the RFP must be completed.*

### FIRM FIXED UNIT COSTS

City of Edmond: (127 square miles @ 3”)

### DIGITAL ORTHOPHOTOS

1. Aerial Triangulation Report
2. A set of color digital orthos in georeferenced TIFF format (uncompressed)
3. A full citywide color MrSID mosaic (40:1 compression)

**OPTIONAL MAPPING DELIVERABLES:** (see Appendix C – Attachment D for geodatabase design)

### PLANIMETRICS/GIS BASE DATA

Planimetric Change Detection & Collection - Pilot Study Area Cost  
 Planimetric Change Detection & Collection - Remainder of the City

### TOPOGRAPHY/LIDAR:

LiDAR Collection and interpolation of the HE-DTM into 1-foot Contours- Pilot Area

LiDAR Collection and interpolation of the HE-DTM into 1-foot Contours - Remainder of the City

- Vertical Accuracy Report
- ASCII Digital Elevation Model (DEM) data
- Hydro Flattened/Enforced, Bare Earth DEM
- Spot Elevations

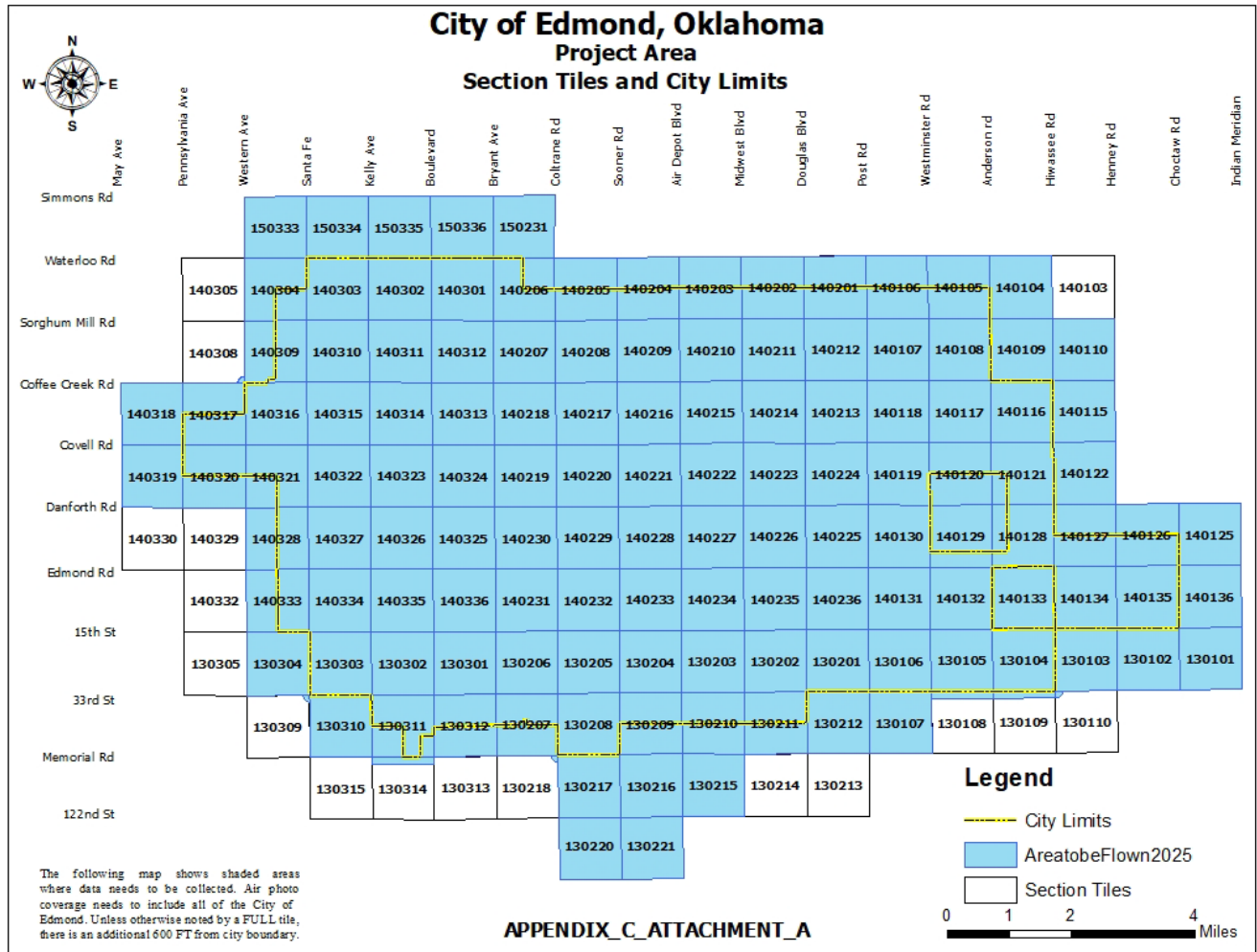
- Raw Point File fully compliant with LAS 1.4
- Topographic databases in ArcGIS Geodatabase and AutoCAD dwg formats

### **METADATA**

Metadata must be included in all geodatabases deliveries for all feature classes using the FGDC format.

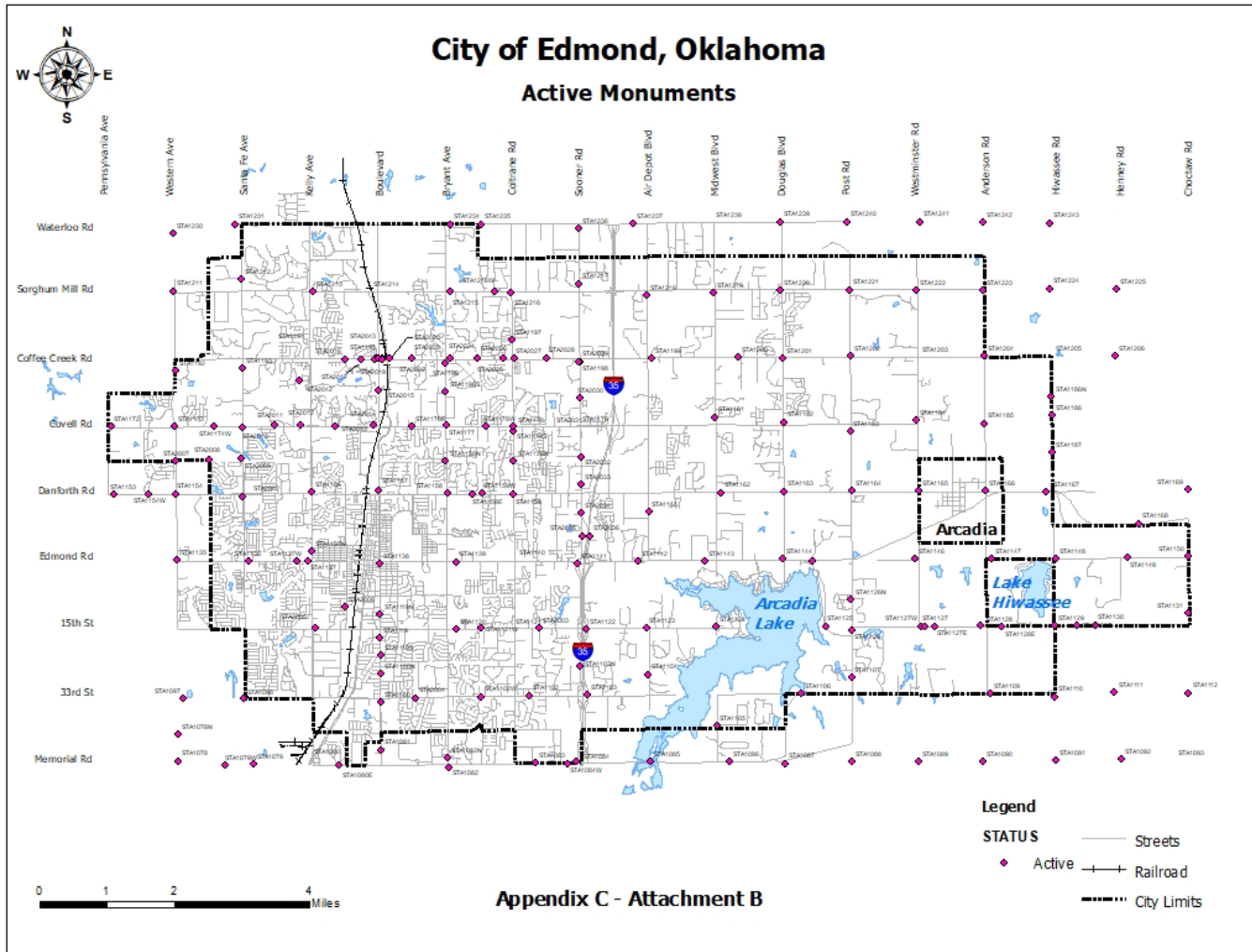
Metadata should include author information, a description of the dataset, data capture techniques, definitions for all fields, subtypes and domain code descriptions, statement of accuracy, compilation scale, and dates of the completed compilation.

# ATTACHMENT A

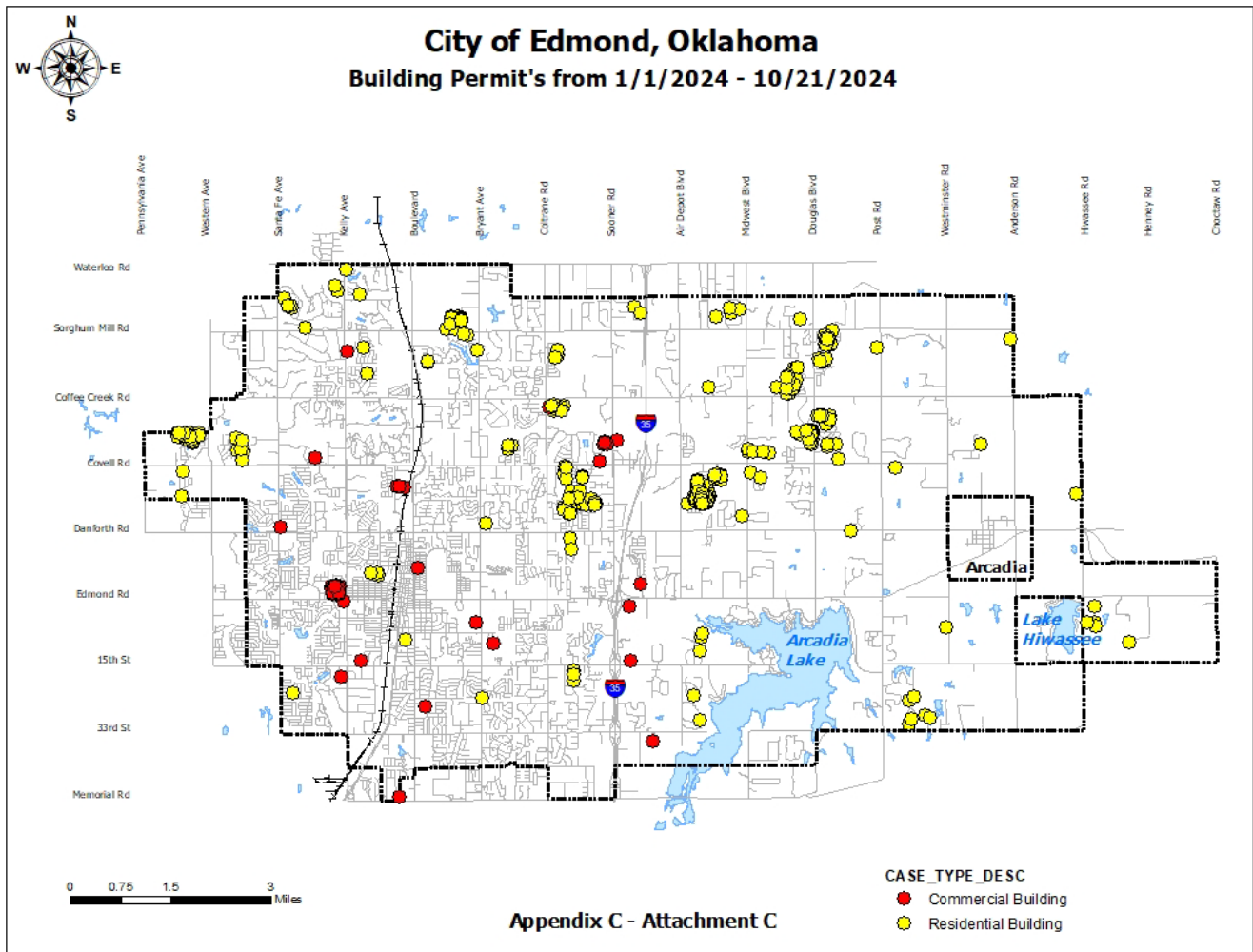




# ATTACHMENT B



# ATTACHMENT C



## ATTACHMENT D: Edmond Geodatabase Design – Planimetric and Topographic Data

This version of the City of Edmond geodatabase data model follows a standard planimetric data model. The following describes the GIS database design for the feature dataset. The Contractor will conform their attribute capture and population of the data sets from the data model illustrated below.

