



STAFF REPORT

MEETING DATE:	February 23, 2016
SUBJECT:	Authorize Technical Services Agreement for Aerial Imagery Procurement
AGENDA ITEM:	6-9
STAFF CONTACT:	Jennifer Pollom, Senior Transportation Planner

SUMMARY:

SRTA circulated a request for proposals (RFP) to complete the *2016 Digital Orthoimagery Collection Project* in partnership with local agencies and organizations. Five proposals were received and evaluated. GeoTerra was the highest scoring proposer.

STAFF RECOMMENDATION:

It is recommended that the board of directors authorize the executive director to enter into a standard technical services agreement with GeoTerra for the *2016 Digital Orthoimagery Collection Project* for a term ending June 30, 2017, not to exceed \$113,000.

DISCUSSION:

Aerial imagery is used in a variety of local and regional planning processes. Imagery for the area encompassing the cities of Shasta Lake, Anderson, Redding and adjacent portions of the unincorporated county, was last obtained in 2010. Up-to-date imagery is needed to reflect the latest land use, transportation, and environmental conditions. The board of directors authorized entering into an aerial imagery agreement with the United States Geologic Survey (USGS) in June 2015. The USGS did not move quickly enough to meet SRTA's and partner organizations' need for "leaf-off and greening" environmental conditions. SRTA staff issued a new request for proposals (RFP) in January to obtain the aerial imagery.

Five proposals were received for the aerial imagery procurement and all were determined to be responsive. The proposals were reviewed by an evaluation panel of SRTA and partner agency staff. A summary of the contractors, their costs and average score is provided below.

Lead Contractor	Cost Proposal	Average Score (out of 90)
GeoTerra (Eugene, OR)	\$113,000	78.3
Digital Mapping Inc. (Huntington Beach, CA)	\$59,750	74.7
Sanborn (Colorado Springs, CO)	\$56,703	73.0
Access Geographic (Tempe, AZ)	\$89,732	72.7
GeoWing (San Francisco, CA)	\$63,500	65.3

GeoTerra was the highest scoring contractor. Eleven (11) evaluation criteria were used to score the contractors, and GeoTerra received the highest combined score in 8 of the categories. Their proposal was well written, and they responded well to all the items in the RFP – not a cookie-cutter proposal. In

particular, their proposal stood out because of qualifications of key staff; ability to quickly mobilize; quality assurance methods; and excellent references in Northern California. The evaluation panel believes GeoTerra will deliver a good product on schedule. Excerpts from GeoTerra's proposal are attached.

Elevation data is a required deliverable of the project. Use of Light Detection and Ranging (LIDAR) to accomplish this was of particular interest to the evaluation panel. LIDAR uses a laser on an aircraft's underside to create elevation data which is then used to adjust the aerial imagery. GeoTerra's cost proposal included the raw LIDAR data as a deliverable; Digital Mapping Inc. offered the raw LIDAR data for an additional \$57,750 (\$117,500 total). LIDAR-derived elevation data is in the best interest of SRTA and partner agencies because it will be current and provide consistent coverage over a larger area. In addition, the raw LIDAR data could be used to create updated elevation contours used by surveyors, designers, and developers.

ALTERNATIVES:

The board of directors may award the project to another responsive contractor or reject all the proposals and direct staff to issue a new RFP in coordination with partner agencies and organizations.

OTHER AGENCY INVOLVEMENT:

All three cities, the county of Shasta, the McConnell Foundation, and the Western Shasta Resource Conservation District helped develop the aerial imagery scope and technical specifications.

FINANCING:

\$42,000 is budgeted in the FY 2015/16 Overall Work Program under Work Element 705.02 for aerial imagery. Partners have committed an additional \$90,300 as shown in the following table. The county has committed no funding to the procurement.