The planimetric data compiled includes road edges (paved, unpaved, trail centerlines, sidewalks, and driveways), parking lots, buildings (minimum size is 12’x10’), hydrology (including drainage ditches), railroad centerlines, street centerlines, sidewalk centerlines, tree mass outlines and single trees in the right of way, and fences that show ownership. Updates include any modifications to existing features such as road widenings and building additions or demolitions.

The topographic data set includes breaklines and masspoints feature class in addition to the contour lines and spot elevations.

The following pages show the feature attribute tables in detail. Whenever codes or a set of valid values is used for an attribute, a domain table is utilized. The information in the lookup tables is not included in this document.

The Respondent is encouraged to add to any aspect of this design in order to better meet the needs of the city of Edmond. Examples of such modifications might include adding new feature types or creating a domain table in the geodatabase for definitions of allowable values. However, the Contractor will be required to report any such changes to the City and to request prior approval for any change, which would preclude creating layers in the specified formats.

### Data File-Type Information and System Requirements:

#### PLANIMETRIC DATA:

##### Buildings (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	Long Integer	4	Subtype code (see below).
UPDATED	Updated	Date	8	Feature updated date.
SHAPE	Shape	Geometry	0	Feature geometry.
ASSET_TYPE	Asset Type	Text	20	Building Type.
FIRE_SUPPRESSION	Fire Suppression	Text	8	Buildings with sprinklers.
ELEVATION	Elevaton	Double	8	Building heights
MODIFIED BY	Modified By	Text	30	Modify by
MODIFIED DATE	Date Modified	Date	*	Date of Modification
STATUS	Status	Text	20	Status of building
SHAPE.AREA	SHAPE.AREA	Double	8	Area of feature.
SHAPE.LEN	SHAPE.LEN	Double	8	Length of feature.

## Building Subtypes

CODE	DESCRIPTION
0	Government Building
1	Building
2	Foundation
3	Ruin
4	Tank
99	Out Areas

## Fence (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	Long Integer	4	Subtype code (see below).
UPDATED	Updated	Date	8	Feature updated date.
SHAPE_LENGTH	Shape_Length	Double	8	Length of feature (in units).

## Fence Subtypes

CODE	DESCRIPTION
1	Fence

## Hydrology (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
DISPLAY	Display	ShortInteger	2	Display code (not used).
TYPE	Type	Long Integer	4	Subtype code (see below).
NAME	Name	Text	35	Name of water body.
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of features (in units)

## Hydrology Subtypes

CODE	DESCRIPTION
1	River
2	Lake, Reservoir
3	Pond
4	Island
5	Irrigation Canal
6	Creek
7	Trickle Channel
8	Drainage Ditch
99	Out Area

## Hydrology Lines (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	Long Integer	4	Subtype code (see below).
DISPLAY	Display	ShortInteger	4	Display code (not used).
NAME	Name	Text	35	Hydrology line name.
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).

## Hydrology Line Subtypes

CODE	DESCRIPTION
1	River
2	Lake, Reservoir
3	Pond
4	Island
5	Irrigation Canal
6	Creek
7	Irrigation Ditch
8	Trickle Channel
9	Drainage Ditch
99	Tile Edge

### Parking Lot (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	ShortInteger	2	Subtype code (see below).
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of features (in units).

### Parking Lot Subtypes

CODE	DESCRIPTION
1	Parking Lot
99	Out Areas

### Pavement (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	ShortInteger	2	Subtype code (see below).
DISPLAY	Display	ShortInteger	2	Display code (not used).
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of features (in units).

### Pavement Subtypes

CODE	DESCRIPTION
1	Paved Road
2	Unpaved Road
3	Bridge
4	Sidewalk
5	Driveway
6	Unpaved Driveway
99	Out Areas

### Pavement Lines (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	Long Integer	4	Subtype code (see below).
DISPLAY	Display	ShortInteger	2	Display code (not used).
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).

### Pavement Lines Subtypes

CODE	DESCRIPTION
5	Trails
9	Bike Paths
99	Tile Edge

### Railroad (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	ShortInteger	2	Subtype code (see below).
DISPLAY	Display	ShortInteger	2	Display code (not used).
NAME	Name	Text	35	Railroad name.
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).

### Railroad Subtypes

CODE	DESCRIPTION
1	Railroad Centerline

### Road Centerline (line)

Attributes	Alias	Data Type	Width	Definition
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	ShortInteger	2	Subtype code (see below).
DISPLAY	Display	ShortInteger	2	
NAME	Name	Text	35	Road centerline name.
UPDATED	Updated	Date	8	Feature updated
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of Features (in units).



### Road Centerlines Subtypes

CODE	DESCRIPTION
1	Paved Road Centerline
2	Unpaved Road Centerline
3	Sidewalk Centerline

### Single Trees (point)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	8	Feature updated
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of Features (in units).

### Single Trees Subtypes

CODE	DESCRIPTION
1	Coniferous Tree
2	Deciduous Tree

### Vegetation (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
SHAPE	Shape	Geometry	0	Feature geometry.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	8	Feature updated date.
Shape_Length	Shape_Length	Double	8	Length of features (in units).
Shape_Area	Shape_Area	Double	8	Area of Features (in units).

### Vegetation Subtypes

CODE	DESCRIPTION
1	Tree Line
2	Tree Line Opening

## TOPOGRAPHIC DATA

### Contours (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	36	Feature updated date.
ELEVATION	Elevation	Double	8	Elevation.
SHAPE	Shape	Geometry	0	Feature geometry.
Shape_Length	Shape_Length	Double	8	Length of features (in units).

### Contour Subtypes

CODE	DESCRIPTION
1	Index Contour
2	Intermediate Contour
3	Hidden Index Contour
4	Hidden Intermediate Contour

### Spot Elevations (point)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	36	Feature updated date.
ELEVATION	Elevation	Double	8	Elevation.
SHAPE	Shape	Geometry	0	Feature geometry.

### Spot Elevation Subtypes

CODE	DESCRIPTION
1	Ground Elevation
2	Bridge Elevation
3	Water Elevation

### Obscured Areas (polygon)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	36	Feature updated date.
SHAPE	Shape	Geometry	0	Feature geometry.
Shape_Area	Shape_Area	Double	8	Area of Features (in units).
Shape_Length	Shape_Length	Double	8	Length of features (in units).

### Obscured Areas Subtypes

CODE	DESCRIPTION
1	Obscured Area

### DTM Breaklines (line)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	36	Feature updated date.
SHAPE	Shape	Geometry	0	Feature geometry.
Shape_Length	Shape_Length	Double	8	Length of features (in units).

### DTM Breaklines Subtypes

CODE	DESCRIPTION
1	Breakline

### DTM Mass Points (points)

ATTRIBUTES	ALIAS	DATA TYPE	WIDTH	DEFINITION
OBJECTID	OBJECTID	OID	4	Internal feature number.
TYPE	Type	LongInteger	4	Subtype code (see below).
UPDATED	Updated	Date	36	Feature updated date.
ELEVATION	Elevation	Double	8	Elevation.
SHAPE	Shape	Geometry	0	Feature geometry.

### DTM Mass Points Subtypes

CODE	DESCRIPTION
1	Mass Point

## TOPOGRAPHIC DATA CAD FORMAT REQUIREMENTS

### CAD File Objects:

Each .dwg group layer contains 5 object classes. These object classes include:

- Annotation**      An object layer that is used to store text related to another CAD object or a drawing title block. Each spot elevation point contains annotation.
- Point**              An object layer that stores CAD points. Spot elevations are represented points.
- Polyline**          An object layer that is used to store CAD lines. Each contour line in this object class is represented as a line.
- Polygon**            An object class that is used to store closed areas, or polygons in the CAD and GIS drawing environment. Contour lines that are closed are represented as polygons.
- MultiPatch**        This geometry type is used for storing 3D objects - such as buildings, geological bodies, 3D no-fly zones, etc - in both the geodatabase and shapefile formats.

### CAD Data Attributes:

The following table provides a description of each CAD field.

NAME	TYPE	WIDTH	DESCRIPTION	FEATURE CLASS
FID	Object ID	4	Unique feature identifier.	All
Shape	Shape	*	Geometric shape of entity.	All
Entity	String	16	The type of CAD entity that the feature represents. Entity and element are synonymous.	All
Handle	String	16	The CAD unique identifier for entities and elements.	All
Layer	String	255	A logical grouping of data in a drawing. Layers can contain a mixture of feature types.	All
LyrFrzn	Short	2	The CAD frozen status of the layer. Frozen layers are not displayed.	All
LyrLock	Short	2	The CAD locked status of the layer. Locked layers are displayed.	All
LyrOn	Short	2	The CAD display status of the layer.	All
LyrVPFrzn	Short	2	The CAD frozen status of the layer's viewport. Frozen layers are not displayed.	All
LyrHandle	String	16	The CAD-maintained internal identifier for a layer.	All
Color	Short	2	The display color of the entity.	All
EntColor	Short	2	The assigned color of the entity.	All
LyrColor	Short	2	The color of the layer in which the entity resides.	All

BlkColor	Short	2	The color of the block with which the entity is associated.	All
Linetype	String	255	The display line type of the entity.	All
EntLinetype	String	255	The assigned line type of the entity.	All
LyrLinetype	String	255	The line type of the layer in which the entity resides.	All
BlkLinetype	String	255	The line type of the block with which the entity is associated.	All
Elevation	Double	8	The z-coordinate value of an entity. In cases where the z-coordinate values of an entity's vertices vary, the z-coordinate value of the vertex encountered will be used.	All
Thickness	Double	8	The extrusion distance of an entity.	All
LineWt	Short	2	The display line weight of an entity.	All
EntLineWt	Short	2	The assigned line weight of an entity.	All
LyrLineWt	Short	2	The line weight of the layer in which the entity resides.	All
BlkLineWt	Short	2	The line weight of the block with which the entity is associated.	All
RefName	String	255	Name of the parent object in which the entity resides.	All
LTScale	Double	8	The scale of the entity's line type.	All
Angle	Double	8	The rotation angle of an entity (in degrees).	Annotation/Point
ExtX	Double	8	X-coordinate extrusion value.	All
ExtY	Double	8	Y-coordinate extrusion value.	All
ExtZ	Double	8	Z-coordinate extrusion value.	All
DocName	String	255	Name of the CAD file.	All
DocPath	String	4096	Path of the CAD file.	All
DocType	String	255	Type of CAD file (by extension).	All
DocVer	String	16	Version of CAD file.	All
ScaleX	Double	8	X-coordinate scale value.	Annotation/Point
ScaleY	Double	8	Y-coordinate scale value.	Annotation/Point
ScaleZ	Double	8	Z-coordinate scale value.	Annotation/Point
<Attribute Tag>	Double	8	An object that is part of an insert that stores alphanumeric data.	All
<Attribute Tag>	Long	4	An object that is part of an insert that stores alphanumeric data.	All
<Attribute Tag>	String	15	An object that is part of an insert that stores alphanumeric data.	All
Style	String	255	Text style.	Annotation

FontId	Short	2	Text symbol ID number (specific to ArcGIS).	Annotation
Text	String	255	Text string.	Annotation
Height	Double	8	Text height.	Annotation
TxtWidth	Double	8	CAD text entity width factor.	Annotation
TxtOblique	Double	8	CAD text entity oblique angler.	Annotation
TxtGenType	String	32	CAD text generation type.	Annotation
TxtJust	String	32	CAD text entity justification parameter.	Annotation
VertAlign	String	32	CAD text entity vertical alignment parameter.	Annotation
TxtFont	String	255	CAD text entity font.	Annotation
TxtBoxHt	Double	8	CAD text entity bounding box height.	Annotation
TxtBoxWd	Double	8	CAD text entity bounding box width.	Annotation
TxtRefWd	Double	8	CAD multiline text width factor.	Annotation
TxtAttach	Short	2	CAD multiline text attachment parameter.	Annotation
TxtDir	Short	2	CAD multiline text direction parameter.	Annotation
LnSpace	Short	2	CAD multiline text spacing type.	Annotation
SpaceFact	Double	8	CAD multiline text spacing factor.	Annotation
TxtMemo	String	2048	Entire CAD text string.	Annotation

## **APPENDIX D:** **CITY OF NORMAN**

### **BACKGROUND**

The City of Norman project covers an area of approximately 256 square miles for orthophotography and 197 square miles for the planimetric and topographic update- see City of Norman Project Maps Appendix D, Attachments A and B. The City of Norman contracted with Sanborn Map Company, Inc. in 2023 to update its orthophoto and planimetric data and topographic data.

### **AERIAL PHOTOGRAPHY**

.25- and .5-foot resolution color orthophotography (2022)

### **PLANIMETRICS (2023)**

See attachment C for features.

### **TOPOGRAPHY (2023)**

1-foot elevation contours urban area 2-foot

Spot elevations

Hydrologically Re-enforced Digital Terrain Model (DTM) - breaklines and masspoints

LiDAR

The City of Norman relies on a robust GIS to perform business operations. All data is stored in a 10.9.1 ArcSDE repository located in a MS SQL Server 2016 R2 database.

Respondents are directed to refer to the RFP, the following sections and the Data Dictionary, Appendix D Attachment C, section for technical specifications and a clear definition of the features and attributes that are considered deliverables, and therefore the responsibility of the Contractor to provide.

### **OBJECTIVES**

The project has 3 objectives:

1. Obtain updated color digital orthophotos for 164 square miles at NMAS 1" = 100' standards - 6 inch pixel resolution and 92 square miles at NMAS 1" = 50' standards - 3 inch pixel resolution.
2. Update the city's planimetric mapping and for approximately 82 square miles at 1" = 50' and 115 square miles at 1"=100' accuracy. See Data Dictionary Attachment C for features to be collected.
3. As an option - obtain 1 foot contours in the urban area and 2 foot contours for the rural portion of the project with raw LiDAR, classified bare earth points, Hydro flatten bare-earth DEM and DTM, Vertical Accuracy Report.

### **Scope of Work**

The Contractor shall produce and deliver to the City of Norman photogrammetric change detection and update of the planimetric features to the standards stipulated in this section and elsewhere in this Request for Proposals. The Contractor shall furnish all materials, equipment, labor, management, insurance, postage, and transportation necessary to complete this work. The Respondent should propose the best procedures and commonly accepted professional techniques in order to assure complete compliance with this RFP.

All work required by the contract will be performed in conformance with these specifications and any contractual modifications to these specifications. Any deviation from the specifications, unless specifically authorized in writing by the GIS Project Manager, shall be sufficient cause for rejecting any part or all of the work performed.

## **TECHNICAL SPECIFICATIONS**

The initial planimetric data and most recent aeriels followed the National Map Accuracy Standards (NMAS). It is expected that the deliverables from this contract shall have an overall average accuracy of 1 inch = 50 feet in urbanized areas and 1 inch = 100 feet. The respondent shall address the issue of the different accuracies of the other participating agencies as it relates to this project, and how they will maintain or improve the accuracy of the City of Norman's current datasets.

### **PLANIMETRIC FEATURES**

The planimetric data to be updated are road edges (paved, unpaved, trail centerlines, sidewalks and driveways), parking lots, buildings, (minimum size is 10' x 10'), hydrology (including drainage features such as ditches), railroad centerlines, street centerlines, tree mass outlines, single trees, fences, and utility points. At the request of our Engineering Division, we are adding several feature codes to existing layers to assisting in assessing stormwater applications. They are shaded in the data dictionary. All are new except for driveways, which they want separated into paved and unpaved. Sample digital data may be provided as an attachment. Respondents are also directed to refer to Appendix E - Attachment C of this RFP for a clear definition of the features and attributes that are considered deliverable, and therefore the responsibility of the Contractor to populate into the GIS database as part of the conversion effort. Respondents shall indicate in their technical plan of operations suggested data conversion techniques for the compilation of source map data.

### **TOPOGRAPHIC FEATURES**

The topographic data to be collected must meet the most current Federal Emergency Management Agency's (FEMA) *Guidelines and Standards for Flood Risk Analysis and Mapping*. Respondents shall indicate in their technical plan of operations suggested data conversion techniques for the compilation of source map data.

#### **Pilot Study** *For Planimetric and topographic data.*

The Pilot Study is necessary for the City of Norman to evaluate the process of detecting change and updating the planimetric data. The Pilot will be used to refine the scope of the remaining data conversion project in terms of quality, accuracy and, timeliness. An important component of this phase will be to clarify and test procedures used by the Contractor and the City to complete this project.

#### **Selected Pilot Area**

The Pilot Study Area sections (Section 16 Township 8 North, Range 2 West for 1" = 50' and Section 7 Township 8 North, Range 1 West for 1" = 100') were chosen to be the pilots in this conversion process. The Pilot Study Area is a one square mile section in each scale.

#### **Pilot Study Process**

In the City of Norman's conversion plan, the Contractor will be supplied with source data to use in the conversion process. The source material for this pilot will be a version of the planimetric feature dataset. The pilot study process will give the Contractor and the City of Norman the opportunity to work with the source data and to identify and resolve any questions or problems that arise as actual data conversion is initiated. It gives both parties, prior to full production, the time need to implement procedures and resolve problems reducing delays and reworks.



### Scale and Accuracy of Planimetric Data

The final scale will be 1" = 50' and 1' = 100'. The respondent shall meet the National Map Accuracy Standard for such scale mapping. All spatial data shall conform to the following:

Coordinates/Projection:	State Plane Coordinate System,
Zone:	Oklahoma South, FIPS Zone 3502
Horizontal Datum:	HARN
Map Units:	Feet

### Attribute Data

All required nongraphic attributes for the geodatabase are identified in Appendix D - Attachment C of this RFP. In the event that necessary attribute data is missing, confused, or unreadable on any source material, the Respondent will contact the City of Norman GIS Project Manager for assistance. In cases concerning minor irregularities in the data or source maps where the answer is obvious or defined by precedent, the Contractor may act to resolve the problem on his own initiative thereby reducing work stoppages and interruptions. When this occurs, the City of Norman GIS Project Manager shall be informed of the action that the Contractor took within 24 hours and the Contractor will document how the problem was resolved.

The City of Norman is seeking firm fixed prices for the performance and delivery of photogrammetric change detection and collection of the planimetric and topographic features. Prices shall cover all necessary work, materials, supplies, data preparation, entry, translation and quality control, etc. Reproduction, travel and other direct and indirect costs should also be included.

It is the responsibility of the Respondent to verify any count information used in estimating the cost of conversion. These estimates are based on the most current information available.

### DELIVERABLES

*Cost Worksheet in Section 10 of the RFP must be completed.*

#### **FIRM FIXED UNIT COSTS - DIGITAL COLOR ORTHOIMAGERY (TIFF):**

City of Norman: 92 miles @ 3" and 164 square miles @ 6"

#### **OPTIONAL MOSAIC PRODUCTS:**

Mr SID of City of Norman

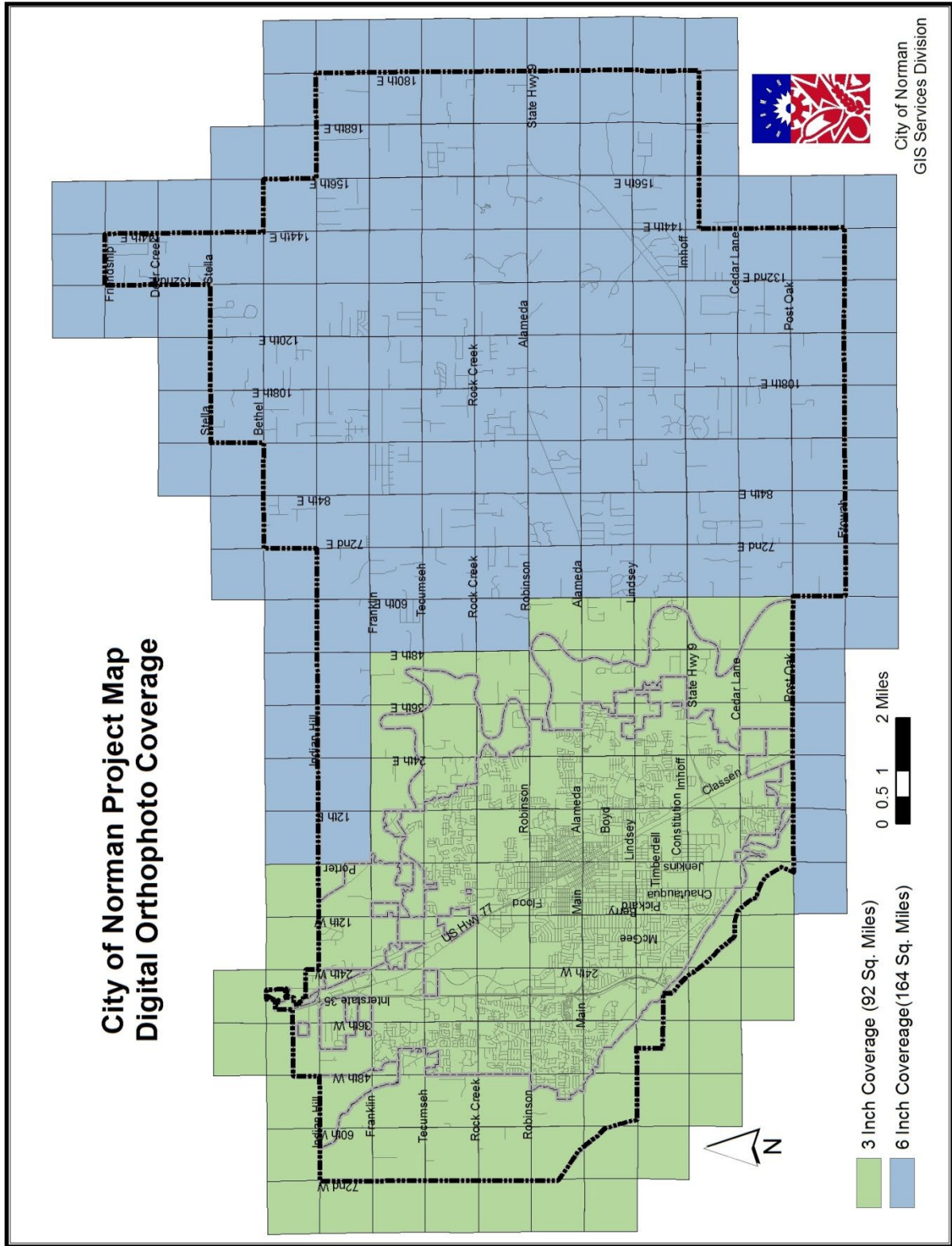
#### **PHOTOGRAMMETRIC PRODUCTS:**

Planimetric Change Detection & Collection - Pilot Study Area Cost  
Planimetric Change Detection & Collection - Remainder of the City -  
82 square miles @ 1"=50' and 115 square miles @ 1"=100'  
Features to be collected in Attachment C of this Appendix

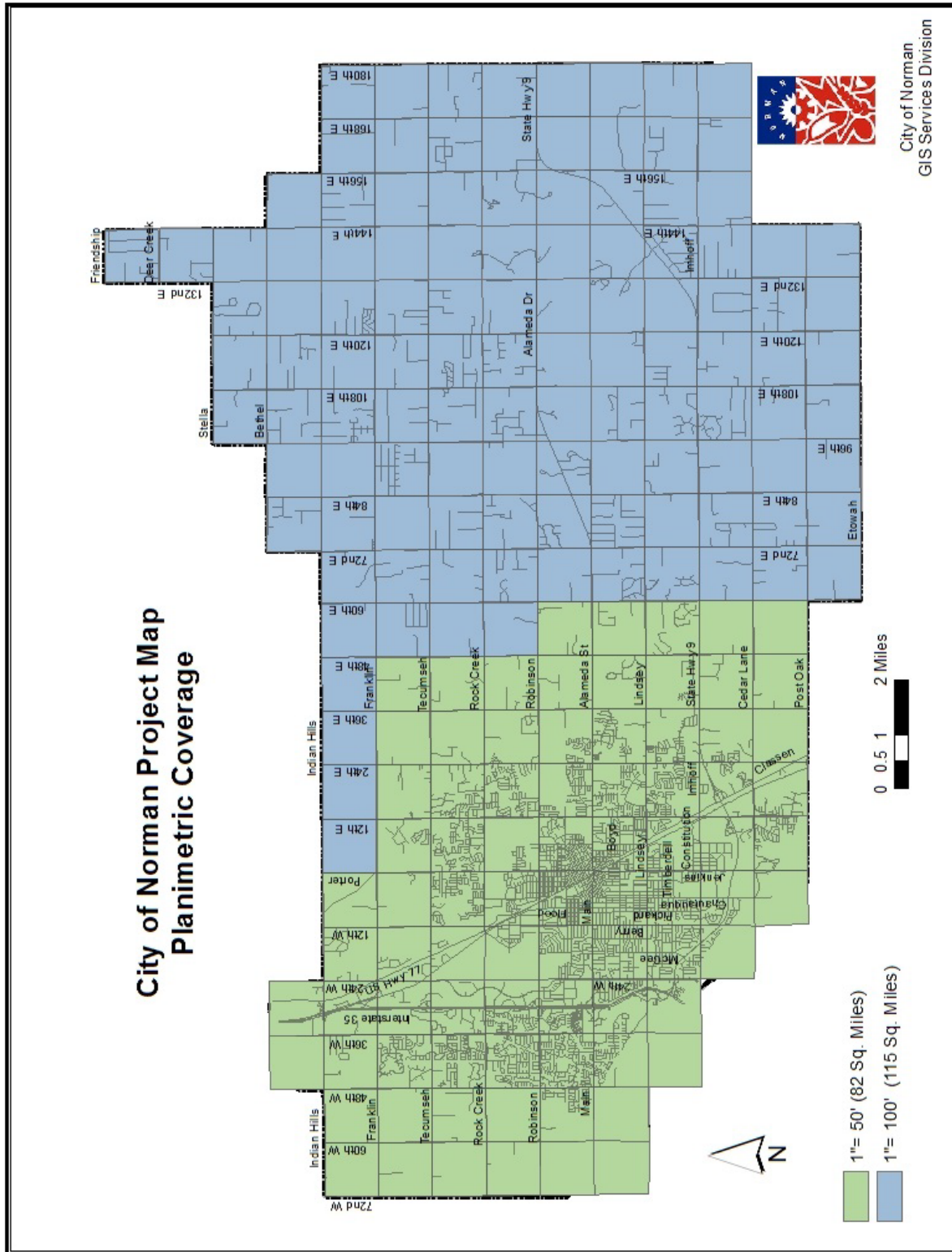
#### **OPTIONAL TOPOGRAPHIC PRODUCTS:**

Geodatabase of topographic contours at 1' intervals the urban area (82 square miles) and 2' intervals in for the rural portion (115 square miles) of project area with spot elevations  
Breaklines  
Raw Lidar Point Cloud (LAS)  
Hydro flatten bare-earth DEM  
DTM  
FEMA compliant Vertical Accuracy Report (60 check points)