Partner	Amount Committed
SRTA	\$42,000
Redding	\$40,000
Shasta Lake	\$10,000
Anderson	\$10,000
Shasta County	\$0
McConnell Foundation	\$30,000
Western Shasta Resource Conservation District	\$300
Total	\$132,300



Daniel S. Little, AICP, Executive Director

Attachment: Information about GeoTerra

February 8, 2016

Jennifer Pollom, MS, AICP, GISP
Senior Transportation Planner
c/o 2016 Digital Orthoimagery Collection Project
Shasta Regional Transportation Authority
1255 East Street, Suite 202
Redding, CA 96001



RE: Transmittal Letter - 2016 Digital Orthoimagery Collection Project

Jennifer,

GeoTerra submits this proposal in response to Shasta Regional Transportation Authority's (SRTA) RFP to select a consultant to provide Digital Orthoimagery in 2016. GeoTerra, a full service aerial mapping firm, is a veteran-owned small business with map production facilities in Portland and Eugene, Oregon, and Boise, Idaho.

This submittal provides details of our ability to successfully accomplish this project. Our management team, led by Bret Hazell, is one of the most experienced in the industry and is intimately familiar with the challenges presented by performing work of this type in the Northern California region. This submittal details our project work plan, staffing, experience, and other key factors that qualify our team and make us a high-quality, value driven choice to support the SRTA team of stakeholders.

This proposal is valid for 90 days from submittal date. The following signature is binding and supports GeoTerra's intent to enter into a fixed price contract with SRTA if selected as your vendor.

Primary POC: Bret Hazell, PM
Tel: 541.343.8877
Cell: 541.912.7751
bhazell@GeoTerra.us
3410 W. 11th Avenue
Eugene, OR 97402

Alternate POC: Brad Hille, Asst. PM
Tel: 503.894.8609
Cell: 503.351.5058
bhille@GeoTerra.us
7816 SE 13th Avenue
Portland, Oregon 97202

We appreciate the opportunity to present this proposal for your review and consideration.

A handwritten signature in blue ink that reads "Bret Hazell".

Bret Hazell, CP, RPP, SP
President

2. Overview of the Company –

GeoTerra, Inc. is a leading provider of Aerial Acquisition and Mapping Services in the United States for all types of projects requiring engineering quality mapping. The Company is able to respond to any size project through an efficient and tested production process that adheres to high levels of quality and timeliness.

GeoTerra was founded in 2002 by a group of key staff who purchased the Eugene office of 3Di Technologies. The Project Manager for this project, Bret Hazell, led this effort and is President of GeoTerra, Inc. Bergman Photographic Services (BPS) merged into GeoTerra in 2014. BPS has supported clients throughout the Western U.S. since 1975 with aerial photography services in support of mapping projects.



On a daily basis, the company provides mapping support to clients throughout the United States with both LiDAR and photogrammetric mapping services. Working through a network of regional aerial acquisition providers, GeoTerra can economically obtain data for any U.S. location.

The company supports the region with five aircraft, 2 UltraCAM digital cameras, 2 LiDAR systems, and a staff of approximately 35. In addition, we have a full-time staff surveyor licensed in California and an internal GIS group utilizing ArcGIS software for support on a wide-range of work. GeoTerra continues to grow its LiDAR capability with multiple state-of-the-art LiDAR systems, deployable on planes or helicopters.

GeoTerra utilizes photogrammetry and LiDAR to produce high accuracy, three-dimensional terrain models (DTMs) and contours to support engineering and planning for cities across the Western U.S. In addition to the terrain surface, three-dimensional feature data sets can be collected along with high resolution color orthophotography. The surface, features and ortho image normally provide the base mapping for many engineering, planning and permitting related tasks.