# ATTACHMENT A: Orthophotography Project Map



**ATTACHMENT B: Planimetric and Topographic Project Map**



## ATTACHMENT C: Data Dictionary

### TRANSPORTATION FEATURE DATASET

#### AIRPORT (Polygon)

##### PROPERTIES

Feature Dataset TRANSPORTATION  
Feature Class AIRPORT

Type: Polygon

Topology/Network: n/a

##### DESCRIPTION

Visible airport runway related infrastructure within the imagery.

##### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap
SHAPE	Geometry		Polygon			S	ArcMap
SHAPE_LENGTH	Double		<not null>			S	ArcMap
SHAPE_AREA	Double		<not null>			S	ArcMap
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor
CODE	Integer	4	0	Y		R	Conversion Vendor

##### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1812	Runway	Edge of paved surface
1813	Taxiway	Edge of paved surface
1814	Access Road	Edge of paved surface

## ROAD (Polygon)

### PROPERTIES

Feature Dataset TRANSPORTATION      Type: Polygon      Topology/Network: n/a  
 Feature Class ROAD

### DESCRIPTION

Visible and hidden road and pavement-related features within the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap
SHAPE	Geometry		Polygon			S	ArcMap
SHAPE_LENGTH	Double		<not null>			S	ArcMap
SHAPE_AREA	Double		<not null>			S	ArcMap
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor
CODE	Integer	4	0	Y		R	Conversion Vendor

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1800	Paved Road	Paved road over 100' long, or 10' in width
1801	Paved Shoulder	Shoulder of road that is outside of the visible driving surface (paved road)
1802	Hidden Paved Road	Edge of paved road that is obscured by a bridge or other man-made feature. Collect to continue paved road surface
1803	Unpaved Road	Unpaved road over 100' long, or 10' in width. Unpaved surfaces will include dirt, gravel or other compact surface.
1804	Hidden Unpaved Road	Edge of unpaved road that is obscured by a bridge or other man-made feature. Collect to continue unpaved road surface
1805	Bridge Overpass	Pedestrian or vehicle bridge. Collect outer edge of bridge surface.
1806	Hidden Bridge Overpass	Pedestrian or vehicle bridge obscured by other bridge (interstate interchange is best example).
1807	Paved Alley	Paved alley over 50' long, or 8' in width.
1811	Curb	Edge of paved surface
1814	Road Under Construction	Collect as road under construction only if road is new or re-designed. If only a portion of road is under construction, collect as paved or unpaved surface.
1816	Unpaved Alley	Unpaved alley over 50' long, or 8' in width.
1825	Rural Trail	Unpaved paths on rural acreage.
1899	Median	Paved or unpaved median feature wholly contained within the road. Treat islands within roads as medians.

## PARKING (Polygon)

### PROPERTIES

Feature Dataset TRANSPORTATION  
 Feature Class PARKING

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Paved or unpaved parking features visible within the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1809	Paved Parking	Commercial and/or Residential paved surfaces used primarily for parking vehicles. Must have at least 1 side that is 10' or greater to be compiled.
1816	Unpaved Parking	Commercial and/or Residential unpaved surfaces (dirt, gravel, grass, other) used primarily for parking vehicles. Must have at least 1 side that is 10' or greater to be compiled.
1822	Pervious Parking	Engineering code. Conversion vendor may see as paved.
1899	Island	Paved or unpaved island feature wholly contained within the parking feature. Treat medians within parking lots as islands.

## UN-CLASSIFIED PAVEMENT (Polygon)

### PROPERTIES

Feature Dataset TRANSPORTATION  
Feature Class PAVEMENT

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Pavement features visible within the imagery that are not contained in the ROAD or PARKING Feature Classes.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap
SHAPE	Geometry		Polygon			S	ArcMap
SHAPE_LENGTH	Double		<not null>			S	ArcMap
SHAPE_AREA	Double		<not null>			S	ArcMap
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor
CODE	Integer	4	0	Y		R	Conversion Vendor

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1808	Paved Driveway	Paved commercial and/or residential driveway.
1823	Unpaved Driveway	
1810	Public Sidewalk	All public visible paved sidewalks, greater than 3'x10' in area, intended exclusively for pedestrian traffic.
1817	Private Sidewalk	All residential, commercial, or apartment complex paved sidewalks, greater than 3'x10' in area, intended exclusively for pedestrian traffic.
1820	Concrete Pad / Patio	Any miscellaneous concrete slabs such as concrete around swimming pool or a patio.
1821	Deck / unpaved patio	Any gravel /bricked area or wood or composite decks



# STRUCTURE FEATURE DATASET

## BUILDING (Polygon)

### PROPERTIES

Feature Dataset STRUCTURE  
Feature Class BUILDING

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Buildings and related structural elements visible in the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.
Building Height	Numeric					R	Conversion Vendor	Height of Building

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1700	Building	Polygon enclosing all erect (not under construction) buildings; i.e. houses, apartments, outbuildings, commercial. Building must have at least 1 side 10' or greater to be compiled.
1701	Approximate Building	Polygon enclosing buildings under construction. Building must have at least 1 side 10' or greater to be compiled.
1702	Foundation	Polygon enclosing all building foundations that do not contain a housing unit on top. Does not include buildings under construction but does include ruins.
1703	Single-wide Trailer	Polygon enclosing mobile home. Double-wide trailer shall be shown as building.
1799	Building Courtyard	Artificial polygon created when building is fully encompassing of an open area.



## POOL (Polygon)

### PROPERTIES

Feature Dataset STRUCTURE  
Feature Class POOL

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Swimming pools visible in the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
2003	Public Pool	Polygon enclosing all public swimming pools. Public pools will be evident by their size. Digitize the pool only, not the deck or paved area around the pool.
2004	Private Pool	Polygon enclosing all in-ground private swimming pools. Digitize the pool only, not the deck or paved area around the pool.

## UN-CLASSIFIED STRUCTURES (Polygon)

### PROPERTIES

Feature Dataset STRUCTURE  
Feature Class MISC\_STRUCTURE

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Structures visible in the imagery that do not fit logically into the other Feature Classes under the STRUCTURE Feature Dataset.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	LEVEL	COLOR	WEIGHT	STYLE	DESCRIPTION
1709	Dam	41	0	2	2	Barrier across river, creek, or swamp to regulate or obstruct water flow. Visible beaver dams large enough to affect water flow shall be outlined also.
1710	Oil Storage Tank	17	1	1	0	Polygon enclosing oil storage tank.
1711	Signal Controller	35	5	1	0	Square or rectangular metal box found in right of way at intersection used to control overhead traffic signal.
1712	Well House					
1713	Substation					
1714	Cell Phone Tower					
1715	Other Oil/Gas Facility					

## BARRIER (Line)

### PROPERTIES

Feature Dataset STRUCTURE  
Feature Class BARRIER

Type: Line

Topology/Network: n/a

### DESCRIPTION

This feature class includes all man-made barriers such as walls and/or fences.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Line			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated length of the Line (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1704	Wall	Line showing fixed structure of concrete or brick not used for retention of earth
1705	Head Wall	Concrete on the end of a transverse drain or pipe culvert.
1706	Fence	Commercial or residential fence meant to show distinction between adjacent properties.
1707	Retaining Wall	Fixed structure retaining earth. Structure can be concrete or other man-made surface.

# LAND USE FEATURE DATASET

## LAND USE (Polygon)

### PROPERTIES

Feature Dataset LAND USE  
Feature Class LAND USE

Type: Polygon

Topology/Network: n/a

### DESCRIPTION

Features relating to land use that are visible in the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	LEVEL	COLOR	WEIGHT	STYLE	DESCRIPTION
1500	Wooded Area	50	2	1	0	Polygon indicating a tree line or edge of a forest
1501	Cemetery	25	3	1	5	Approximate polygon boundary enclosing a cemetery. If cemetery is bound by fence or wall, that feature shall have precedence over cemetery.
1502	Quarry / Borrow Pit	28	2	1	2	Mining area. No distinction is made between rock (consolidated) material mines and loose (unconsolidated) material mines.

## TREE (Point)

### PROPERTIES

Feature Dataset LAND USE

Type: Point

Topology/Network: n/a

Feature Class TREE

### DESCRIPTION

Points showing individual street trees.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Point			S	ArcMap	Internal geometry (assigned by ArcMap)
SYMBOL	Integer		0	Y		S	ArcMap/ Conversion Vendor	Internal attribute storing the symbol of the point feature (used by ArcMap)
ANGLE	Integer		0			S	ArcMap/ Conversion Vendor	Internal attribute storing the rotation angle for the symbol (used by ArcMap)
FEATURE_SUBTYPE	Text	30	1	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1503	Tree	Point showing single tree (on public or private property) that has a canopy diameter of at least 20' - do not show small ornamental trees or shrubs.

# HYDROLOGY FEATURE DATASET

## HYDROLOGY\_WATERBODY (Polygon)

### PROPERTIES

Feature Dataset HYDROLOGY

Type: Polygon

Topology/Network: Topology

Feature Class HYDROLOGY\_WATERBODY

### DESCRIPTION

Visible double line hydrology and standing water bodies within the imagery.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Polygon			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated perimeter length of the polygon (assigned by ArcMap)
SHAPE_AREA	Double		<not null>			S	ArcMap	Internal attribute with calculated area of the polygon (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
PK_COMMON_ID	Long Integer		<not null>		PK	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a unique common identifier assigned to each hydro shape feature to support NHD modeling.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.
NAME	Text	50	<null>			O		Common/Local Name for water body. Not intended for GNIS compatibility.

## FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1602	River / Stream	Well-defined shoreline of streams and rivers with an average width greater than 10' wide.
1603	Approximate River / Stream	Approximate shoreline of streams and rivers with an average width greater than 10' wide. River / Stream takes precedence over this feature. Entire feature must have undefined or approximate shoreline to qualify.
1604	Lake	Shoreline of natural lake. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.
1605	Farm Pond	Shoreline of non-industrial pond not found in a residential or commercial development. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.
1606	Industrial Pond	Shoreline of industrial pond used for treating industrial or man-made refuse. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.
1607	Reservoir	Shoreline of man-made reservoir. Reservoir will be defined as a water body containing an Earthen dam or man-made damn feature on one end of the water body. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.
1610	Hidden River / Stream	Shoreline of stream or river with an average width greater than 10' wide obscured by an overhead feature.
1611	Natural Channel	
1699	Island	Shoreline of feature and collected <i>only</i> if necessary to produce contiguous features (i.e. clarification of a void area).
2400	Detention Pond	Shoreline of non-industrial pond found in a residential or commercial development. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.
2401	Retention Pond	
2402	Paved Channel	Paved ditch or channel designed to constrict the flow of water.
2403	Pipe / Culvert	Large culverts or above-ground pipes that tie into the hydrographic network. Determination of actual feature type is subjective and assigned by Conversion Vendor staff.