Services Provided

- Aerial photography / imagery and LiDAR acquisition services for mapping
- Photogrammetric mapping of terrain surfaces, and feature data collection with special expertise in engineering grade map products, photogrammetric point clouds (DSM), and wide area, high-resolution orthophotography generation
- LiDAR data processing utilizing the Optech Galaxy (2015) sensor, and the Trimble 68i (2011) sensor; classification of data sets to include 3D, stereo imagery editing and quality control of point cloud classifications
- Geographic Information Systems (GIS) services – an ESRI Business Partner since 2002
- GPS control surveys for aerial mapping / geodetic control networks / LiDAR drive surveys

- Eugene, Oregon Photogrammetric mapping, AT, orthophotography production & LiDAR
- Portland, Oregon Photogrammetric mapping, orthos, GIS, image processing & LiDAR
- Boise, Idaho Photogrammetric mapping, airport obstruction and facilities mapping
- Aurora, Oregon Hangar facility, 5 aircraft, multiple flight crews, maintenance facilities

In support of SRTA, we can provide orthophotography using well proven techniques with the latest software and hardware. Our full in-house production process allows us to work closely with GT flight crews to obtain precise custom imagery in order to provide the highest quality image data set possible.

Experienced, tested, with the latest technical capabilities, allows us to provide value, accuracy, and timely delivery for detailed projects. Acquisition, surveying, photogrammetry, orthophoto generation, Lidar, and GIS are all performed in-house.



3. Key Project Staff –

GeoTerra has an exceptional track record of success over the last 13 years. Growing, adapting, and building on success, we have managed to support a broad base of clients with the finest in aerial mapping services. Our staff continues to grow and develop their expertise with each project, honing their management and technical mapping skills to provide quality at a value driven cost to the client.

Since its inception in 2002, GeoTerra has focused on providing high quality and good overall value to our clients. Our formula has bred success with additional staff and resources added in the intervening years. In 2014 we merged Bergman Photographic Services (BPS) of Portland into our company so when combined, we could provide clients like SRTA with a more complete and integrated production process. The combined company now combines acquisition of both imagery and LiDAR, with surveying, mapping, and GIS to directly meet the rigorous demands presented by a fast changing profession. As the industry and technology evolve, GeoTerra has successfully adapted to remain successful in a difficult business environment.

GeoTerra currently has a staff of 35 having, approximately doubled in size since 2013. The merger with Bergman Photographic Services, Inc. in 2014 added seven (7) staff members while others have been hired to increase our capabilities in project management, aerial acquisition, Lidar processing, photogrammetry, and orthophoto production. No other regional aerial mapping firm has the number of certified staff we have for aerial mapping related work.

Each one of the key staff listed below shares a commitment to excellence and professionalism. By a considerable margin, we are fortunate to have the largest, most qualified, experienced, and skilled staff in the western U.S. for projects of this type.

▪ Project Manager (President)	Bret Hazell, CP, RPP, SP – Designated POC (O)
▪ Asst. PM / Production Team Leader	Brad Hille, CPT, RPP
▪ Flight Operations	Bruce Bergman (O), Larry Bergman (O)
▪ Professional Land Surveyor	Shelby Griggs, PLS (O)
▪ Orthophoto Team Leader	Amy Perdue
▪ Director, Mapping Services	Ron Sluggett, CP, RPP (O)
▪ Senior Photogrammetrist	Gordon Peet, CP, RPP
▪ GIS Support Services	Molly Jackson, GISP

(O) – Owner in GeoTerra

CP = Certified Photogrammetrist by ASPRS; RPP = Registered Professional Photogrammetrist (OR); CPT – Certified Photogrammetric Technologist (ASPRS); PLS – Professional Land Surveyor; GISP = Geographic Information System Professional (GISCI)

Bret Hazell will be the primary POC for SRTA to include contracting, technical scope of work, and overall responsibly in charge of the project. He will be assisted by Brad Hille who will provide assistance on technical coordination, reporting, and quality control.