## HYDROLOGY DRAIN (Line)

### PROPERTIES

Feature Dataset HYDROLOGY  
Feature Class HYDROLOGY\_DRAIN

Type: Line

Topology/Network: Topology

### DESCRIPTION

The visible centerline of a hydrology feature within the imagery that is less than 10' wide. Additionally, centerline abstractions oriented in the direction of flow through all open water bodies captured in the hydrology waterbody feature class. The resulting lines are designed to create a geographic network compatible with the National Hydrological Dataset (NHD) modeling standards for representing NHD drainage network.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Line			S	ArcMap	Internal geometry (assigned by ArcMap)
SHAPE_LENGTH	Double		<not null>			S	ArcMap	Internal attribute with calculated length of the Line (assigned by ArcMap)
FEATURE_SUBTYPE	Text	30	0	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a subtype identifying the feature. The description of the feature subtype is displayed.
NHD_FEATURE	Text	24	<null>	Y		O	NHD	Type of NHD network element. NHD feature types include Artificial Path, Canal/Ditch (1-dimensional), Connector, Pipeline, and Stream/River (1-dimensional)
NHD_CODE	Integer	5	<null>			O	NHD	Numeric value that encodes the type and values for a set of characteristics for an NHD feature. This five-digit code has two parts: the first three digits encode the feature type; the last two digits encode values for a set of characteristics associated with the feature.
PK_COM_ID	Long Integer	10	<not null>		PK	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a unique identifier of each hydrology drain element in the network to support NHD modeling.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The



NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
								description of the feature subtype is displayed.
NAME	Text	50	<null>			O		Common/Local Name for drain feature. Not intended for GNIS compatibility.
FK_WB_COM_ID	Long Integer	10	-9999		FK	R	NHD	Unique identifier of the waterbody that the network element (artificial path only) flows through. (-9999 FOR Not Applicable)
FK_NHD_RCH_CO_M_ID	Long Integer	10	<null>		FK	O	NHD	Unique identifier of the transport reach and coastline reach of which the network element is part. (Tie to NHD)

#### FEATURE SUBTYPE DEFINITIONS (DOMAIN)

CODE	DESCRIPTION CLASS (NHD_FTYPE)	DESCRIPTION
1600	Single Line Stream	Centerline of creek or stream with an average width LESS than 10' wide.
1601	Hidden Single Line Stream	Centerline of creek or stream with an average width LESS than 10' wide obstructed by an overhead feature.
1602	River / Stream	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1603	Approximate River / Stream	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1604	Lake	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1605	Farm Pond	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1606	Industrial Pond	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1607	Reservoir	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1610	Hidden River / Stream	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
1611	Natural Channel	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
2400	Detention Pond	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
2401	Retention Pond	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
2402	Paved Channel	A centerline abstraction to facilitate hydrologic modeling through open water bodies.
2403	Pipe / Culvert	A centerline abstraction to facilitate hydrologic modeling through open water bodies.

## HYDROLOGY POINT SOURCE (Point)

### PROPERTIES

Feature Dataset HYDROLOGY

Type: Line

Topology/Network: n/a

Feature Class HYDROLOGY\_POINT\_SOURCE

### DESCRIPTION

Single points showing source of input into the hydrographic model.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Point			S	ArcMap	Internal geometry (assigned by ArcMap)
SYMBOL	Integer		0	Y		S	ArcMap/ Conversion Vendor	Internal attribute storing the symbol of the point feature (used by ArcMap)
ANGLE	Integer		0			S	ArcMap/ Conversion Vendor	Internal attribute storing the rotation angle for the symbol (used by ArcMap)
FEATURE_SUBTYPE	Text	30	1	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
2404	Storm Inlet	Catch basin or inlet located within a curb, road or parking feature.

# UTILITY FEATURE DATASET

## UTILITY POINT (Point)

### PROPERTIES

Feature Dataset UTILITY

Type: Point

Topology/Network: n/a

Feature Class UTILITY\_POINT

### DESCRIPTION

Single point features showing location of visible utility features.

### ATTRIBUTES

NAME (ALIAS)	TYPE	LENGTH	DEFAULT VALUE	DOMAIN	INDEX	SYSTEM, REQUIRED, OPTIONAL	DATA SOURCE	DESCRIPTION
OBJECTID (FID)	Object ID		<not null>		Y	S	ArcMap	Internal object / feature ID number (assigned by ArcMap)
SHAPE	Geometry		Point			S	ArcMap	Internal geometry (assigned by ArcMap)
SYMBOL	Integer		0	Y		S	ArcMap/ Conversion Vendor	Internal attribute storing the symbol of the point feature (used by ArcMap)
ANGLE	Integer		0			S	ArcMap/ Conversion Vendor	Internal attribute storing the rotation angle for the symbol (used by ArcMap)
FEATURE_SUBTYPE	Text	30	1	Y	Y	R	Conversion Vendor	Assigned by Conversion Vendor, this attribute is a code identifying the feature. The description of the feature code is displayed.
CODE	Integer	4	0	Y		R	Conversion Vendor	Assigned by Conversion Vendor, this attribute identifies a general feature class code associated with each subtype. The description of the feature subtype is displayed.

### FEATURE SUBTYPE DOMAIN DEFINITIONS

CODE	DESCRIPTION CLASS	DESCRIPTION
1901	Utility Pole	Point indicating a single feature.
1902	Street Light	Point indicating a single feature

## APPENDIX E:

### CITY OF OKLAHOMA CITY

#### BACKGROUND

The City of Oklahoma City orthoimagery project includes collecting color orthoimagery for 781 sq-miles of Oklahoma City and adjacent areas. It also includes 6 sq-miles of true orthoimagery centered on downtown. See Attachments A, B and C for maps and image tile index grid of these areas. Oklahoma City last updated its orthoimagery in January 2022.

#### PLANIMETRIC AND ELEVATION PROJECT

The City of Oklahoma City planimetric and elevation dataset project includes collecting LIDAR and producing the datasets listed below for 712 sq-miles of Oklahoma City and adjacent areas. See project Attachments D and E for a map and tile dataset index grid of these areas.

- Updated 8 core vector planimetric datasets in ESRI file geodatabase format
- Updated 1-sq mile tiles, containing the 8 planimetric datasets, in AutoCAD format
- 2-foot elevation contours
- A hydro-enforced digital elevation model (DEM)
- Classified first and last return LAS LIDAR datasets

#### 8 CORE VECTOR PLANIMETRIC DATASETS

1. Building footprints with roof elevation
2. Edge of pavement with type of feature
3. Street centerlines
4. Railroad centerlines
5. Polyline stream features including centerlines of lakes
6. Polygon lake, pond, and river features
7. Polygon group vegetation features
8. Point single vegetation features

#### OPTIONAL VALUE-ADDED DELIVERABLES

##### \*During Winter 2025 leaf-off acquisition

- Polyline sidewalk, trail and bike path dataset with feature type and surface type attributes
- Crosswalk centerlines with features snapped to sidewalks where they coexist
- Crosswalk ramp points snapped to crosswalk centerlines where they coexist
- LIDAR and imagery derived **enhanced** impervious surfaces dataset
- Polyline stream dataset digitized in direction of flow
- Single integrated polyline natural stream and storm sewer dataset digitized in direction of flow
- 3-D wireframe building footprints for high, medium and low priority areas

##### \*\*During a second Spring 2026 leaf-on acquisition

- 781 sq-miles of 2026 leaf-on 6" imagery: TIFF tiles, MrSID mosaic, JP2000 mosaic
- 781 sq-miles of 2026 leaf-on down sampled 12" imagery: MrSID mosaic, JP2000 mosaic
- Vegetation with type and height attributes from leaf-on imagery

## **SCOPE OF WORK**

The Contractor shall produce and deliver to the City of Oklahoma City photogrammetric change detection and update of the planimetric features to the standards stipulated in this section and elsewhere in this Request For Proposals. The Contractor shall also produce and deliver the color orthoimagery, elevation datasets, and LIDAR to the standards stipulated in this section and elsewhere in this Request For Proposals. The Contractor shall furnish all materials, equipment, labor, management, insurance, postage, and transportation necessary to complete this work. The Respondent should propose the best procedures and commonly accepted professional techniques in order to assure complete compliance with this Request for Proposals.

All work required by the contract will be performed in conformance with these specifications. Any contractual modifications will also conform to these specifications. Any deviation from the specifications, unless specifically authorized in writing by the GIS Project Manager, shall be cause for rejecting any part or all of the work performed.

## **PILOT STUDY**

The Pilot Study is necessary for the City of Oklahoma City to evaluate the quality, contrast and color balancing of the orthoimagery, as well as the positional accuracy and feature construction of planimetric and elevation datasets. Both imagery, planimetric and elevation datasets will be generated for the pilot area, and delivered the City to review, prior to proceeding with production of the full dataset deliverables.

### **Pilot Study Area**

The City will provide the Contractor the area to use for the Pilot Study Area when the contract has been awarded. The Pilot Study Area will be 2-square miles in extent and contain a combination of urban, rural, natural, man-made, and terrain features to use in evaluating quality, contrast and color balancing of the orthoimagery.

### **Pilot Study Process**

The City will provide the Contractor existing GIS source data for the Pilot Study Area. The source material consists of the current imagery, planimetric and elevation datasets the City has for the selected area. The Pilot Study will give the Contractor and the City of Oklahoma City the opportunity to compare the existing and new data, before production of the final deliverables is initiated. This gives both parties, prior to full production, the time needed to implement procedures and resolve problems reducing delays and reworks.

## **SCALE, ACCURACY AND COORDINATE SYSTEM REQUIREMENTS**

### **Orthoimagery**

Color digital orthophotos that meet NMAS 1" = 100' mapping standards at 6-inch pixel resolution.

Projected Coordinate System:

NAD\_1983\_CORS96\_StatePlane\_Oklahoma\_North\_FIPS\_3501\_Ft\_US

Projection: Lambert\_Conformal\_Conic

### **Planimetric and Elevation Datasets**

Planimetric and elevation datasets that meet NMAS 1" = 100' mapping standards.

Projected Coordinate System:

NAD\_1983\_CORS96\_StatePlane\_Oklahoma\_North\_FIPS\_3501\_Ft\_US

Projection: Lambert\_Conformal\_Conic

**ACCURACY REPORT DELIVERABLES**

- Aero-Triangulation quality assurance report with executive summary
- NSSDA Report documenting 20 independent checkpoints for the LiDAR digital terrain model in **bare ground** areas. The report will provide accuracy assessment of the final data. Vertical checkpoints will be compared to the final LiDAR surface and a RMSE value will be calculated. This report can be used to publish the final accuracy of the data.
- NSSDA Report documenting 80 independent checkpoints for the LiDAR digital terrain model. The report will provide accuracy assessment of the final data within **four additional land cover classes** as required by the USGS and FEMA. Vertical checkpoints will be compared to the final LiDAR surface and a RMSE value will be calculated for land cover class. This report can be used to publish the final accuracy of the data for each land cover class.

**DELIVERABLES AND FIRM FIXED COSTS**

The City of Oklahoma City is seeking firm fixed prices for the performance and delivery of photogrammetric change detection and collection of the planimetric and topographic features, color orthoimagery, and elevation datasets. Prices shall cover all necessary work, materials, supplies, data preparation, entry, translation, and quality control. Reproduction, travel, and other direct and indirect costs should also be included. It is the responsibility of the Respondent to verify any count information used in estimating the cost of producing the deliverables. These estimates are based on the most current information available.

**DIGITAL COLOR ORTHOIMAGERY COSTS (IMAGE TILES USE INDEX GRID IN ATTACHMENT C):**

- 2-sq miles orthoimagery for the pilot area specified by the City during the pilot study \_\_\_\_\_
- 6” resolution 1-sq mile TIFF image tiles, including 6 sq-miles true orthos, for areas in Attachments A & B \_\_\_\_\_
- Single 6” resolution MrSID mosaic imagery, which includes the true orthos, for area in Attachment A \_\_\_\_\_
- Single 12” resolution MrSID mosaic imagery, which includes the true orthos, for area in Attachment A \_\_\_\_\_
- Single 6” resolution JPEG 2000 mosaic imagery, which includes the true orthos, for area in Attachment A \_\_\_\_\_
- Single 12” resolution MrSID mosaic of the entire multi-jurisdictional project area shown in Appendix A \_\_\_\_\_

**PLANIMETRIC AND ELEVATION COSTS (DATASET TILES USE INDEX GRID IN ATTACHMENT E):**

- 2-sq miles core planimetric and elevation datasets for the pilot area specified by the City \_\_\_\_\_
- Updated 8 core planimetric dataset mosaics in ESRI file geodatabase format, for area in Attachment D \_\_\_\_\_
- Updated 1-sq mile tiles, containing the 8 planimetric datasets in AutoCAD format, area in Attachment D \_\_\_\_\_
- 2-ft elevation contour mosaic in ESRI file geodatabase format, for area in Attachment D \_\_\_\_\_

Hydro-enforced DEM mosaic, in ESRI file geodatabase raster format, area in Attachment D	_____
Hydro-enforced DEM mosaic in TIFF raster format, for area in Attachment D	_____
Classified first return 1-sq mile LAS LIDAR tiles, for area in Attachment D	_____
Classified last return 1-sq mile LAS LIDAR tiles, for area in Attachment D	_____