Key Staff Bio's – SRTA Project

Bret Hazell, CP, Project Manager

bhazell@GeoTerra.us



Bret has over 30 years of progressively responsible management experience with documented success in the areas of photogrammetry, LiDAR, geo-positioning systems, human resource management, and military construction. He is the Senior Project Manager, managing general operations and principal projects. On a daily basis he assists clients with project management, project development, and contracting. Bret manages a wide range of mapping related work across the United States. He has successfully led project teams to support multimillion dollar mapping, LiDAR, and GIS efforts with a total project resume exceeding 1,000 projects. He is the principal owner of GeoTerra, Inc. and

one of the most experienced project managers for mapping related work in the industry. He has successfully managed municipal mapping projects in Northern California for Anderson, Crescent City, Eureka, Arcata, Santa Rosa, Novato, Healdsburg, Livermore, Pleasanton, Dublin, Campbell, Gilroy, Ukiah, Fortuna, Rio Dell, Mt. Shasta City, and Yreka.

Bret holds a Master of Science in Geography from Oregon State University and a Bachelor of Arts in Geography from California State University, Chico. He is an ASPRS Certified Photogrammetrist, a State of Oregon Registered Professional Photogrammetrist and licensed Surveyor Photogrammetrist in the State of Virginia.

Brad Hille, CPT, Asst. PM; Production Coordinator, Quality Assurance

bhille@GeoTerra.us



Brad has more than 20 years of progressively responsible experience in cartographic mapping and photogrammetry. He has a proven record of managing hundreds of projects of all sizes. In his duties as Project Manager, Brad oversees critical aspects of production coordination, setting priorities and ensuring interdepartmental work efforts are efficient and accurate. Brad's extensive technical expertise is critical in supervising projects and managing them from inception to delivery including the QA/QC steps.

His extensive experience in photogrammetry includes project planning, DTM development, and high accuracy data collection. An excellent communicator, Brad is responsible for client relations, project management and tracking, subcontracting coordination, flight and control planning, aerial triangulation, DTM and planimetric feature collection, and developing QA/QC processes.

Brad joined GeoTerra in 2014, significantly enhancing our capabilities in production management and project management. He will oversee the production, reporting, and quality control on the 2016 COMPASS project.

Shelby Griggs, PLS; Staff Surveyor

sgriggs@GeoTerra.us

Licensed in Idaho (#7321), Oregon, Washington, California, and Nevada



Shelby is one of the leading GPS surveyors in the country with an in-depth knowledge of GPS control networks. He has been planning and executing GPS surveys and providing technical expertise on high-accuracy project map control for over 25 years. His extensive background includes cadastral and boundary surveying and has performed large GPS control surveys in Alaska, California, Idaho, Nevada, Rhode Island, Connecticut, North Carolina, South Carolina, Louisiana, Texas, New Mexico, Oregon, Rhode Island, and Washington. Shelby is a principal and Vice President of GeoTerra, Inc. He has been a speaker at several regional surveying and mapping conferences involving the technical aspects of GPS and its implementation.

Shelby will be responsible for enhancing the SRTA control network and publication of a detailed report.

Amy Perdue; Orthophotography Production Team Leader

aperdue@GeoTerra.us



As the Orthophotography Department Manager, Amy ensures specifications and quality control are maintained for all orthophoto products. Amy is responsible for project delivery, both in hard copy and digital, to include the packaging, documentation, data presentation and data backup of all project and production data sets. Amy manages a well trained and experienced group of imagery technicians in the GeoTerra Orthophotography Department. She holds a Bachelor of Science degree in Geography from Oregon State University, Corvallis, and has over 15 years of progressively responsible experience related to performing tasks associated with orthophotography production.

Amy has been the Orthophoto Manager for over 10 years with an in-depth level of expertise and experience in support of municipal mapping projects. She has managed the orthophoto production on over 100 projects of this type and size.

Complete resumes for key project staff are provided with the proposal in **Attachment A**. Each person has extensive experiencing performing their assigned task and will be available to support this project. The aerial mapping work shall be performed under the direct supervision of a Registered Professional Photogrammetrist (RPP). All survey related work will be performed by or under the direct supervision of a professional land surveyor (PLS) with current registration in the State of California.



4. Work Locations / Work Outside of the U.S.

Aerial Imagery Acquisition

Aircraft mobilize from our flight and maintenance facility in Aurora, Oregon. On multi-day acquisition projects like SRTA, we will ferry to Redding Municipal Airport and base from this airport until work is complete. Our mobilization point is the closest location for digital mapping cameras to the SRTA project.



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|------------------|-------------------------------------|
| ❖ Aurora | 310 miles (GeoTerra) |
| ▪ Boise | 375 miles (Valley Air Photo) |
| ▪ Burbank | 490 miles (Keystone Aerial Surveys) |
| ▪ Salt Lake City | 545 miles (Aero-Graphics) |

Production Locations – Mapping

Normally mapping related work is performed in our Eugene, Portland, or Boise locations. When required by schedule or limited budget, some production work is shared with partner firms in the United States, India, and Canada. Our staff of approximately 35 is maintained using this methodology, allowing us to expand and contract production without negative impacts on technical staff. Without our production partners, we would not be as efficient or skilled in the mapping tasks we perform. No matter where work is performed, all deliverable data sets are quality controlled and formatted for delivery in one of our three production offices.

For this project we are providing pricing using 1) all U.S. production or 2) unrestrained production which may result in some work being done by production partners in other U.S. locations, Canada, or India.

If work is authorized to be performed in partner locations, we will utilize tested production partners who have worked with GeoTerra for over five (5) years to supplement our production capacity.

Production Locations – Surveying

Normally, survey related work for municipal mapping control is performed by our in-house surveyor. We sometimes use local surveyors if they have experience and a good track record of success for projects in a particular location. If selected, we will discuss options with SRTA to see if there are any concerns about using either methodology.

Production Locations – GIS Services

GIS related work is performed using in-house staff at multiple GT locations.

5. Related Experience and References –

#1: Project Title: City of Santa Rosa, California
End Client: City of Santa Rosa, California
Role of Firm: Prime
Contact Information:
Mike Hargreaves
mhargreaves@srcity.org
(707) 543-3112
Dates of Service: 2007 – 2016 (multiple projects)

GeoTerra was awarded this mapping project to support the City of Santa Rosa through a qualifications based selection process. This complex, multi-year mapping project involved photogrammetry, LiDAR, and extensive ground surveying to establish flood plain mapping of major creeks. GeoTerra was the Prime project consultant for multiple subcontractors.

2007: Mapped five (5) primary drainage areas covering approximately 23 miles. To support floodplain analysis and creation of FEMA specified map products, both aerial and ground survey methods were used as a means for data collection and development.

- 2008: Floodplain mapping and orthophotography for the south half of the City.
- 2009: New high resolution color orthophotography for the northern half of the City to match southern half previously completed.
- 2016: New high resolution color orthophotography at 0.15' pixel resolution / DTM update

Photogrammetric mapping at 1" = 50' map scale with 1' contour intervals
Color orthophotography at 0.25' pixel resolution

To support floodplain analysis and creation of FEMA specified map products, both aerial and ground survey methods were used as a means for data collection and development. GeoTerra was responsible for supervising the ground survey of over 1,000 cross sections and integrating those into the final surface model. LiDAR acquisition and data was integrated with photogrammetry.



Memorandum

HANDOUT AT MEETING



Information Technology Department

Phone: 225-5273
Fax: 225-5275

Thomas Schreiber
Chief Information Officer

Date: May 27, 2015
To: All Shasta County Departments
From: Dave Powers, IT Services Manager - GIS
Subject: Shasta County Aerial Imagery

The objective of this memo is to determine the level of interest that your department has for participating in procuring new aerial imagery for Shasta County.

Aerial Imagery is one of the most fundamental and essential datasets used by many entities within Shasta County including Shasta County departments, the incorporated cities, state and federal agencies, as well as the County's 911 service at SHASCOM. Over the past few years, there have been numerous instances when the quality and age of the available Shasta County aerial imagery did not meet the immediate needs of law enforcement, fire safety, public safety and many County departments.

The numerous problems with the current Shasta County aerial imagery have been the cause for substantial interest in acquiring new high-resolution imagery for the majority for Shasta County. This interest has led to many discussions as well as several vendor presentations sponsored by the Shasta County GIS Advisory Committee and the GIS subcommittee for the Integrated Public Safety System replacement project.

High quality aerial imagery provides valuable support for decision making as well as cost savings for operations. Accurate and current high quality imagery enables staff to "see" before they go, and reduces fieldwork and information collection costs. Some examples include:

- **Public Safety:** Fire and Police personnel can see the location of incidents and addresses, improving dispatching, crime analysis, incident response, and officer safety. Use of oblique imagery (photos taken at an angle to provide additional visual perspectives), helps features such as access points, exit routs and elevation changes to be more easily identifiable.
- **Public Works:** Reduces the need for field visits, supports traffic and pavement management, storm drain and flood protection, and enhances project planning and infrastructure management. Again oblique imagery can provide valuable context that can be missing on maps or in vertical photography.
- **Planning:** Improves code enforcement, site plan review, and understanding of impacts of new projects.
- **Assessment and Tax Collection:** Provides improved research methods to determine undocumented changes by comparing new imagery to existing house plans or older imagery. Use of oblique imagery provides expanded views of roof, exterior walls, and other features to use for assessment analysis.
- **Disaster Planning and Response:** Improves planning and response before, during, and after disasters, and provides the foundation for a Common Operating Picture.
- **Community Outreach:** Improves communication with residents by providing a picture of the area of discussion, increasing citizen engagement.
- **Operational Efficiency:** A consistent view supports collaboration, integration, and efficiency to lower operational costs.

Ownership of high-resolution, spatially accurate and current imagery provides key benefits when compared to aerial imagery from online providers (“free mapping websites” like Google or Bing), and off-the-shelf vendors. These benefits include:

- Enhanced resolution that shows greater detail and provides more information.
- Saved time in locating and responding to emergencies while avoiding costs associated with erroneous information from out-of-date or unknown-date imagery.
- Enhanced and documented accuracy promotes the capturing of defensible information and data from the imagery that is in the right spatial location thereby providing better support for facilities management, planning, and operations.
- Providing for multiple access methods, which include desktop software, handheld devices, and mobile applications as well as remotely hosted solutions to reduce hardware and software costs.
- Complete control of the data, including the use across department applications and platforms.

An aerial imagery planning committee with representatives from the City of Redding, City of Shasta Lake, Shasta Regional Transportation Agency (SRTA), the McConnell Foundation, SHASCOM, Shasta County, and the Far North Regional GIS Committee has been meeting on a regular basis over the past year to discuss options for purchasing new imagery. Out of these meetings, a commitment to purchase new aerial imagery in the first part of 2016 has been approved by the City of Redding, the City of Shasta Lake, the McConnell Foundation and SRTA. The commitment from this consortium will provide new high-resolution imagery for the three incorporated cities and roughly 220 square miles around them. One of the key benefits of the multi participatory consortium approach is that it lowers costs through cost sharing, and as more participants join, each member realizes lower costs.

As mentioned at the beginning, the main reason for this memo is to gauge the interest of County departments in new aerial imagery and additionally to understand your willingness to participate as a stakeholder in this consortium. Please contact me if you would like to know more about the benefits of new aerial imagery or to have any questions that you would might have answered. Lastly please respond to me via email by Friday June 19 letting me know what level of participation you are willing to commit , even if it is zero.

Thank you for taking the time to read this memo and for responding back to me.

Dave Powers
IT Services Manager – GIS Division
Information Technology Dept.
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515-5115 (C)