**OPTIONAL VALUE-ADDED COSTS (DATASET DELIVERY AREAS ARE IN ATTACHMENT D UNLESS OTHERWISE SPECIFIED):**

**\*During the Winter 2025 leaf-off acquisition**

Polyline sidewalk, trail and bike path dataset with feature type and surface type attributes	_____
Crosswalk centerlines with features connected to sidewalks where they coexist	_____
Point features indicating crosswalk ramps snapped to crosswalk centerlines where they coexist	_____
LIDAR and imagery derived enhanced impervious surfaces dataset	_____
Polyline stream dataset digitized in direction of flow	_____
Single integrated polyline natural stream and storm drainage feature dataset digitized in direction of flow	_____
3-D wireframe building footprints, for 75 sq-mile high priority area in Attachment F	_____
3-D wireframe building footprints, for 126 sq-mile medium priority area in Attachment F	_____
3-D wireframe building footprints, for 435 sq-mile low priority area in Attachment F	_____

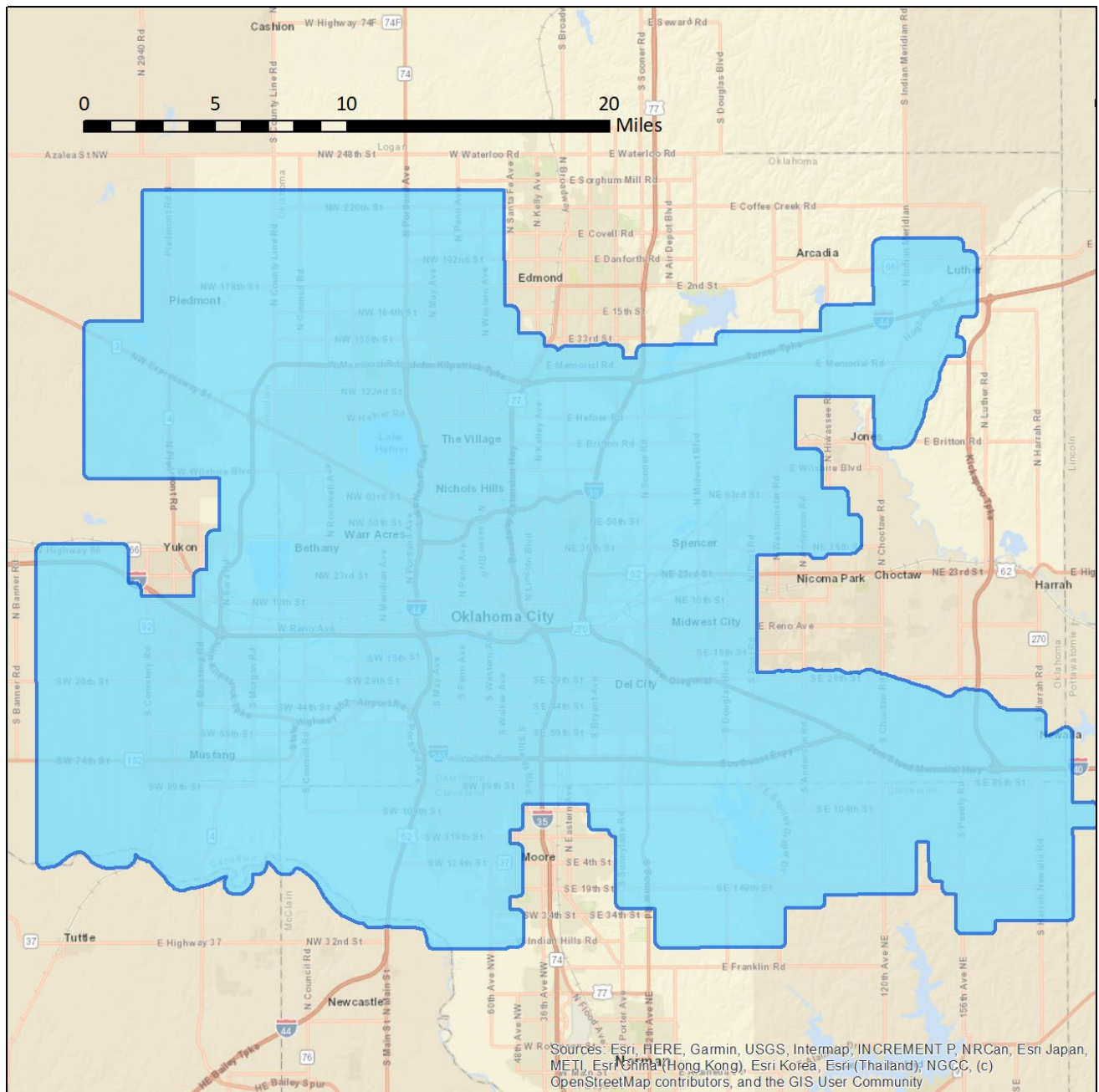
**\*During a second Spring 2026 leaf-on acquisition**

6" leaf-on imagery <b>spring 2026:</b> TIFF tiles, MrSID mosaic, JP2000 mosaic, for area in Attachment A	_____
12" leaf-on imagery <b>spring 2026:</b> MrSID mosaic, JP2000, for area in Attachment A	_____
Vegetation with type and height attributes from <b>spring 2026</b> leaf-on imagery	_____

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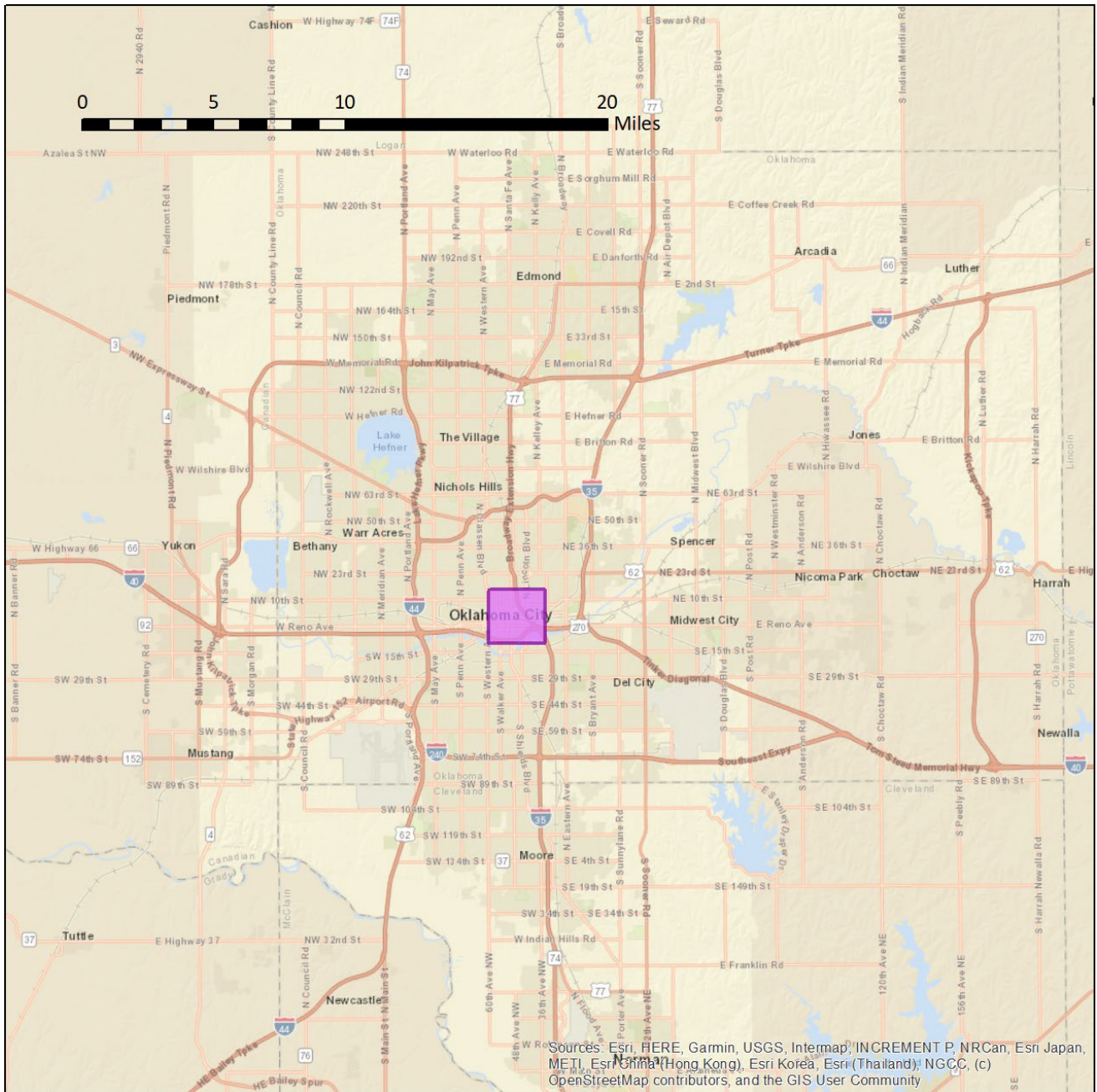


# ATTACHMENT A: Orthoimagery Delivery Area

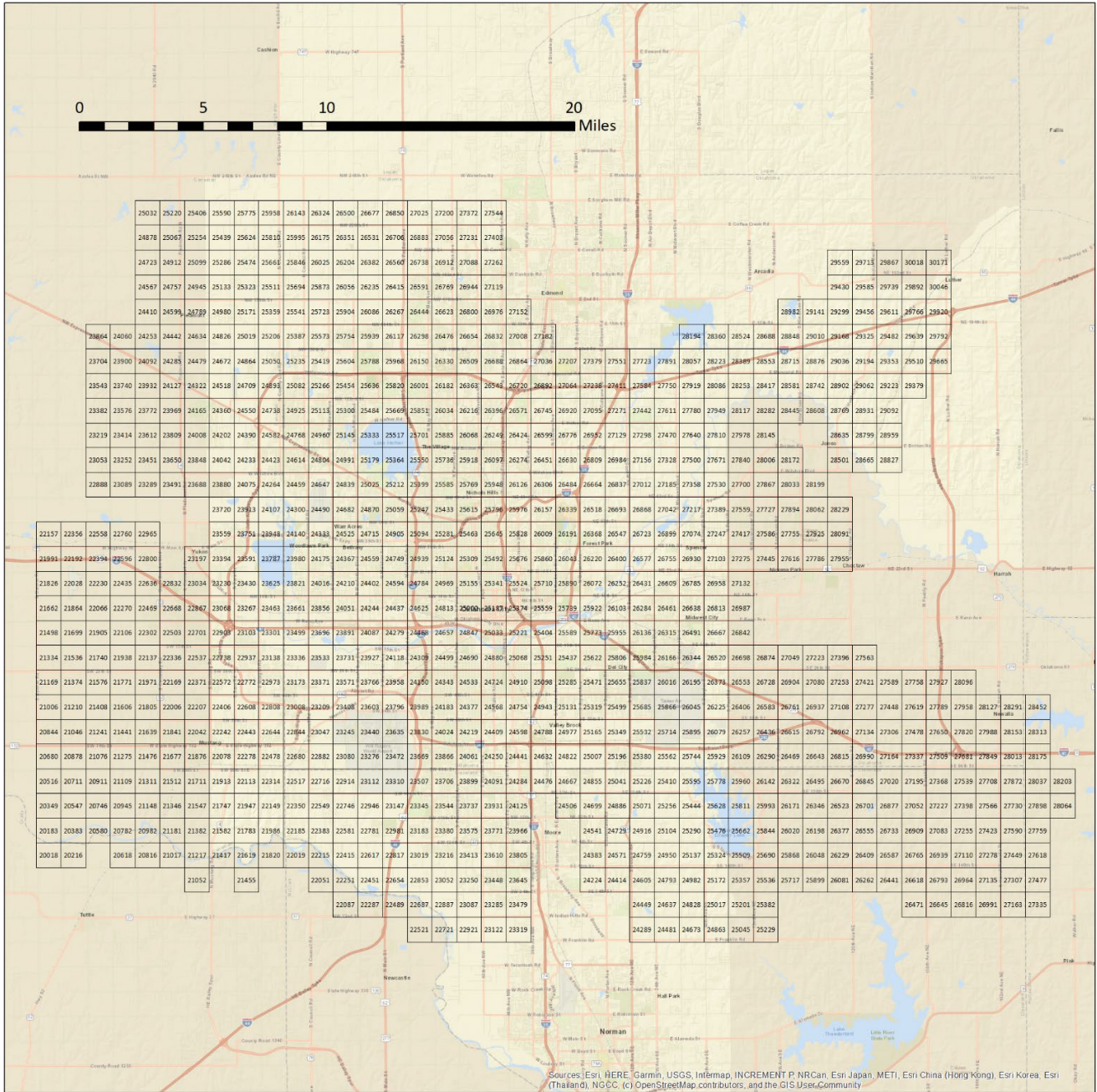




# ATTACHMENT B: True Orthoimagery Delivery Area

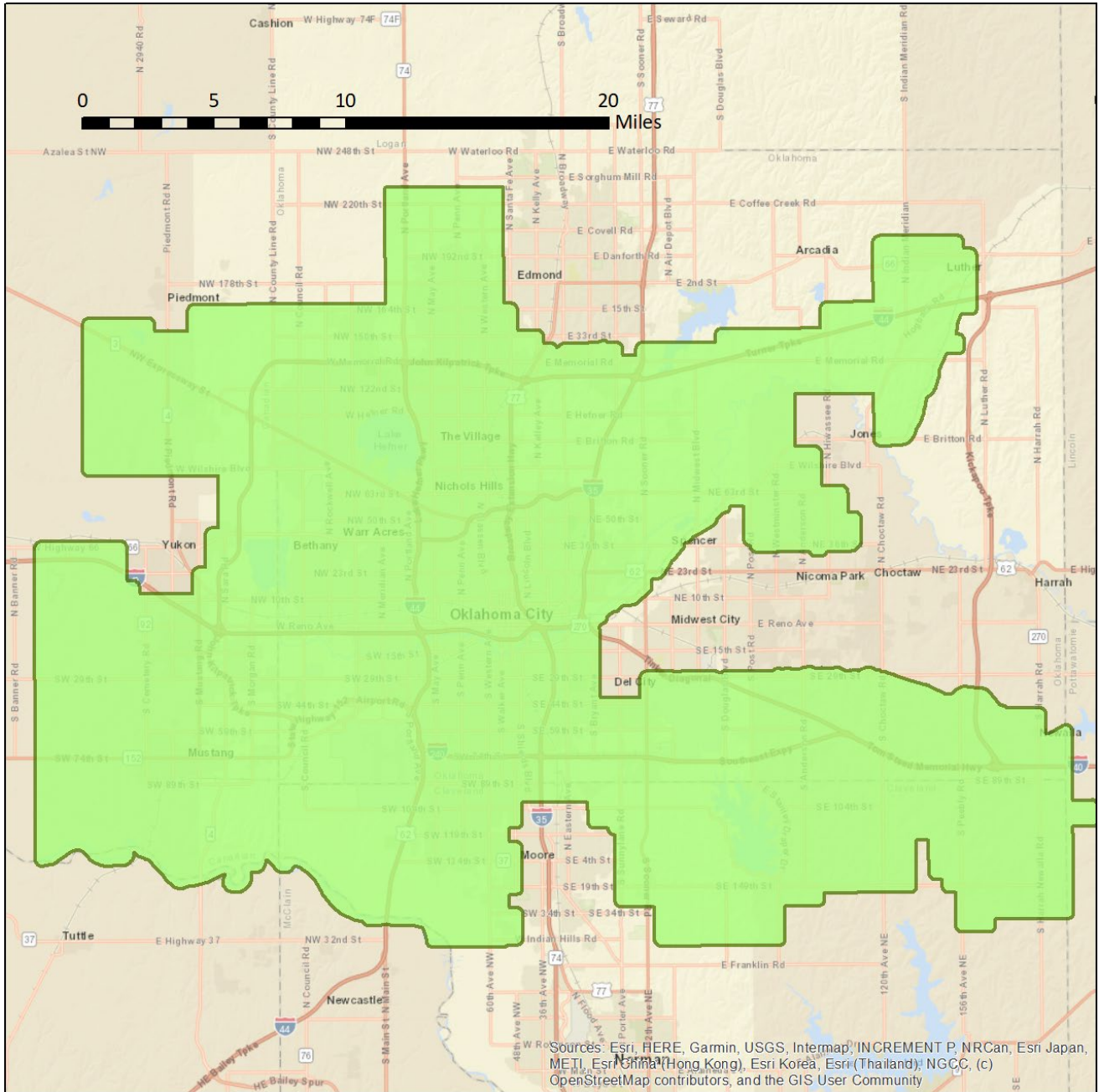


# ATTACHMENT C: Orthoimagery Tile Index

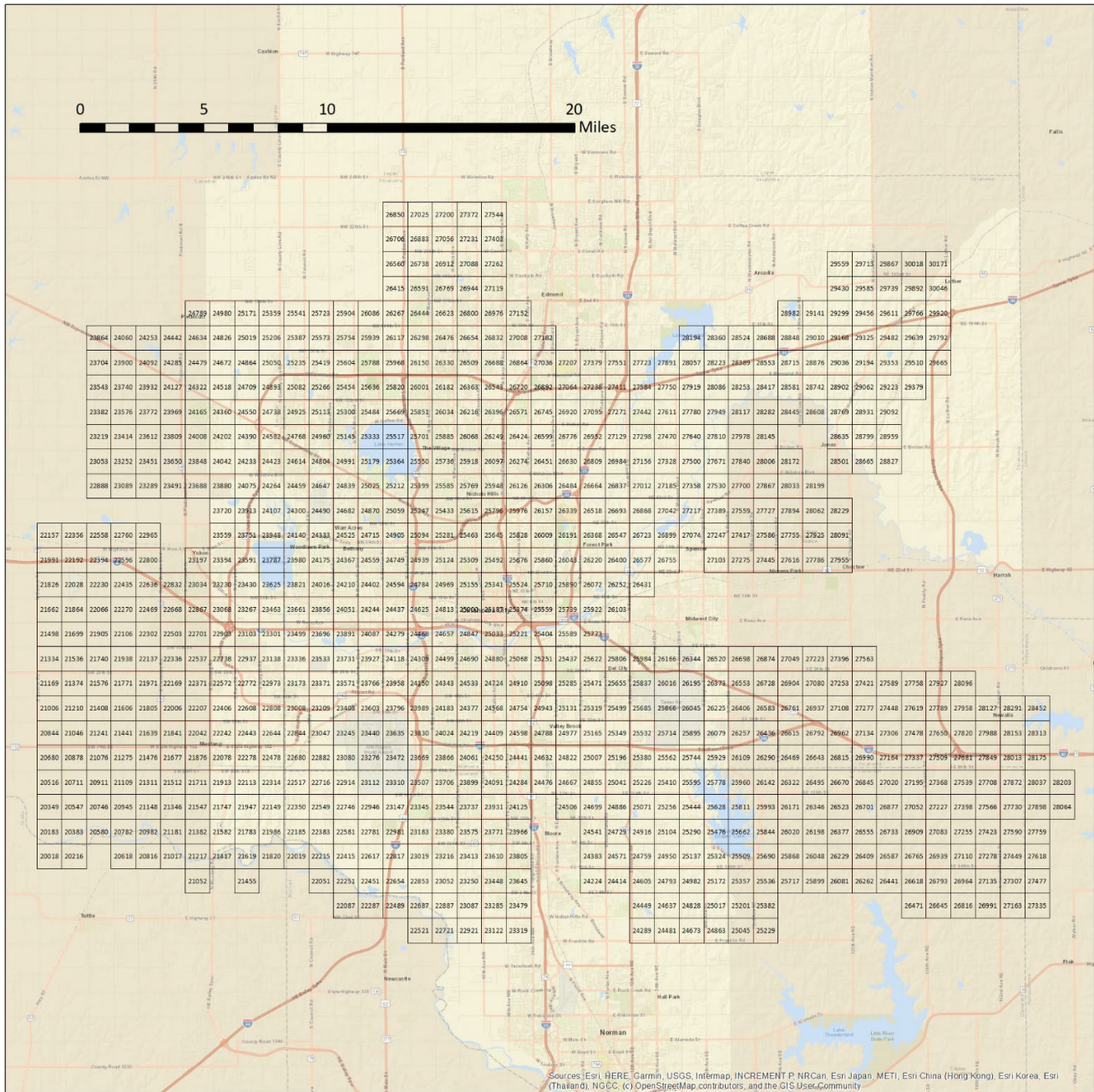




# ATTACHMENT D: Planimetric and Elevation Delivery Area

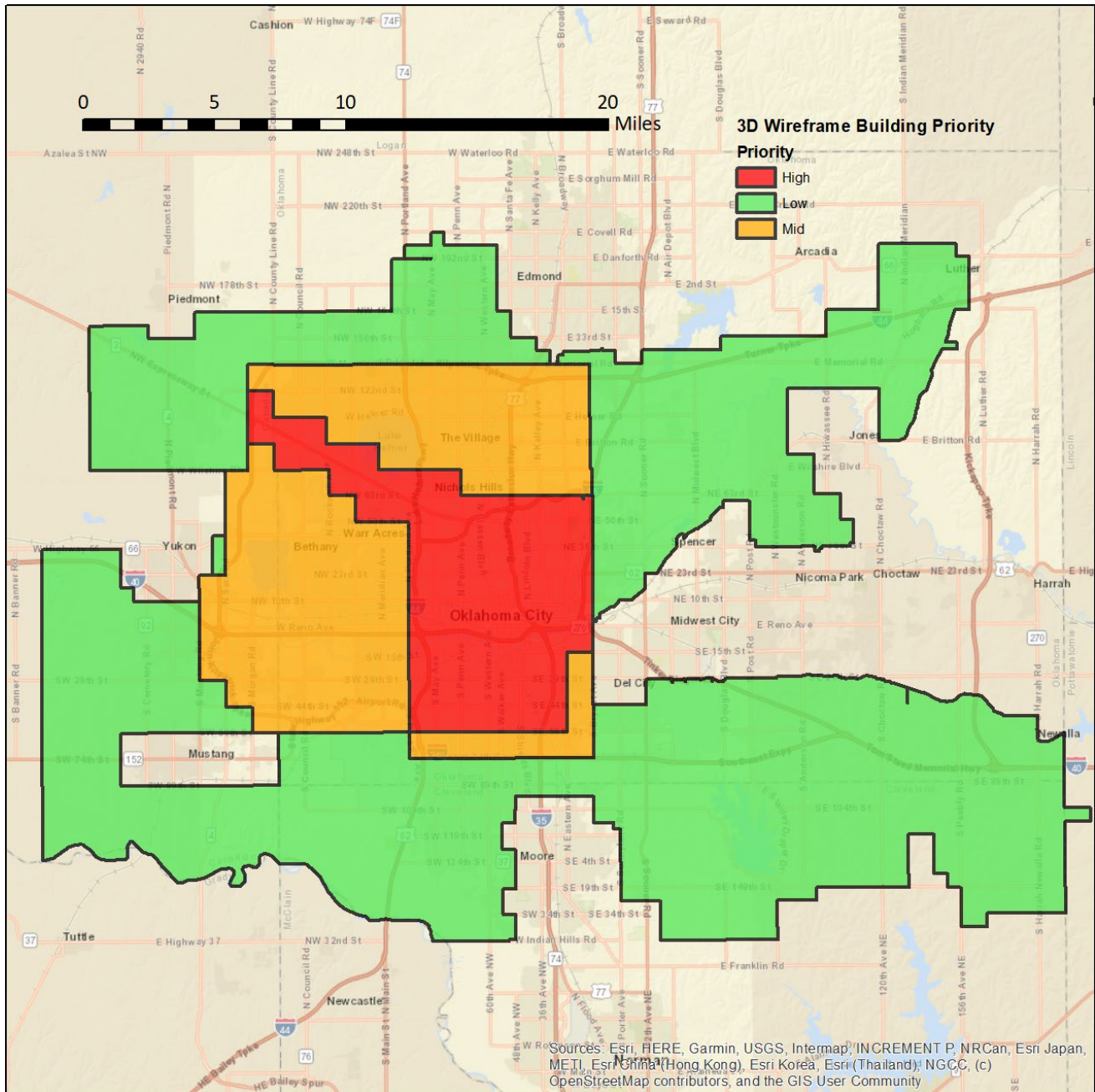


# ATTACHMENT E: Planimetric and Elevation Tile Index

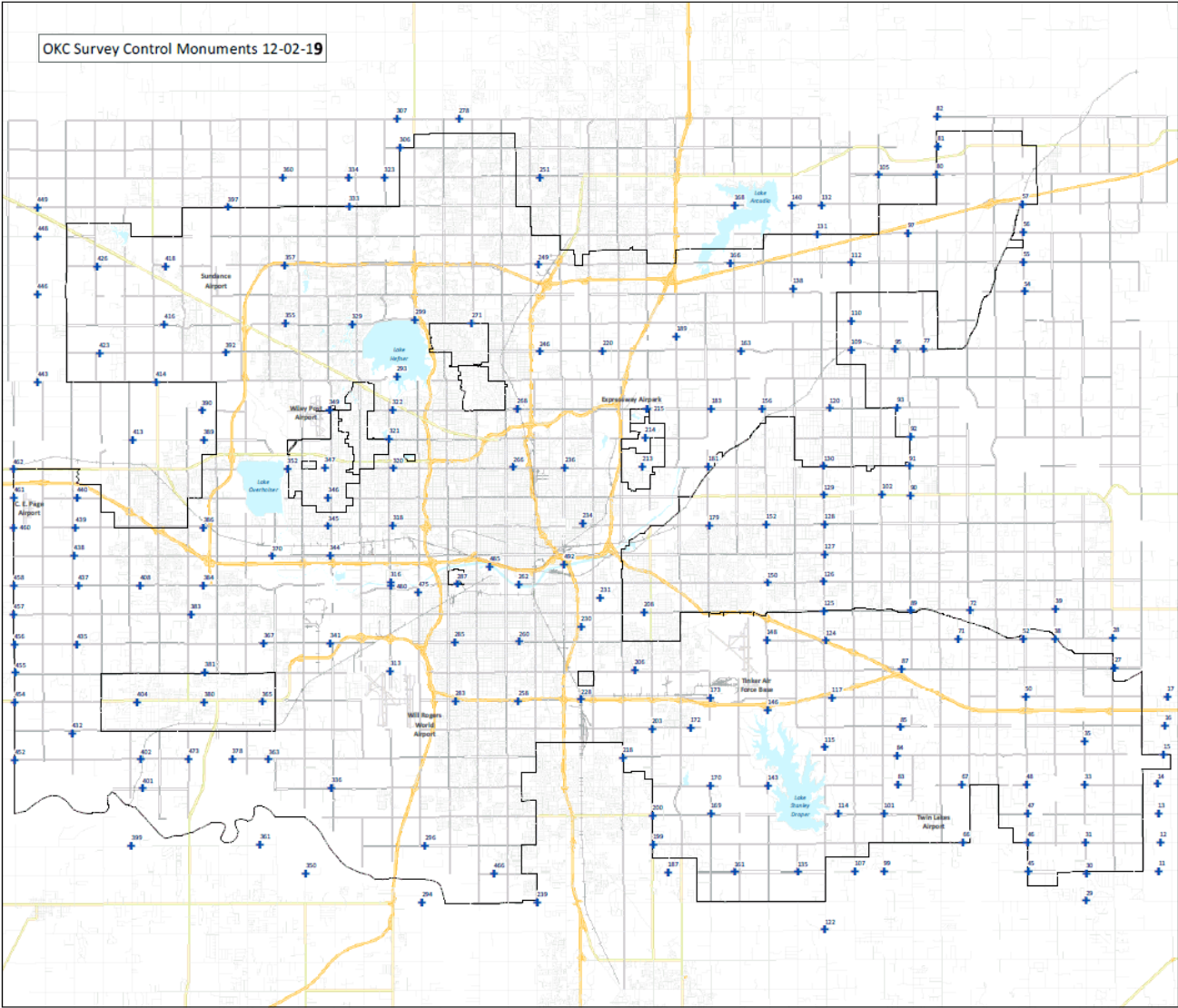




# ATTACHMENT F: 3D Wireframe Buildings Areas by Priority



**ATTACHMENT G: Oklahoma City Survey Control Monuments**



## APPENDIX F: CLEVELAND COUNTY

### BACKGROUND

Cleveland County has a population of 301,193 (2023 estimate) and is approximately 558 square miles. The project area is 678 square miles and includes a 1-mile buffer around the county boundary. The last orthos were flown in 2020.

### PROJECTION

All spatial data shall conform to the following:

<b>Coordinates/Projection:</b>	NAD_1983_StatePlane,
<b>Zone:</b>	Oklahoma_North_FIPS_3501_Feet
<b>Horizontal Datum:</b>	D_North_American_1983
<b>Map Units:</b>	US Survey Feet

### AERIAL PHOTOGRAPHY

12-inch resolution color ortho photography of full county.

### DELIVERABLES

*Cost Worksheet in Section 10 of the RFP must be completed.*

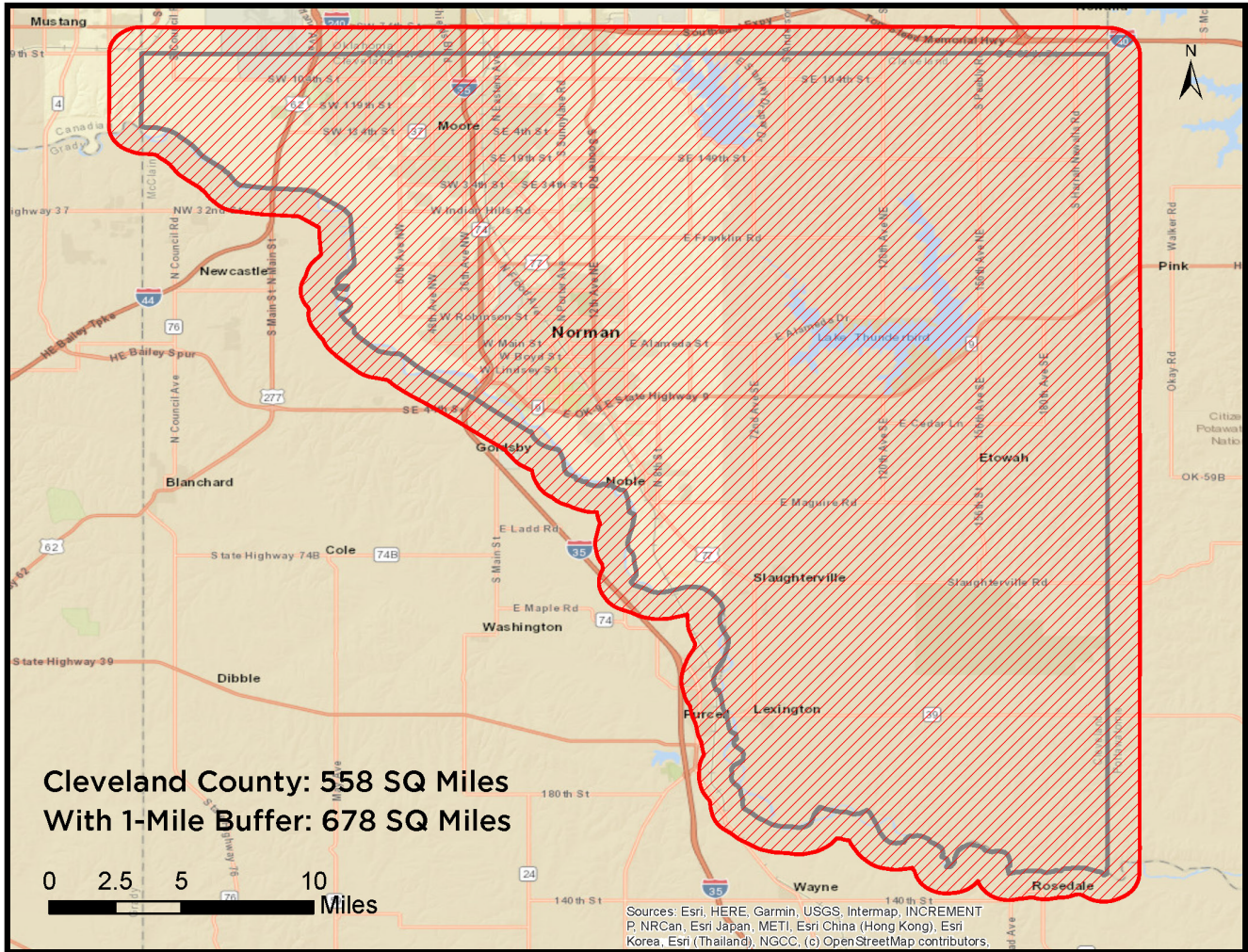
The final ortho deliverables will be required to be in:

- GeoTIFF, uncompressed
- MrSID, compressed no greater than 15:1\*
- Lossless JPEG 2000

\*Note: No re-compression of compressed data is acceptable. Image mosaics shall be equal in quality to image tiles.



# ATTACHMENT A: Orthoimagery Delivery Area





## APPENDIX G:

### FORMS

All forms in this section must be submitted with the proposal.

All forms associated with this RFP are to be delivered to (ACOG) Association of Central Oklahoma Governments. ACOG will distribute the Proposals to the members of COAGA 2025.

1. Non-collusion Affidavit – City of Edmond
2. Non-collusion Affidavit – City of Norman
3. Non-collusion Affidavit – City of Oklahoma City
4. Non-collusion Affidavit – Cleveland County
5. Non-collusion Affidavit – General

The Non-collusion Affidavit is available at:

<http://www.acogok.org/wp-content/uploads/2019/12/AFFIDAVIT-OF-NON-COLLUSION.doc>

## APPENDIX H: METADATA REQUIREMENTS

Metadata shall be produced in a format (FGDC CSDGM (TXT) or FGDC CSDGM) that can be imported into the Metadata Editor in ArcCatalog. At minimum, metadata shall include the following information:

### Identification\_Information:

#### Citation:

##### Citation\_Information:

Originator:

Publication\_Date:

Title:

Geospatial\_Data\_Presentation\_Form:

Online\_Linkage:

### Description:

Abstract:

Purpose:

### Time\_Period\_of\_Content:

#### Time\_Period\_Information:

Single\_Date/Time:

Calendar\_Date:

Currentness\_Reference:

### Status:

Progress:

Maintenance\_and\_Update\_Frequency:

### Spatial\_Domain:

#### Bounding\_Coordinates:

West\_Bounding\_Coordinate:

East\_Bounding\_Coordinate:

North\_Bounding\_Coordinate:

South\_Bounding\_Coordinate:

### Keywords:

Theme:

Place:

### Access\_Constraints:

### Use\_Constraints:

### Native\_Data\_Set\_Environment:

### Data Quality:

Positional Accuracy:

Horizontal Accuracy:

### Spatial\_Reference\_Information:

#### Horizontal\_Coordinate\_System\_Definition:

Planar:

Grid\_Coordinate\_System:

Grid\_Coordinate\_System\_Name:

State\_Plane\_Coordinate\_System:

SPCS\_Zone\_Identifier:

Lambert\_Conformal\_Conic:

- Standard\_Parallel:
- Standard\_Parallel:
- Longitude\_of\_Central\_Meridian:
- Latitude\_of\_Projection\_Origin:
- False\_Easting:
- False\_Northing:
- Planar\_Coordinate\_Information:
- Planar\_Coordinate\_Encoding\_Method:
- Coordinate\_Representation:
- Abscissa\_Resolution:
- Ordinate\_Resolution:
- Planar\_Distance\_Units:
- Geodetic\_Model:
- Horizontal\_Datum\_Name:
- Ellipsoid\_Name:
- Semi-major\_Axis:
- Denominator\_of\_Flattening\_Ratio:

Entity Attribute:

- Detailed Description:
- Entity Type:
  - Label:
  - Definition:
  - Definition Source:
- Attribute:
  - Definition:
  - Definition Source:

Distribution\_Information:

- Distributor:
  - Contact\_Information:
    - Contact\_Organization\_Primary:
      - Contact\_Organization:
      - Contact\_Person:
    - Contact\_Position:
    - Contact\_Address:
      - Address\_Type:
      - Address:
      - State\_or\_Province:
      - Postal\_Code:
    - Contact\_Voice\_Telephone:
    - Contact\_Facsimile\_Telephone:
    - Contact\_Electronic\_Mail\_Address:
    - Hours\_of\_Service:
- Distribution\_Liability:

Data\_Quality\_Information:

- Attribute\_Accuracy:
  - Attribute\_Accuracy\_Report:
- Logical\_Consistency\_Report:
- Completeness\_Report:
- Positional\_Accuracy:
  - Horizontal\_Positional\_Accuracy:
  - Horizontal\_Positional\_Accuracy\_Report:

Lineage:

- Source\_Information:
  - Source\_Citation:
  - Citation\_Information:

Originator:  
Publication\_Date:  
Title:  
Geospatial\_Data\_Presentation\_Form:  
Source\_Scale\_Denominator:  
Type\_of\_Source\_Media:  
Source\_Time\_Period\_of\_Content:  
Time\_Period\_Information:  
Range\_of\_Dates/Times:  
Beginning\_Date:  
Ending\_Date:  
Source\_Currentness\_Reference:  
Source\_Citation\_Abbreviation:  
Source\_Contribution:

Process\_Step:  
Process\_Date:  
Process\_Description:  
Process\_Contact:  
Contact\_Information:  
Contact\_Person\_Primary:  
Contact\_Person:  
Contact\_Organization:  
Contact\_Address:  
Address\_Type:  
Address:  
City:  
State\_or\_Province:  
Postal\_Code:  
Country:  
Contact\_Voice\_Telephone:  
Contact\_Facsimile\_Telephone:  
Contact\_Electronic\_Mail\_Address:  
Hours\_of\_Service:  
Cloud\_Cover:

Metadata\_Reference\_Information:  
Metadata\_Date:  
Metadata\_Review\_Date:  
Metadata\_Contact:  
Contact\_Information:  
Contact\_Organization\_Primary:  
Contact\_Organization:  
Contact\_Person:  
Contact\_Address:  
Address\_Type:  
Address:  
City:  
State\_or\_Province:  
Postal\_Code:  
Contact\_Voice\_Telephone:  
Contact\_Facsimile\_Telephone:  
Contact\_Electronic\_Mail\_Address:  
Hours\_of\_Service:  
Metadata\_Standard\_Name:  
Metadata\_Standard\_Version:  
Metadata\_Use\_Constraints: