

# General Services Administration (GSA)

## Federal Supply Service

### *Authorized Federal Supply Schedule Price List*

*Supplement No. 2, Effective October 16, 2015*

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## **GSA Advantage!®**

On-line access to contract ordering information, terms and conditions, up-to-date pricing, and the option to create an electronic delivery order are available through **GSA Advantage!®**, a menu-driven database system. The INTERNET address for **GSA Advantage!®** is:  
<http://www.GSAAdvantage.gov>.

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## **Contract Information**

**Professional Services Schedule (PSS)**

**Federal Supply Schedule Industrial Group:** 00CORP

**Federal Supply Group:** 899      **Class:** F999

**Contract Number:** GS-10F-0099W

For more information on ordering from Federal Supply Schedules click on the FSS Schedules button at <http://www.gsa.gov/schedules-ordering>.

**Contract Period:** January 29, 2010 through January 28, 2020

**Contractor:** Sanborn Map Company, Inc., The  
1935 Jamboree Drive, Suite 100  
Colorado Springs, CO 80920-5358

**Telephone:** (719) 593-0093 (or) (866) 726-2676; **FAX Number:** (719) 528-5093

**Web Site:** <http://www.sanborn.com>

**E-mail:** [akappel@sanborn.com](mailto:akappel@sanborn.com)

**Contract Administration:** Amy E. Kappel

**Business Size (under NAICS codes 541620 and 541370):** Large Business (other than small)

**Prices Shown Herein are Net (discount deducted)**

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## Customer Information

1.
  - a. **Table of awarded special item number(s) with appropriate cross-reference to item descriptions and awarded price(s):** 899-7 and 899-7RC (Geographic Information Systems (GIS) Services)
  - b. **Identification of the lowest priced model number and lowest unit price for that model for each special item number awarded in the contract. This price is the Government price based on a unit of one, exclusive of any quantity/dollar volume, prompt payment, or any other concession affecting price. Those contracts that have unit prices based on the geographic location of the customer, should show the range of the lowest price, and cite the areas to which the prices apply.**
  - c. **If the Contractor is proposing hourly rates, a description of all corresponding commercial job titles, experience, functional responsibility and education for those types of employees or subcontractors who will perform services shall be provided. If hourly rates are not applicable, indicate “Not applicable” for this item.**
2. **Maximum Order:** \$1,000,000.00
3. **Minimum Order:** \$100.00
4. **Geographic Coverage (delivery area):** The geographic location for all labor categories is domestic delivery that includes 50 states, Washington D.C., and Puerto Rico only
5. **Point(s) of production (city, county, and State or foreign country):** Same as company address; and/or City of Charlotte, Mecklenburg County, North Carolina, and/or Town of Pelham, Westchester County, New York
6. **Discount from list prices or statement of net price:** Prices Shown Herein are Net (discount deducted)
7. **Quantity discounts:**
  - a. Task Orders between \$500,000 and \$2,499,999 receive an additional 2% discount off awarded prices
  - b. Task Orders \$2,500,000 and above receive an additional 4% discount off awarded prices
8. **Prompt payment terms:** Net 30 days. **Information for Ordering Offices: Prompt payment terms cannot be negotiated out of the contractual agreement in exchange for other concessions.**
9.
  - a. **Notification that Government purchase cards are accepted at or below the micro-purchase threshold:** Yes
  - b. **Notification whether Government purchase cards are accepted or not accepted above the micro-purchase threshold:** will accept over \$2,500
10. **Foreign items (list items by country of origin):** None

11.
  - a. **Time of Delivery (Contractor insert number of days):** Specified on the Task Order
  - b. **Expedited Delivery.** The Contractor will insert the sentence “Items available for expedited delivery are noted in this price list.” under this heading. The Contractor may use a symbol of its choosing to highlight items in its price lists that have expedited delivery: Contact Contractor
  - c. **Overnight and 2-day delivery.** The Contractor will indicate whether overnight and 2-day delivery are available. Also, the Contractor will indicate that the schedule customer may contact the Contractor for rates for overnight and 2-day delivery: Contact Contractor
  - d. **Urgent Requirements.** The Contractor will note in its price list the “Urgent Requirements” clause of its contract and advise agencies that they can also contact the Contractor’s representative to effect a faster delivery: Contact Contractor
12. **F.O.B. Point(s):** Destination
13.
  - a. **Ordering Address(es):** Same as Contractor
  - b. **Ordering procedures:** For supplies and services, the ordering procedures, and information on Blanket Purchase Agreements (BPA’s) are found in Federal Acquisition Regulation (FAR) 8.405-3.
14. **Payment address(es):** Same as company address
15. **Warranty provision:** Contractor’s standard commercial warranty.
16. **Export Packing Charges (if applicable):** N/A
17. **Terms and conditions of Government purchase card acceptance (any thresholds above the micro-purchase level):** Contact Contractor
18. **Terms and conditions of rental, maintenance, and repair (if applicable):** N/A
19. **Terms and conditions of installation (if applicable):** N/A
20. **Terms and conditions of repair parts indicating date of parts price lists and any discounts from list prices (if applicable):** N/A
  - a. **Terms and conditions for any other services (if applicable):** N/A
21. **List of service and distribution points (if applicable):** N/A
22. **List of participating dealers (if applicable):** N/A
23. **Preventive maintenance (if applicable):** N/A
24.
  - a. **Special attributes such as environmental attributes (e.g., recycled content, energy efficiency, and/or reduced pollutants):** N/A

- b. If applicable, indicate that Section 508 compliance information is available on Electronic and Information Technology (EIT) supplies and services and show where full details can be found (e.g., contractor’s website or other location). The EIT standards can be found at: <http://www.Section508.gov/>.
25. Data Universal Numbering System (DUNS) number: 06-433-2356
26. Notification regarding registration in the System for Award Management (SAM) database: Registered

## GSA Contract Prices (Inclusive of 0.75% IFF)

The labor categories and hourly pricing, including IFF, under SINs 899-7 and 899-7RC (Geographic Information Systems (GIS) Services) are identified in the table below.

Labor Category Title	Price
<b>Contractor Site</b>	
Acquisition Manager	\$ 178.26
Pilot-Photogrammetry	\$ 132.23
Pilot-LiDAR	\$ 148.41
Geodetic Specialist	\$ 132.18
Geodetic Technician	\$ 87.67
Registered Land Surveyor	\$ 135.18
Senior Survey Technician	\$ 109.40
Senior Data Acquisition Technician-Photogrammetry	\$ 92.77
Data Acquisition Technician-Photogrammetry	\$ 65.09
Data Acquisition Technician-LiDAR	\$ 76.71
Operations Director-Remote Sensing	\$ 233.84
Operations Director-Photogrammetry	\$ 262.40
Operations Manager-Remote Sensing	\$ 141.77
Operations Manager-LiDAR	\$ 254.44
Operations Coordinator-Photogrammetry	\$ 125.16
Operations Coordinator-LiDAR	\$ 183.79
Imagery Analyst - Team Lead	\$ 131.75
Imagery Analyst	\$ 107.95
Senior Imagery Technician	\$ 85.62
Imagery Technician II	\$ 84.33
Imagery Technician I	\$ 63.65
Senior GIS Analyst Team Lead - Vector	\$ 178.18
Senior GIS Analyst, Vector	\$ 150.91
Senior Stereo Compiler - Team Lead	\$ 112.95
Senior Stereo Compiler	\$ 98.75

Senior CADD/GIS Technician - Vector	\$ 101.26
CADD/GIS Technician II - Vector	\$ 76.85
CADD/GIS/Data Technician I - Vector	\$ 68.75
Aerial Triangulation Manager	\$ 180.57
Senior Aerial Triangulation Technician	\$ 125.72
Senior LiDAR Analyst	\$ 247.86
LiDAR Analyst	\$ 185.40
LiDAR Technician II	\$ 106.11
LiDAR Technician I	\$ 78.16
Business Manager	\$ 234.10
Senior Remote Sensing/GIS Analyst	\$ 113.33
Remote Sensing/GIS Analyst	\$ 97.01
Associate Remote Sensing/GIS Analyst	\$ 64.34
Senior Remote Sensing/GIS Technician	\$ 78.79
Quality Manager	\$ 186.41
Senior Program Manager	\$ 271.71
Program Manager	\$ 207.96
Offsite Program Manager	\$ 238.86
Senior Project Manager	\$ 268.11
Project Manager-Remote Sensing	\$ 153.06
Project Manager-Photogrammetry	\$ 189.77
Associate Project Manager-Remote Sensing	\$ 109.13
Associate Project Manager-Photogrammetry	\$ 150.86
Senior Photogrammetrist	\$ 180.57
<b>Customer Site</b>	
Program Manager	\$ 212.11
Deputy Program Manager	\$ 184.53
Project Analyst	\$ 69.01
Project Manager	\$ 69.01
Library Manager	\$ 60.07
Geospatial Team Lead	\$ 63.76
Data Collection Team Lead	\$ 63.76
Senior Data Collector**	\$ 33.70
Data Collector**	\$ 30.55
Data Collector in Training II**	\$ 26.91
Data Collector in Training I**	\$ 24.30

NRI Materials Lead**	\$ 40.44
Library Technician II**	\$ 26.91
Library Technician I**	\$ 24.30
Project Management Specialist	\$ 71.42
Remote Sensing Analyst II	\$ 52.08
Remote Sensing Analyst I	\$ 43.57
GIS Analyst IV	\$ 71.42
GIS Analyst III	\$ 59.51
GIS Analyst II	\$ 52.08
GIS Analyst I	\$ 43.57
Cartographer/GIS Analyst (Senior)	\$ 84.35
Cartographer/GIS Analyst (Intermediate)	\$ 66.86
Cartographer/GIS Analyst (Associate)	\$ 57.96
Remote Sensing/GIS Analyst (Senior)	\$ 85.02
Remote Sensing/GIS Analyst (Intermediate)	\$ 68.17
Remote Sensing/GIS Analyst (Associate)	\$ 55.55
Natural Resources GIS Analyst/Programmer (Senior)	\$ 88.98
Natural Resources GIS Analyst/Programmer (Intermediate)	\$ 73.89
Natural Resources GIS Analyst/Programmer (Associate)	\$ 57.58
GIS Mapping Technician (Senior)	\$ 63.30
GIS Mapping Technician (Intermediate)	\$ 54.11
GIS Mapping Technician (Associate)	\$ 46.68

## Service Contract Act (SCA) Matrix and Narrative

SCA Eligible Labor Category**	SCA Equivalent Code Title	Wage Determination No.	Wage Determination No.	Wage Determination No.
Senior Data Collector	30081 – Engineering Technician I	2005-2397	2005-2441	2005-2513
Data Collector	30081 – Engineering Technician I	2005-2397	2005-2441	2005-2513
Data Collector In Training II	01052 – Data Entry Operator II	2005-2397	2005-2441	2005-2513
Data Collector In Training I	01051 – Data Entry Operator I	2005-2397	2005-2441	2005-2513
NRI Materials Lead	30081 – Engineering Technician I	2005-2397	2005-2441	2005-2513
Library Technician II	01052 – Data Entry Operator II	2005-2397	2005-2441	2005-2513
Library Technician I	01051 – Data Entry Operator I	2005-2397	2005-2441	2005-2513

The Service Contract Act (SCA) is applicable to this contract and it includes SCA applicable labor categories. The prices for the cited SCA labor categories are based on the U.S. Department of Labor WD Number(s) identified in the SCA matrix. The prices offered are based on the preponderance of where work is performed and should the Contractor perform in an area with

lower SCA rates, resulting in lower wages being paid, the task order prices will be discounted accordingly.

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## Labor Category Descriptions

### I. GEOGRAPHIC INFORMATION SYSTEMS (GIS) SERVICES PROVIDED AT CONTRACTOR'S FACILITY

#### **Acquisition Manager**

The Acquisition Manager provides management services in oversight and support of flight operations, acquisition resources and staff, and provides oversight and coordination of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Acquisition Manager manages the logistics for data acquisition, overseeing flight and field operations. Responsibilities include overall mission planning and organization. Flight planning, managing pilots and field crew, scheduling aircraft and crew, arranging aircraft maintenance, planning safety programs, preparing and monitoring budgets, and complying with FAA regulations are the primary duties of this position.

#### Minimum Experience/Training

- 10 years of experience in aviation management.
- 10 years of experience working in a data acquisition environment.
- Knowledge of foreign and domestic government air carrier operations.
- Knowledge of FAA and aviation insurance regulations.
- Supervisory experience of 3 or more staff.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in relevant field, such as engineering, aviation or business management.

#### **Pilot - Photogrammetry**

#### Duties/Responsibilities

The Photogrammetry Pilot operates aircraft to fly aerial photo missions in support of mapping and data acquisition projects. As Pilot in Command of the aircraft, the pilot directs onboard crew to ensure safe and efficient acquisition missions. Responsibilities include performing flight operations within schedule and budget; coordinating with authorities to obtain flight permission/clearance within restricted or Class B airspace; maintaining flight records; and advising acquisition manager of any equipment maintenance requirements or safety concerns.

#### Minimum Experience/Training

- Minimum of 1,500 hours total flying time; (3 Years).
- 500 hours as pilot in command in aircraft type.
- Proficiency with computers and software.
- Annual ground and flight training required in make and model of designated aircraft.

#### Minimum Education/Certifications

- Bachelor of Science Degree in Aviation or equivalent experience.
- Active commercial pilot's license and FAA medical certification.

- IFR Rating.

### **Pilot - LiDAR**

#### Duties/Responsibilities

The LiDAR Pilot operates aircraft to fly aerial photo missions in support of mapping and data acquisition projects. As Pilot in Command of the aircraft, the pilot directs onboard crew to ensure safe and efficient acquisition missions. Responsibilities include performing flight operations within schedule and budget; coordinating with authorities to obtain flight permission/clearance within restricted or Class B airspace; maintaining flight records; and advising acquisition manager of any equipment maintenance requirements or safety concerns.

#### Minimum Experience/Training

- Minimum of 1,500 hours total flying time; (3 Years).
- 500 hours as pilot in command in aircraft type.
- Proficiency with computers and software.
- Annual ground and flight training required in make and model of designated aircraft.

#### Minimum Education/Certifications

- Bachelor of Science Degree in Aviation or equivalent experience.
- Active commercial pilot's license and FAA medical certification.
- IFR Rating.

### **Geodetic Specialist**

#### Duties/Responsibilities

The Geodetic Specialist acts as a technical expert, providing technical direction to survey operations. Responsibilities include managing/planning, operating sensors, troubleshooting technical survey issues, performing photography and LIDAR data collection and processing, conducting quality control of photography and LIDAR data. Also responsible for all GPS survey and ground control for all survey mapping and GPS survey projects.

#### Minimum Experience/Training

- Three (3) years geodetic engineering experience to include GPS and RTK survey, least squares adjustments, GPS data processing, map datum and projections.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field such as geomatics engineering.

### **Geodetic Technician**

#### Duties/Responsibilities

The Geodetic Technician assists in surveying the earth's surface to determine precise location and measurements of points, elevations, lines, areas, and contours for construction, mapmaking, land division, titles, mining or other purposes.

#### Minimum Experience/Training

- Six (6) months related field work experience, using any laser or LIDAR instrument or GPS equipment.

#### Minimum Education/Certifications

- Associate's Degree or GIS certification. Experience may be substituted for education.

### **Registered Land Surveyor**

#### Duties/Responsibilities

The Registered Land Surveyor is responsible for surveying and mapping in GPS and conventional surveying methods using Laser scanning, GPS Control, Topographic, GIS, and CAD/Microstation/Geopak. Survey projects may include Global Positioning Satellite and geodetic/cadastral surveys, ground-based LiDAR, mobile ground-based LiDAR, traditional surveying, mapping, mining, and civil engineering.

Minimum Experience/Training

- One (1) year surveying field experience in appropriate surveying applications.
- Proficiency in GIS and surveying software.

Minimum Education/Certifications

- Professional Licensed Surveyor (PLS) or Professional Surveyor and Mapper (PSM).
- Bachelor's Degree in a relevant field or equivalent experience. Experience may be substituted for education.

### **Senior Survey Technician**

Duties/Responsibilities

The Senior Survey Technician assists the Registered Land Surveyor in the planning and mobilization of Ground Control GPS Surveys (GCS) and Ground Based LiDAR and Terrestrial 3d Scanning Missions (GBL). This position helps the Registered Land Surveyor carry out the following duties: executing GCS by using GPS equipment following established guidelines for point selection in the field; processing the GCS information on a daily and project basis; compiling data into GPS Network solutions; setting targets and control for airborne missions; processing the GBL 3D scanned information, producing accurate, Geo-Referenced, 3D models from the data. This includes use of software to filter data to usable level for producing Digital Terrain Model (DTM) and Triangle Irregular Networks (TIN) information. Other duties include processing DTM and TIN; collecting data by conventional methods to DOT and client specifications; producing topographic CAD files; and helping to train more junior-level technicians and acting as a technical resource.

Minimum Experience/Training

- High School diploma – three (3) years' experience. Extensive experience using and troubleshooting GPS and survey equipment.

Minimum Education/Certifications

- Minimum High School diploma
- Associate's Degree (or Certificate) or Bachelor's Degree preferred.
- Land Surveyor in Training (LSIT) certification preferred.

### **Senior Data Acquisition Technician - Photogrammetry**

Duties/Responsibilities

The Senior Data Acquisition Technician - Photogrammetry assists with data acquisition by operating aerial sensors and performing basic surveying duties such as centering a tripod, measuring distances using a tape or surveyor's chain, measuring compass bearings, clearing vegetation from sight lines, and placing stakes and markers. Helps train data acquisition technicians and provides guidance in the field.

Minimum Experience/Training

- One (1) year related field work experience, using any LIDAR operation or survey GPS.

Minimum Education/Certifications

- Associate's Degree or equivalent experience.

### **Data Acquisition Technician - Photogrammetry**

#### Duties/Responsibilities

The Data Acquisition Technician - Photogrammetry assists with data acquisition by operating aerial camera systems and performing basic surveying duties such as centering a tripod, measuring distances using a tape or surveyor's chain, measuring compass bearings, clearing vegetation from sight lines, and placing stakes and markers. This role may set base stations for the flight crew; and process GPS after the mission is complete to insure no data gaps.

#### Minimum Experience/Training

- Proficiency in software applications used for processing survey data.
- Experience operating an aerial sensor system.

#### Minimum Education/Certifications

- High school diploma or equivalent.

### **Data Acquisition Technician - LiDAR**

#### Duties/Responsibilities

The Data Acquisition Technician - LiDAR assists with data acquisition by operating LiDAR systems and performing basic surveying duties such as centering a tripod, measuring distances using a tape or surveyor's chain, measuring compass bearings, clearing vegetation from sight lines, and placing stakes and markers. This role may set base stations for the flight crew; and process GPS after the mission is complete to insure no data gaps.

#### Minimum Experience/Training

- Proficiency in software applications used for processing survey data.
- Experience operating an aerial sensor or LiDAR system.

#### Minimum Education/Certifications

- High school diploma or equivalent.

### **Operations Director – Remote Sensing**

The Operations Director – Remote Sensing provides direction and oversight in support of remote sensing operations management programs, resources and staff, and provides similar applicable oversight of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Director - Remote Sensing supervises the operations management team within the division, strategically directing and monitoring budget, schedule, staffing, training and long-term planning. This position acts as the main liaison between the General Manager and operations staff.

#### Minimum Experience/Training

- Ten (10) plus years of production operations experience.
- Technical expertise in multiple GIS-related disciplines.
- Five (5) plus years' experience managing employees.
- Extensive experience with financial analysis.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Master's degree preferred.

### **Operations Director – Photogrammetry**

The Operations Director - Photogrammetry provides direction and oversight in support of photogrammetric operations management programs, resources and staff, and provides similar applicable oversight of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Director - Photogrammetry supervises the operations management team within the division, strategically directing and monitoring budget, schedule, staffing, training and long-term planning. This position acts as the main liaison between the General Manager and operations staff.

#### Minimum Experience/Training

- Ten (10) plus years of production operations experience.
- Technical expertise in multiple GIS-related disciplines.
- Five (5) plus years' experience managing employees.
- Extensive experience with financial analysis.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Master's degree preferred.

### **Operations Manager – Remote Sensing**

The Operations Manager – Remote Sensing provides management services in oversight and support of remote sensing operations, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Manager - Remote Sensing oversees the activities in an identified production area, usually engaged in tasks related to a specific technical discipline. This position is responsible for managing the technicians and analysts and the daily activities of the department; troubleshoots technical issues; provides training; and monitors project schedules and financials.

#### Minimum Experience/Training

- Five (5) plus years of production operations experience.
- Technical expertise in the relevant production discipline.
- Two (2) years of experience managing employees.
- Exposure to financial analysis.

#### Minimum Education/Certifications

- Bachelor's Degree in a relevant field.

### **Operations Manager – LiDAR**

The Operations Manager – LiDAR provides management services in oversight and support of LiDAR operations, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Manager - LiDAR oversees the activities in an identified production area, usually engaged in tasks related to a specific technical discipline. This position is responsible for managing the technicians and analysts and the daily activities of the department; troubleshoots technical issues; provides training; and monitors project schedules and financials.

#### Minimum Experience/Training

- Five (5) plus years of production operations experience.
- Technical expertise in the relevant production discipline.
- Two (2) years of experience managing employees.
- Exposure to financial analysis.

#### Minimum Education/Certifications

- Bachelor's Degree in a relevant field.

### **Operations Coordinator – Photogrammetry**

The Operations Coordinator - Photogrammetry assists management with coordination of operations photogrammetric programs, resources and staff, and provides similar applicable coordination of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Coordinator - Photogrammetry assists the Acquisition Manager with field operations planning. Responsibilities include coordinating data acquisition staff (deployment, procedures, etc.); tracking progress of imagery collection on all jobs; generating and/or reviewing flight plans, ensuring flight logs and other records are accurate and complete; providing sensor operation training to new employees; communicating with FAA and military for airspace access; troubleshooting and maintenance of sensors; and creating maps and flight lines for project managers. This position performs field data processing for quality assessment and supervises deployment of GPS equipment.

#### Minimum Experience/Training

- Three (3) years with extensive experience operating a variety of sensor operators used for mapping and remote sensing applications.
- Knowledge of surveying techniques.
- Experience with flight planning.
- Proficiency with digital remote sensing equipment, GPS, camera system and computer software.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant field, such as engineering or business management, or equivalent experience.

### **Operations Coordinator – LiDAR**

The Operations Coordinator - LiDAR assists management with coordination of operations LiDAR programs, resources and staff, and provides similar applicable coordination of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Operations Coordinator - LiDAR assists the Acquisition Manager with field operations planning. Responsibilities include coordinating data acquisition staff (deployment, procedures, etc.); tracking progress of imagery collection on all jobs; generating and/or reviewing flight plans, ensuring flight logs and other records are accurate and complete; providing sensor operation training to new employees; communicating with FAA and military for airspace access; troubleshooting and maintenance of sensors; and creating maps and flight lines for project managers. This position performs field data processing for quality assessment and supervises deployment of GPS equipment.

#### Minimum Experience/Training

- 3 years. Extensive experience operating a variety of sensor operators used for mapping and remote sensing applications.
- Knowledge of surveying techniques.
- Experience with flight planning.
- Proficiency with digital remote sensing equipment, GPS, camera system and computer software.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant field, such as engineering or business management, or equivalent experience.

### **Imagery Analyst - Team Lead**

The Imagery Analyst – Team Lead provides technical expertise and supervision to support operations orthophoto programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Imagery Analyst - Team Lead provides technical expertise in orthophoto production and supervises the orthophoto team. This position is responsible for orthophoto team operations and performs administrative functions; assigns work; monitors schedule and budget; coordinates and communicates with other departments; and assures quality.

#### Minimum Experience/Training

- Five (5) years of experience producing and editing orthophotos.
- Advanced technical expertise in orthophoto mapping.
- Supervisory experience.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant field or equivalent work experience.

### **Imagery Analyst**

The Imagery Analyst provides technical expertise and analytical services to support operations orthophoto programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Imagery Analyst provides technical expertise in orthophoto production, troubleshooting and solving complex orthophoto issues and developing production tools for data conversion and image processing. Develops and implements target GIS software platform QA/QC tools and performs QA/QC. Designs and provides training to more junior staff members.

#### Minimum Experience/Training

- Five (5) years of experience producing and editing orthophotos.
- Advanced technical expertise in orthophoto mapping.

#### Minimum Education/Certifications

- Associate's Degree or certificate in relevant course of study or equivalent work experience.

### **Senior Imagery Technician**

The Senior Imagery Technician provides technical expertise to support operations orthophoto, programs, resources and staff, and provides similar technical expertise in support of external

resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Senior Imagery Technician acts as a technical expert, answering questions, resolving problems and instructing less experienced technicians. Reviews technicians' work for compliance with specifications and quality standards, and provides training/assistance to them in performing tasks as needed. Creates and maintains procedural documentation for projects. Performs project coordination duties as assigned (coordination of project schedules; compliance with quality specifications for multiple imaging projects; final review of image products prior to delivery).

#### Minimum Experience/Training

- High School diploma – three (3) years' experience.
- Demonstrated technical expertise and competence in related technical job functions.

#### Minimum Education/Certifications

- High School diploma.
- Bachelor's or Associates Degree preferred.

### **Imagery Technician II**

#### Duties/Responsibilities

The Imagery Technician II performs digital orthophoto processing, graphics, and quality control. Prepares orthophoto images from aerial photographs, survey data, and compilation data.

#### Minimum Experience/Training

- Six-(6) months demonstrated proficiency in use of GIS software tools.

#### Minimum Education/Certifications

- High school diploma.

### **Imagery Technician I**

#### Duties/Responsibilities

The Imagery Technician I performs digital ortho photography processing, graphics, and quality control. Prepares orthophoto images from aerial photographs, survey data, and compilation data.

#### Minimum Experience/Training

- Proficiency in use of GIS software tools, entry level position.

#### Minimum Education/Certifications

- High school diploma.
- Associate's Degree or higher, or certificate in relevant course of study, or the equivalent work experience preferred.

### **Senior GIS Analyst Team Lead – Vector**

The Senior GIS Analyst Team Lead - Vector provides technical expertise and supervision to support operations GIS programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Senior GIS Analyst Team Lead - Vector assigns, directs, and leads the image interpretation team in the production of photo interpretation, vectorization, and field verification tasks to produce products, with the goal of delivering all products on time and within budget, while meeting client requirements and ensuring the profitability of the company. This position is responsible for all phases of team operations, including, but not limited to, scheduling, team assignments, quality assurance and control, personnel management, team performance

monitoring, budget and schedule performance monitoring, and coordination and communication with other departments, teams, and management personnel.

Minimum Experience/Training

- Seven (7) years of experience in a GIS environment working with CADD and ESRI tools.
- Supervisory experience.

Minimum Education/Certifications

- Bachelor's Degree in a relevant field or an equivalent combination of education and experience.

### **Senior GIS Analyst – Vector**

The Senior GIS Analyst - Vector provides technical expertise and analytical services to support operations orthophoto, imagery and GIS programs resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

Duties/Responsibilities

The Senior GIS analyst - Vector collects, organizes, edits, performs image interpretation and performs data vectorization tasks to produce finished products that meet internal and/or external client requirements. This position also provides technical expertise in GIS and vector map production, troubleshooting and solving complex technical issues and develops production processes for data conversion and data processing. Responsibilities also include project coordination tasks, providing guidance to team members, and supporting the team lead as required.

Minimum Experience/Training

- Seven (7) years of experience performing vector tasks.

Minimum Education/Certifications

- Bachelor's Degree in relevant course of study such as geomatics, engineering or geography and equivalent work experience.
- Master's degree preferred.

### **Senior Stereo Compiler - Team Lead**

The Senior Stereo Compiler – Team Lead provides technical expertise and supervision to support operations geospatial programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

Duties/Responsibilities

The Senior Stereo Compiler, Team Lead supervises stereo compilation in the production of a variety of geospatial products in compliance with associated specifications and client supplied requirements. Data are interpreted and compiled using softcopy photogrammetric workstation from photographic stereo pairs or synthesized LiDAR stereo pairs. Compiled data includes planimetric and topographic terrain/elevation data. The team lead performs administrative functions; assigns work; monitors schedule and budget; coordinates and communicates with other departments; and assures quality.

Minimum Experience/Training

- Five (5) years of experience in photogrammetry, image interpretation, CADD and ESRI.
- Supervisory experience.

Minimum Education/Certifications

- Bachelor's Degree in a relevant field or an equivalent combination of education and experience.

### **Senior Stereo Compiler**

The Senior Stereo Compiler provides technical expertise to support operations geospatial programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The senior Stereo Compiler interprets and compiles data using softcopy photogrammetric workstation using photographic stereo pairs or synthesized LiDAR stereo pairs. Compiled data includes planimetric and topographic terrain/elevation data. The senior Stereo Compiler also provides technical expertise in image interpretation and vector map production, troubleshooting and solving complex technical issues. Responsibilities also include QA/QC functions and assigned project coordination tasks, providing guidance to team members, and supporting the team lead when as required.

#### **Minimum Experience/Training**

- Five (5) years' experience in photogrammetry, image interpretation, CADD and ESRI.
- Proficiency in image interpretation.

#### **Minimum Education/Certifications**

- Bachelor's Degree in a relevant field or an equivalent combination of education and experience.

### **Senior CADD/ GIS Technician – Vector**

The Senior CADD/GIS Technician-Vector provides technical expertise to support operations orthophoto, GIS, and photogrammetric programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Senior CADD/GIS Technician – Vector works in the areas of editing, photo interpretation, and vectorization to produce a variety of products to meet internal and/or external client requirements and assists with training and problem solving. Possesses a thorough understanding of the technical side of GIS and photogrammetric mapping.

#### **Minimum Experience/Training**

- High School diploma – three (3) years' experience.
- Demonstrated technical expertise and competence in related technical job functions.
- Proficiency in GIS software tools.

#### **Minimum Education/Certifications**

- High School diploma.
- Bachelor's or Associates Degree preferred.

### **CADD/GIS/Data Technician II - Vector**

#### **Duties/Responsibilities**

The CADD/GIS Technician II – Vector works in the areas of editing, photo interpretation, and vectorization to produce a variety of products to meet internal and/or external client requirements.

#### **Minimum Experience/Training**

- High School diploma – three (3) years' experience.
- Proficiency in GIS software tools.

#### Minimum Education/Certifications

- High School diploma.
- Bachelor's or Associates Degree preferred.

#### **CADD/GIS/Data Technician, Vector I**

##### Duties/Responsibilities

The CADD/GIS Technician I – Vector works in the areas of editing, photo interpretation, and vectorization to produce a variety of products to meet internal and/or external client requirements.

##### Minimum Experience/Training

- High School diploma – one (1) year experience.
- Proficiency in GIS software tools.

##### Minimum Education/Certifications

- High School diploma, entry level position.

#### **Aero Triangulation Manager**

The Aero Triangulation Manager provides management services in oversight and support of aero triangulation and stereo compilation operations, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

##### Duties/Responsibilities

The Aero Triangulation Manager is responsible for managing all photogrammetric operational activities including aero triangulation and stereo compilation. Responsibilities include oversight and development of digital photogrammetric workflows using large format digital camera imagery and facilitating data integration between LiDAR and photogrammetric sensors. This is a professional level position participating in the design of specifications for the standardization of select products and involves collaboration with project managers to ensure all projects' technical specifications are and complete and appropriate. Also, participates in proposal meetings to discuss project specifications and contribute in terms of strategies or alternative strategies that may help win business and meet perspective clients' needs.

##### Minimum Experience/Training

- Ten (10) years of experience in photogrammetry, GIS and CADD.
- Management experience.

##### Minimum Education/Certifications

- Bachelor's Degree in a geomatics related field such as photogrammetry, land survey, engineering or GIS and equivalent work experience.
- Master's degree preferred.
- Professional Certification as a Photogrammetrist from a nationally recognized body such as the American Society of Photogrammetry and Remote Sensing or licensure from a state board or agency.

#### **Senior Aero Triangulation Technician**

The Senior Aero Triangulation Technician provides technical expertise to support operations aero triangulation programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

##### Duties/Responsibilities

The Senior Aero Triangulation Technician prepares data for ingestion into aero triangulation software, manages the auto-mensuration process, ensures successful generation of pass and tie points and completes the bundle block adjustment to project specification. Other duties include; coordinating ground control requirements; troubleshooting data and internal/external file inputs; maintaining project documentation; and helping to train staff.

Minimum Experience/Training

- High School diploma – three (3) years' experience.
- Experience solving practical problems and dealing with a variety of variables in situations where only limited standardization exists.
- Ability to calculate figures and amounts. Ability to apply concepts of algebra and geometry.
- Demonstrated technical expertise and competence in related technical job functions.

Minimum Education/Certifications

- High School diploma.
- Bachelors or Associate's Degree preferred, or experience in relevant field.

### **Senior LiDAR Analyst**

The Senior LiDAR Analyst provides technical expertise and analytical services to support operations LiDAR programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

Duties/Responsibilities

The Senior LiDAR Analyst provides technical expertise in LiDAR data processing and production, troubleshooting and solving complex issues. Accountable for internal coordination of all technical aspect of LiDAR projects, including compliance with quality/specifications. Coordinates work efforts of staff assigned to the project. Generates LiDAR tile layout, project area, project requirements and develop LiDAR Filters. Completes data processing and translations as necessary, and perform the final review of LiDAR files as needed prior to shipment. Complex Development of software for LiDAR processing and value added services. A complete understanding of LiDAR principles and additional complex understanding of all geospatial and remote sensing disciplines is required.

Minimum Experience/Training

- Seven (7) years of experience processing LiDAR data.
- Advanced technical expertise in all phases of LiDAR and Remote Sensing.

Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Master's degree preferred

### **LiDAR Analyst**

The LiDAR Analyst provides technical expertise and analytical services to support operations orthophoto programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

Duties/Responsibilities

The LiDAR Analyst provides technical expertise in LiDAR data processing and production, troubleshooting and solving complex issues. Accountable for internal coordination of all technical aspect of LiDAR projects, including compliance with quality/specifications. Coordinates work efforts of staff assigned to the project. Generates LiDAR tile layout, project

area, project requirements and develop LiDAR Filters. Completes data processing and translations as necessary, and perform the final review of LiDAR files as needed prior to shipment. Development of software for LiDAR processing is required.

Minimum Experience/Training

- Five (5) years of experience processing LiDAR data.
- Advanced technical expertise in LiDAR processing.

Minimum Education/Certifications

- Bachelor's Degree in a relevant field of study, such as geomatics, engineering or geography, or equivalent combination of education and experience.

### **LiDAR Technician II**

Duties/Responsibilities

The LiDAR Technician II processes LiDAR data. Responsibilities include performing manual edit QC and LiDAR filtering and titling, processing GPS and IMU data, and creating Metadata.

Minimum Experience/Training

- High School diploma – three (3) years' experience.
- Proficiency in GIS software tools.

Minimum Education/Certifications

- High School diploma.
- Bachelor's or Associate's Degree preferred.

### **LiDAR Technician I**

Duties/Responsibilities

The LiDAR Technician I processes LiDAR data. Responsibilities include performing manual edit QC and LiDAR filtering and titling, processing GPS and IMU data, and creating Metadata.

Minimum Experience/Training

- High School diploma or three (3) years' experience in relevant field.
- Proficiency in GIS software tools.

Minimum Education/Certifications

- High School diploma, entry level position.

### **Business Manager**

The Business Manager provides management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

Duties/Responsibilities

The Business Manager consults with employees and clients to provide guidance on and helps solve complex technical and business problems; provides senior level oversight to program management, working in conjunction with project managers to ensure project objectives and timelines are being met; and helps ensure quality.

Minimum Experience/Training

- Fifteen (15) years of management experience combined with subject matter expertise in an area relevant to Sanborn's business.
- Experience in a leadership capacity.

Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Master's degree preferred.

### **Senior Remote Sensing/GIS Analyst**

The Senior Remote Sensing/GIS Analyst provides technical expertise and analytical services to support operations remote sensing GIS programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Senior Remote Sensing/GIS Analyst manages projects and project teams. They lead development of new remote sensing approaches and methodologies. Responsibilities include deriving information products using image processing methods and tools using remotely sensed data (satellite imagery, aerial photography, LiDAR) and geographic information systems; acting as a technical resource for clients; training and assisting junior-level staff, managing project budgets and developing new products; and processing multispectral imagery, LiDAR and hyperspectral imagery. This position is expected to write proposal materials, cost projects and make presentations at professional conferences.

#### **Minimum Experience/Training**

- A minimum of six (6) years' experience in remote sensing and related disciplines.
- Background in GIS or imagery classification and analysis using commercial software such as ERDAS Imagine, ENVI, eCognition, and ESRI Software.
- Understanding of statistics.
- Project coordination/management background.

#### **Minimum Education/Certifications**

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Master's degree preferred.

### **Remote Sensing/GIS Analyst**

The Remote Sensing/GIS Analyst provides technical expertise and analytical services to support operations remote sensing GIS programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Remote Sensing/GIS Analyst leads development of remote sensing projects and methodologies. Responsibilities include deriving information products using image processing methods and tools using remotely sensed data (satellite imagery, aerial photography, LiDAR) and geographic information systems; acting as a technical resource for clients; training and assisting junior-level staff, managing project budgets and developing new products; and processing multispectral imagery, LiDAR and hyperspectral imagery.

#### **Minimum Experience/Training**

- A minimum of four (4) years' experience in remote sensing and related disciplines.
- Background in GIS or imagery classification and analysis using commercial software such as ERDAS Imagine, ENVI, eCognition, and ESRI software.
- Understanding of statistics.
- Project coordination/management background.

#### **Minimum Education/Certifications**

- Bachelor's Degree or higher in GIS, remote sensing or related field.

### **Associate Remote Sensing/GIS Analyst**

The Associate Remote Sensing/GIS Analyst provides technical expertise and analytical services to support operations remote sensing GIS programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Associate Remote Sensing/GIS Analyst is expected to support the analyst or senior analyst on projects. They will have the responsibility to assist in deriving information products using image processing methods and tools using remotely sensed data (satellite imagery, aerial photography, LiDAR) and geographic information systems. The position is not required to supervise other technical staff but will be required to work with other technical staff on projects.

#### **Minimum Experience/Training**

- A minimum of two (2) years' experience in remote sensing, GIS or related disciplines.
- Background in GIS or image analysis using software such as ERDAS Imagine, ENVI, eCognition, and or ESRI software.

#### **Minimum Education/Certifications**

- Bachelor's Degree.

### **Senior Remote Sensing/GIS Technician**

The Senior Remote Sensing / GIS Technician provides technical expertise to support operations remote sensing GIS programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Senior Remote Sensing/GIS Technician assists in the development of new production processes for the integration of new satellite and aerial remote sensing products/services. Duties include image processing and classification of a variety of sensors including SPOT, Landsat, IKONOS, QuickBird and other multi/hyperspectral sensors. Helps train technicians in the application of remote sensing techniques and production processes.

#### **Minimum Experience/Training**

- A minimum of four (4) years' experience in remote sensing and related disciplines.
- Background in imagery classification and analysis using commercial software such as ERDAS Imagine, ENVI, eCognition, and Feature Analyst extension for ESRI.
- Demonstrated technical expertise and competence in related technical job functions.

#### **Minimum Education/Certifications**

- Bachelor's Degree or higher in GIS, remote sensing or related field.
- Experience may be substituted for education.

### **Quality Manager**

The Quality Manager provides management services in oversight and support of quality control programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### **Duties/Responsibilities**

The Quality Manager plans, coordinates, and directs the company's quality assurance program, ensuring products are produced consistent with Sanborn's established standards and procedures and meet the client's requirements. Responsibilities include performing inspection and testing

activities to ensure continuous control over materials, facilities, and products; monitoring internal quality control requirements for new projects and verifying that procedures for both production and subcontractors are in place to meet customer specifications. As well, the quality manager defines, maintains documents and communicates the quality assurance program; pursues corrective actions as necessary; plans, promotes, and organizes training activities and discussions related to product quality and reliability; oversees and supports the ISO program; and performs internal audits on active programs to verify that ISO procedures are being followed as designed.

Minimum Experience/Training

- Five (5) years of management experience.
- Expertise in quality practices, standards, tools and management systems, including ISO 9001:2000 and 27001 series of standards.
- Experience in a leadership capacity promoting quality improvement and conducting internal quality audits.

Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- ISO Internal Auditing certification for 9001:2000 is preferred.
- Master's degree preferred.

### **Senior Program Manager**

The Senior Program Manager provides expertise in program management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

Duties/Responsibilities

The Senior Program Manager has extensive experience managing diverse, large scale, multimillion dollar projects for a variety of clients. Responsibilities include proposal development, financial planning, contract review, subcontract coordination, budget and schedule control, and client coordination.

Minimum Experience/Training

- Fifteen (15) plus years of program management experience.
- Technical expertise in GIS-related disciplines.

Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.
- Master's degree preferred

### **Program Manager**

The Program Manager provides program management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

Duties/Responsibilities

The Program Manager has extensive experience managing diverse, large scale, multi-million dollar projects for a variety of clients. Responsibilities include proposal development, financial planning, contract review, subcontract coordination, budget and schedule control, and client coordination.

Minimum Experience/Training

- Ten (10) plus years of program management experience.
- Program management experience, from inception to completion.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.

### **Offsite Program Manager**

The Offsite Program Manager provides program management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Offsite Program Manager has extensive experience managing diverse, large scale, multimillion dollar on-site projects for a variety of clients. Responsibilities include proposal development, financial planning, contract review, subcontract coordination, budget and schedule control, and client coordination.

#### Minimum Experience/Training

- Fifteen (15) plus years of program management experience.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree in relevant course of study and equivalent work experience.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.
- Master's degree preferred.

### **Senior Project Manager**

The Senior Project Manager provides expertise in project management services in oversight and support of projects, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Senior Project Manager contributes to proposals, oversees project timelines and budgets and works directly with clients to ensure project success. Responsibilities include authoring proposals, developing project budgets and schedules, managing contract and subcontract issues, troubleshooting operational issues that impact projects. The position provides leadership, direction, and oversight to our ongoing mapping programs and/or specific projects. The position is responsible for full project lifecycle management including proposal writing; project scheduling; project deliverables; production and QC; project budgeting and controlling all aspects of projects in accordance with contract documents.

#### Minimum Experience/Training

- Ten (10) plus years of program management experience.
- Program management experience, from inception to completion.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.

### **Project Manager – Remote Sensing**

The Project Manager – Remote Sensing provides management services in oversight and support of remote sensing projects, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### **Duties/Responsibilities**

The Project Manager – Remote Sensing contributes to proposals as assigned, oversees project timelines and budgets and works directly with clients to ensure project success. Responsibilities include developing project budgets and schedules, managing contract and subcontract issues, troubleshooting operational issues that impact projects. The position provides leadership, direction, and oversight to assigned projects. The position includes assigned responsibilities to throughout the project management lifecycle including proposal writing; project scheduling; project deliverables; production and QC; project budgeting and controlling all aspects of projects in accordance with contract documents.

#### **Minimum Experience/Training**

- Five (5) plus years of project coordination experience.
- Technical expertise in GIS-related disciplines.

#### **Minimum Education/Certifications**

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.

### **Project Manager – Photogrammetry**

The Project Manager – Photogrammetry provides management services in oversight and support of photogrammetric services, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### **Duties/Responsibilities**

The Project Manager – Photogrammetry contributes to proposals as assigned, oversees project timelines and budgets and works directly with clients to ensure project success. Responsibilities include developing project budgets and schedules, managing contract and subcontract issues, troubleshooting operational issues that impact projects. The position provides leadership, direction, and oversight to assigned projects. The position includes assigned responsibilities to throughout the project management lifecycle including proposal writing; project scheduling; project deliverables; production and QC; project budgeting and controlling all aspects of projects in accordance with contract documents.

#### **Minimum Experience/Training**

- Five (5) plus years of project coordination experience.
- Technical expertise in GIS-related disciplines.

#### **Minimum Education/Certifications**

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.

### **Associate Project Manager – Remote Sensing**

The Associate Project Manager – Remote Sensing provides essential project management services in oversight and support of remote sensing projects, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Associate Project Manager – Remote Sensing contributes to proposals as assigned, oversees project timelines and budgets and works directly with clients to ensure project success. Responsibilities include assisting in developing project budgets and schedules, managing contract and subcontract issues, troubleshooting operational issues that impact projects.

#### Minimum Experience/Training

- Three (3) plus years of remote sensing project coordination experience.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure preferred.

### **Associate Project Manager – Photogrammetry**

The Associate Project Manager – Photogrammetry provides essential project management services in oversight and support of photogrammetric services, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Associate Project Manager – Photogrammetry contributes to proposals as assigned, oversees project timelines and budgets and works directly with clients to ensure project success. Responsibilities include assisting in developing project budgets and schedules, managing contract and subcontract issues, troubleshooting operational issues that impact projects.

#### Minimum Experience/Training

- Three (3) plus years of photogrammetry project coordination experience.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure preferred.

### **Senior Photogrammetrist**

The Senior Photogrammetrist provides technical expertise and supervisory services to support operations photogrammetric programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Senior Photogrammetrist acts as a technical authority, consulting to employees and clients alike on complex photogrammetric problems. This role uses photogrammetric technology to extract measurements and make maps and interpret data from images. The position is responsible for all phases of mapping and other mensuration requirements, which include planning and supervising survey activities for control, specifying photography or other imagery requirements, helping project management staff to manage projects for mapping or other mensuration requirements and interpretation. Only employees who hold a Certified Photogrammetrist (CP) designation from ASPRS may hold the title of Photogrammetrist.

#### Minimum Experience/Training

- Ten (10) years of experience in photogrammetry, GIS and CADD.

- Project Management experience.

#### Minimum Education/Certifications

- Master's Degree in a geomatics related field such as photogrammetry, land survey, engineering or GIS.
- Experience and professional certification may be substituted for some education.
- Professional Certification of Photogrammetrist from a nationally recognized body such as the American Society of Photogrammetry and Remote Sensing or licensure from a state board or agency.

## II. GEOGRAPHIC INFORMATION SYSTEMS (GIS) SERVICES PROVIDED AT ORDERING ACTIVITY'S LOCATION

### **Program Manager**

The Program Manager provides program management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Program Manager has extensive experience managing diverse, large scale, multi-million dollar projects for a variety of clients. Responsibilities include proposal development, financial planning, contract review, subcontract coordination, budget and schedule control, and client coordination.

#### Minimum Experience/Training

- Ten (10+) plus years of program management experience.
- Program management experience, from inception to completion.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.
- Project Manager Professional (PMP) Certification or other relevant certification/licensure.

### **Deputy Program Manager**

The Deputy Program Manager provides essential program management services in oversight and support of programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Deputy Program Manager assists the program manager with management of large scale programs, monitoring project timelines and working with the client on routine communications.

#### Minimum Experience/Training

- Five (5) years of project management exposure.
- Technical expertise in GIS-related disciplines.

#### Minimum Education/Certifications

- Bachelor's Degree or higher in a relevant field.

### **Project Analyst**

The Project Analyst provides technical expertise and analytical services to support operations project management programs, resources and staff, and provides similar technical expertise in

support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Project Analyst is responsible for maintaining and tracking program-wide workload statistics and distribution across three separate offices, as well as reporting status of individual projects in concert with client objectives. Responsibilities include maintaining and tracking project workload statistics and workload distribution for program-level evaluation, monitoring project schedules, collecting detailed project status and generating status reports for each project, assisting the creation of business cases, and understanding major systems functions and impacts of customer requests, and effectively communicating the impact/implications.

#### Minimum Experience/Training

- Two (2) years professional experience.
- Ability to use email and calendaring tools (e.g., Microsoft Outlook), computer-based spreadsheets and word processing is required.
- Advanced experience with Microsoft® Excel and working knowledge of Microsoft Project is required.

#### Minimum Education/Certifications

- Bachelor's Degree from an accredited college or university in a relevant field.
- Exposure to technology courses of study a plus.

### **Project Manager**

The Project Manager provides management services in oversight and support of projects, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Project Manager position requires experience bringing together teams and successfully managing projects. The position works closely with clients; executes the quality control plan, manages production schedules to meet delivery expectations, and provides regular progress reports. Responsibilities include overseeing all aspects of production, maintaining staffing levels, providing leadership by developing a management team and providing each staff member with a growth path, ensuring fair compensation, assisting with benefit programs, and motivating staff with an overall view of progress. Other responsibilities include creating reports, managing assigned budget, participating in strategic planning sessions and attending meetings.

#### Minimum Experience/Training

- Demonstrated success as project manager, overseeing work assignments and serving as the primary point of contact with the client.

#### Minimum Education/Certifications

- Bachelor's Degree in business or related field.
- Master's Degree preferred. The equivalent combination of related education and experience will be considered.

### **Library Manager**

The Library Manager provides management services in oversight and support of data management programs, resources and staff, and provides oversight and coordination of similar applicable external resources within the scope of Environmental Consulting and Geographic Information systems services

#### Duties/Responsibilities

The Library Manager assists the Project Manager in leading the decision-support team and library functions in support of the client mission requiring advanced applications of library sciences. The position is responsible for the quality of all products and services performed by the library team, managing production schedules to meet client delivery expectations, and providing weekly progress reports. Other duties including coordinating with staff to ensure consistent quality control and training plans between multiple client installations, leading and conducting team-area quality control activities and documents findings, and providing recommendations as to staffing and promotion. When applicable, this role recommends process improvements and leads the conversion of analog library into a digital library using state-of-the-art library science ensuring appropriate handling, filing, distribution, and safe-guarding of all library source materials, including inventorying of materials.

#### Minimum Experience/Training

- Three (3) years or more of professional experience managing analog and/or digital records and materials. Specific experience in records management, library/information science and/or archival science is required.
- Demonstrated success in managing the overall coordination of work assignments for employees and/or teams.
- Experience with analog and digital filing systems (e.g. medical, legal, business) and radiofrequency identification (RFID) applications in records and materials management is preferred.

#### Minimum Education/Certifications

- A minimum of a Bachelor's Degree.
- Master's Degree in Library Science (MLS) is preferred.

### **Geospatial Team Lead**

The Geospatial Team Lead provides technical expertise and supervision to support operations geospatial programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Geospatial Team Lead provides functional leadership in geospatial processing and training and assists in managing onsite personnel and subcontractor staff. The position coordinates and executes the quality control plan and manages production schedules to meet client delivery expectations; oversees geospatial production; provides mid-level supervisory responsibility by assisting in staff management; develops and maintains geospatial training plans, course materials, and schedules; maintains employee training records; collaborates with other staff to identify and correct geospatial/image problems or issues and provides leadership in remote sensing, by sharing technical expertise and educating production staff in the concepts of remote sensing, image processing, and other geospatial technologies.

#### Minimum Experience/Training

- Five (5) years of professional experience.
- Experience working in organizations providing photo interpretation, remote sensing, natural resource data collection, mapping, geospatial services, and GIS technologies.
- Demonstrated success in managing the overall coordination of work assignments for employees and/or teams.
- Prior exposure to geospatial application approaches.

#### Minimum Education/Certifications

- Bachelor's Degree is required in a natural or physical science, or geography discipline or relevant field.
- A graduate Degree in a natural or physical science or geography discipline with GIS certification is preferred.

### **Data Collection Team Lead**

The Data Collection Team Lead provides technical expertise and supervision to support operations data acquisition programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### **Duties/Responsibilities**

The Data Collection Team Lead provides functional leadership in data collection and location certification processing and training, as well as assisting in managing onsite personnel and subcontractor staff. Responsibilities include coordinating and executing the quality control plan; managing production schedules; developing and maintaining data collection and location certification training plans, course materials, and schedules; implementing nationally consistent data collection and location certification training and quality control plans; and working with Senior Data Collectors to manage the oversight of production.

#### **Minimum Experience/Training**

- Five (5) years of professional experience.
- Experience working in organizations providing photo interpretation, remote sensing, natural resource data collection, mapping, geospatial services, and GIS technologies.
- Demonstrated success in managing the overall coordination of work assignments for employees and/or teams.

#### **Minimum Education/Certifications**

- A minimum of a bachelor's Degree is required in a natural or physical science, or geography discipline.
- A graduate Degree in a natural or physical science, or geography discipline with GIS certification is preferred.

### **Senior Data Collector**

#### **Duties/Responsibilities**

The Senior Data Collector manipulates geospatial information to produce mapping products using a graphics workstation, trace digitizing, and/or construction digitizing. The primary responsibility of the position is to conduct quality control functions in accordance with client procedures and protocols. As well, this position serves as a geospatial or data collection group leader of four to six staff members, providing technical guidance and work direction. Other duties include conducting advanced-level aerial and image interpretations of landscape features, and the identification of landscape change (supporting data collection functions). The position exhibits technical leadership, works independently with little supervision, and is able to develop technical solutions to non-standard situations.

#### **Minimum Experience/Training**

- Demonstrated proficiency and experience working in a GIS environment, conducting advanced aerial photo and image interpretation of landscape features/data collection.
- Background in map layout design and GIS data formats.
- Prior exposure to geospatial application approaches.

#### **Minimum Education/Certifications**

- High School diploma and appropriate college level courses or training in geographic sciences.
- An associate's Degree or certification in GIS or a related field preferred; experience and specialized training may be substituted for education.

### **Data Collector**

#### Duties/Responsibilities

The Data Collector has demonstrated proficiency in tasks of a Data Collector in Training II. Responsibilities include conducting intermediate and advanced aerial and image interpretations, image registration and supporting data collection functions in accordance with client procedures and protocols, maintaining records and reports, and performing image-to-image registration.

#### Minimum Experience/Training

- Demonstrated proficiency in Data Collector in Training II tasks.
- Experience with photo interpretation and/or data collection.
- Knowledge in map layout design and understanding of GIS data formats.
- Awareness of GIS application approaches.
- Specialized training (e.g. ESRI training courses) a plus.

#### Minimum Education/Certifications

- High School diploma and appropriate college level courses or training in geographic sciences.
- An associate's Degree or certification in GIS or a related field preferred; experience and specialized training may be substituted for education.

### **Data Collector in Training II**

#### Duties/Responsibilities

The Data Collector in Training II has demonstrated proficiency in the tasks of a Data Collector in Training I. Responsibilities includes conducting basic and intermediate aerial and image interpretations, image registration and supporting data collection functions in accordance with client procedures and protocols, maintaining records and reports, and performing image-to-image registration. Technician II employees are able to work independently on most standard cases and with supervision on non-standard cases.

#### Minimum Experience/Training

- Demonstrated proficiency in Data Collector in Training I tasks.
- Experience with photo interpretation and/or data collection.
- Knowledge in map layout design and understanding of GIS data formats.
- Awareness of GIS application approaches.
- Specialized training (e.g. ESRI training courses) a plus.

#### Minimum Education/Certifications

- High School diploma and appropriate college level courses or training in geographic sciences.
- An associate's Degree or certification in GIS or a related field preferred; experience and specialized training may be substituted for education.

### **Data Collector in Training I**

#### Duties/Responsibilities

The Data Collector in Training I is in training to learn how to manipulate a geographic information system (GIS) to produce a mapping product using a graphics workstation, trace digitizing, and/or construction digitizing. Responsibilities includes conducting basic aerial and image interpretations, image registration and supporting data collection functions in accordance with client procedures and protocols, maintaining records and reports, and performing image-to-image registration.

#### Minimum Experience/Training

- Specialized training (e.g. ESRI training courses) a plus.
- Experience with photo interpretation and/or data collection.
- Knowledge in map layout design and understanding of GIS data formats.
- Awareness of GIS application approaches.

#### Minimum Education/Certifications

- High School diploma and appropriate college level courses or training in geographic sciences.
- An associate's Degree or certification in GIS or a related field preferred; experience and specialized training may be substituted for education.

### **Natural Resource Inventory Materials Lead**

The Natural Resources Inventory Materials Lead provides technical expertise and supervision to support operations inventory and data management programs, resources and staff, and provides similar technical expertise in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The NRI Materials Lead assists the Library Manager in managing onsite personnel and subcontractor staff, executing the quality control plan, managing production schedules to meet client delivery expectations, and providing weekly progress reports. Responsibilities include overseeing client projects and materials handling to ensure schedule compliance, quality control, and client satisfaction. The position will oversee, as assigned, training for employees performing library activities, provide technical support to library team, and serve as the first line of technical assistance before a concern is elevated. Other duties include weekly and daily reporting and assisting management in conducting hiring, performance reviews, and promotions.

#### Minimum Experience/Training

- Demonstrated proficiency in managing the overall coordination of work assignments for employees, subcontractors and/or teams.

#### Minimum Education/Certifications

- Bachelor's Degree in related field.
- The equivalent combination of related education and experience will be considered.

### **Library Technician II**

The Library Technician II provides technical knowledge to support operations data management programs, resources and staff, and provides similar technical knowledge in support of external resources within the scope of Environmental Consulting and Geographic Information systems services.

#### Duties/Responsibilities

The Library Technician II manages client source materials, in adherence to client established procedures and protocols. This position carries out functions and activities in support of various tasks. Responsibilities include documenting quality control findings; making and/or directing appropriate corrections, and making recommendations for additional corrective and/or

preventative measures. The position also arranges for and provides for safe storage of records and documents, assists in the management of tracking systems, and independently uses spreadsheets and/or client systems to enter, access, or retrieve data, designs library forms and spreadsheets to enhance and streamline library processes and purges materials from client files in accordance with established protocols, policies and procedures.

Minimum Experience/Training

- Demonstrated proficiency accomplishing the tasks of Library Tech I.
- Demonstrated proficiency using computer and software packages, such as Microsoft Office products.

Minimum Education/Certifications

- High school diploma or higher.

### **Library Technician I**

Duties/Responsibilities

The Library Technician I manages client source materials, in adherence to established procedures and protocols, in support of the client mission. Responsibilities include inventorying segment folders and file materials, identifying, documenting, correcting and reporting filing errors, conducting scanning of imagery and ancillary materials, maintaining records and reports, and independently programming and placing tracking tags into folders.

Minimum Experience/Training

- Proficiency using computer and software packages, such as Microsoft Office products.

Minimum Education/Certifications

- High school diploma or higher.

### **Project Management Specialist**

The Project Management Specialist provides technical expertise, analytical services, and collaboration skills to support project management programs, resources and staff, and provides similar technical expertise and collaboration skills in support of external resources within the scope of Environmental Consulting and Geographic Information systems services

Duties/Responsibilities

The Project Management Specialist works with Federal Program Managers to develop detailed project plans, timelines, and milestones. Report documents will range from Gantt charts, PERT analysis, to the annual published FHTET work plan and project management website.

Minimum Experience/Training

- Two (2+) plus years of experience in the design, development and maintenance of technical project plans.
- Proficiency in Microsoft Project Professional Edition and Server.

Minimum Education/Certifications

- Associate Degree in appropriate field of study; may be substituted for one and one half (1 ½) years of general experience.
- A Bachelor's Degree in appropriate field of study will be considered as the equivalent to three (3) years of general experience.
- Microsoft Project certification is recommended though not required.

### **Remote Sensing Analyst II**

Duties/Responsibilities

The Remote Sensing Analyst II works independently or with very general technical direction on complex resource assessment issues and problems, performs all phases of image analysis work including conceptualization of problems to be solved, analysis of alternative solutions, geospatial data base construction and verification, integration of remotely sensed data, automation of processes, data analysis, and preparation of products. The position is called upon to write papers for grey literature or peer reviewed literature journals, develop procedure documentation and develop presentation materials and present project results to small and large groups. Other duties include providing training in the use and application of Remote Sensing and GPS for real world applications and occasionally working with sensors such as multi-spectral scanners, hyperspectral imagers, and other electronic mechanisms for collecting natural resource data.

Minimum Experience/Training

- Five (5) years of specialized experience in the application of Remote Sensing to the analysis of natural resources issues or emphasizing the integration of remote sensing data into GIS.

Minimum Education/Certifications

- BS/BA Degree in Natural Resources, Geography, Landscape Architecture, or similar relevant field.

### **Remote Sensing Analyst I**

Duties/Responsibilities

The Remote Sensing Analyst I works independently or with very general technical direction on complex resource assessment issues and problems, performs all phases of image analysis work including conceptualization of problems to be solved, analysis of alternative solutions, geospatial data base construction and verification, integration of remotely sensed data, automation of processes, data analysis, and preparation of products. The position will be called upon to develop presentation materials and present project results to small and large groups. This role provides training in the use and application of Remote Sensing and GPS for real world applications and occasionally works with sensors such as multi-spectral scanners, hyperspectral imagers, and other electronic mechanisms for collecting natural resource data.

Minimum Experience/Training

- Two (2) years of specialized experience in the application of Remote Sensing to the analysis of natural resources issues or emphasizing the integration of remote sensing data into GIS.

Minimum Education/Certifications

- BS/BA Degree in Natural Resources, Geography, Landscape Architecture, or similar relevant field.

### **GIS Analyst Level IV**

Duties/Responsibilities

The GIS Analyst Level IV works independently and provide technical assistance and guidance on GIS issues and statistical techniques, solve and provide assistance to others on GIS task oriented problems with only a general description of the desired end product, be responsible for all database requirement models, and details within development task, conduct technical reviews of other GIS analyst work when necessary to solve problems or improve functionality, write papers, develop procedure documentation, develop presentation materials, present projects results to small and large groups, and provide training to others in the use and application of GIS for real world applications. The position will be required to have advanced knowledge of GIS, raster, vector and statistical techniques for analyses, demonstrated ability to solve natural resource related problems with ESRI ARC software products, SDE and/or ArcServer, and will also have knowledge and use of statistical software packages such as S-Plus, R, and ArcGIS Spatial AML, Python, and GDAL.

#### Minimum Experience/Training

- Three (3) years' experience in the application of GIS and statistical techniques to the analysis of natural resource issues.

#### Minimum Education/Certifications

- Bachelor's Degree.
- A Master's Degree or PhD in Natural Resources, Natural Sciences, Landscape Architecture, GIS or related field preferred.

### **GIS Analyst Level III**

#### Duties/Responsibilities

The GIS Analyst Level III develops plans for and create applications and other assigned GIS tasks, will be responsible for all database requirements and details within development tasks, write papers, develop procedure documentation, develop presentation materials and present projects to small and large groups. The position also provides training to others in the use and applications of GIS for real world applications and will have advanced GIS, raster and vector analysis knowledge, experience with data development, SDE and ArcServer, and demonstrated ability to solve natural resource related problems and database development with ERSI ARC software products.

#### Minimum Experience/Training

- Three (3) years' experience in the application of GIS techniques to the analysis of natural resource issues.

#### Minimum Education/Certifications

- A Bachelor's Degree in Natural Resources, Natural Sciences, Landscape Architecture or related field.
- A Master's Degree in Natural Resources, Natural Sciences, Landscape Architecture, GIS or related field preferred.

### **GIS Analyst Level II**

#### Duties/Responsibilities

The GIS Analyst Level II has technical competency in cartographic productions, GIS data development and QA/QC of spatial data, requires little assistance accomplishing assigned tasks according to plans, write papers, develop procedure documentation and develop presentation materials, presents project results to small and large groups, provides training in the use and application of GIS for real world applications. The position will be competent in producing maps, using raster data, and integration and/or analyzing remotely sensed data in a GIS, will have knowledge of ESRI ARC software products, and will continue to integrate new technology and techniques in the use of application of GIS data.

#### Minimum Experience/Training

- Three (3) years of experience in the application of GIS techniques to the natural resource issues.

#### Minimum Education/Certifications

- BS/BA Degree in Natural Resources, Natural Sciences, Landscape Architecture or related field.

### **GIS Analyst Level I**

#### Duties/Responsibilities

The GIS Analyst Level I has proficient and technical competency in GIS data development, and will attain, prepare and document GIS data, digitize and manipulate map projections, have

knowledge of ESRI ARC software products, and continue to integrate new technology and techniques in the use of application of GIS data.

Minimum Experience/Training

- One (1) year of experience in the application of GIS techniques in natural resource management.

Minimum Education/Certifications

- Bachelor's Degree in Natural Resources, Natural Sciences, or Landscape Architecture or related field is a plus.

### **Cartographer/GIS Analyst (Senior)**

The Senior Cartographer/GIS Analyst provides expert level functional skills in digital cartographic and GIS mapping project tasks which require thorough knowledge of cartographic mapping, cartographic software and hardware, map lithography and GIS technical subject matter. Has expert knowledge and skill in the use of Adobe Creative Suite software and advanced knowledge and skill in the use of ESRI ArcGIS and related software.

Duties/Responsibilities

The Senior Cartographer/GIS Analyst plans, designs, and prepares simple to complex cartographic compilations by integrating the most recent digital cartographic, map publishing, and GIS mapping technologies to basic cartographic map production principals.

The Senior Cartographer/GIS Analyst provides technical direction, map design, resolution of non-routine cartographic problems, implementation and documentation of map production and design, and integration of the final publication or product design.

Minimum Education/Certifications

- Bachelor's degree in Cartography, Geography or Earth Sciences.

Minimum Experience/Training

- Ten (10) years of intensive and progressive experience with digital cartography, GIS technology and map making.

Or

Alternate Requirements

- Twenty (20) years of intensive and progressive experience with digital cartography, GIS technology and map making accompanied by a High School degree or equivalent.

### **Cartographer/GIS Analyst (Intermediate)**

The Intermediate Cartographer/GIS Analyst provides high level functional skills in digital cartographic and GIS mapping project tasks which require a working knowledge of cartographic mapping, cartographic software and hardware, map lithography, and GIS technical subject matter. Has advanced knowledge and skill in the use of Adobe Creative Suite, ESRI ArcGIS and related software.

Duties/Responsibilities

The Intermediate Cartographer/GIS Analyst plans, designs, and prepares simple to complex cartographic compilations by integrating the most recent digital cartographic, map publishing and GIS mapping technologies to basic cartographic map production principals.

The Intermediate Cartographer/GIS Analyst assists with implementation and documentation of map publication, resolution of non-routine cartographic problems and design and integration of the final publication or product design.

Minimum Education/Certifications

- Bachelor's degree in Cartography, Geography or Earth Sciences

Minimum Experience/Training

- Four (4) years of intensive and progressive experience with digital cartographic and GIS technology, and map making.

Or

Alternate Requirements

- Fourteen (14) years of intensive and progressive experience with digital cartographic and GIS technology, and map making accompanied by a High School degree or equivalent.

### **Cartographer/GIS Analyst (Associate)**

The Associate Cartographer/GIS Analyst provides skills in digital cartographic and GIS mapping project tasks, which requires a basic knowledge of cartographic mapping, cartographic software and hardware, map lithography, and GIS technical subject matter. Has basic knowledge and novice skill in the use of Adobe Creative Suite, ESRI ArcGIS and related software.

Duties/Responsibilities

The Associate Cartographer/GIS Analyst assists in planning, design, and preparation of simple to moderate level cartographic compilations by integrating the most recent digital cartographic, map publishing, and GIS mapping technologies to basic cartographic map production principals. The Associate Cartographer/GIS Analyst assists with implementation and documentation in map production and design and integration of the final publication or product design. Resolves routine cartographic problems.

Minimum Education/Certifications

- Bachelor's degree in Cartography, Geography or Earth Sciences.

Minimum Experience/Training

- None required but some experience with digital cartographic and GIS technology, and map making is desirable.

Or

Alternate Requirements

- Ten (10) years of intensive and progressive experience with digital cartographic and GIS technology, and map making accompanied by a High School degree or equivalent.

### **Remote Sensing/GIS Analyst (Senior)**

The Senior Remote Sensing/GIS Analyst's responsibilities may include: the coordination and oversight of GIS and Remote Sensing based data capture and analysis projects. Expert knowledge of and demonstrated skill in the use of the following software: ArcGIS (ESRI), Imagine (ERDAS), Definiens Developer (Trimble), ENVI/IDL (Exelis), Geomatica (PCI), R, Matlab (Mathworks)Microsoft, as well as numerous other programs running on a client's Intra/Extranet servers. Tasks may include: predictive spatial modeling, topographic analysis, algorithm development for spatio-temporal analyses, digital image pre-processing including geo-registration, orthorectification, and atmospheric/radiometric correction, image analysis and classification, advanced multivariate statistical analysis for modeling and image processing, and advanced knowledge of radiative transfer models.

Additional responsibilities may include: database management and report preparation for various end-users, review and integration of ancillary GIS data from outside sources, correlation of reference field data to GIS layers for model development and accuracy assessment, testing of new remote sensing data sources and image processing software to determine applicability to project objectives, and internal/external technical transfer of analysis systems and processes. Interface with the data management team, understand end user needs and objectives, optimize workflow, research and keep abreast of all available and applicable data, technology and standards for GIS output, as well as, integrating internal and external resources (staff hardware/software support services) necessary to meet project objectives. Import and export any

spatial and/or tabular data with the GIS and remote sensing software. Manipulate and edit in GIS/RS mapping software. Perform advanced programming in scientific languages, such as R, Matlab and IDL, to automate complex image processing and spatio-temporal analytical tasks. Helps coordinate field data for calibration/validation, assess hardware/software needs (i.e. GPS, specialized equipment, field computers, etc.) and the data flow processes involved. Development of pattern recognition, anomaly detection and multi-temporal data analysis algorithms for analyzing multispectral, hyperspectral and LiDAR datasets. Demonstrated previous success in developing remote sensing algorithms for multispectral, hyperspectral, or LiDAR datasets.

Minimum Education/Certifications

- Master's degree from an accredited research institution in Forestry, Ecology, Soils, Geology, Hydrology, Geography, Computer Science, Mathematics or Earth Science.
- A PhD and strong publication record in peer-reviewed scientific literature is highly desired for the senior-level position.

Minimum Experience/Training

- Ten (10) years of intensive and progressive experience in a field requiring extensive use of GIS and remote sensing related tools.

### **Remote Sensing/GIS Analyst (Intermediate)**

Duties/Responsibilities

The Intermediate Remote Sensing/GIS Analyst's responsibilities may include: the coordination and oversight of GIS and Remote Sensing based data capture and analysis projects. Expert knowledge of and demonstrated skill in the use of the following software: ArcGIS (ESRI), Imagine (ERDAS), Definiens Developer (Trimble), ENVI/IDL (Exelis), Geomatica (PCI), R, Matlab (Mathworks), as well as numerous other programs running on a client's Intra/Extranet servers. Tasks may include: predictive spatial modeling, topographic analysis, algorithm development for spatio-temporal analyses, digital image pre-processing including geo-registration, orthorectification, atmospheric/radiometric correction, image classification, and advanced multivariate statistical analysis for modeling and image processing.

Additional responsibilities may include: database management and report preparation for various end-users, review and integration of ancillary GIS data from outside sources, correlation of reference field data to GIS layers for model development and accuracy assessment, testing of new remote sensing data sources and image processing software to determine applicability to project objectives, and internal/external technical transfer of analysis systems and processes.

As directed, the Intermediate Remote Sensing/GIS Analyst will: provide requested data to end users via a GIS database or hard copy products; take queries from team members; create projects and print maps and reports; perform a vast array of spatial and tabular queries using the available tools in the GIS and remote sensing software; import and export any spatial and/or tabular data with the GIS and remote sensing software; manipulate and edit scripts for GIS/RS software in various languages, such as Python, EML, EASI or IDL to automate tasks. Assist field data integration, accuracy assessment, hardware/software, (GPS, field computers, etc.) and the data flow processes involved.

Minimum Education/Certifications

- Bachelor's degree in Forestry, Ecology, Soils, Geology, Hydrology, Geography, Computer Science, Mathematics or Earth Science.
- A Master's degree in is highly desirable for the associate-level position.

Minimum Experience/Training

- Five (5) years of intensive and progressive experience in a field requiring extensive use of remote sensing and GIS related tools.

Or

#### Alternate Requirements

- Fifteen (15) years of intensive and progressive experience in a field requiring extensive use of remote sensing and GIS related tools accompanied by a High School degree or equivalent.

### **Remote Sensing/GIS Analyst (Associate)**

#### Duties/Responsibilities

The Associate Remote Sensing/GIS Analyst's responsibilities may include assisting with GIS and remote sensing based data capture and analysis projects. Expert knowledge of and demonstrated skill in the use of the following software: ArcGIS (ESRI), Imagine (ERDAS), Definiens Developer, ENVI/IDL (ITTVIS), SAS, R, Oracle and Access (Microsoft), as well as numerous other programs running on a client's Intra/Extranet servers. Tasks may include: topographic analysis, surface modeling, digital image pre-processing including geo-registration, orthorectification and atmospheric/radiometric correction, image analysis and classification, database population and auditing, cartography, training, and creation of FGDC compliant metadata.

Additional responsibilities may include: providing assistance with database management and report preparation for various customers, review and integration of ancillary GIS data from outside sources, correlation of reference field data to GIS layers for model development and accuracy assessment, and testing of new remote sensing data and software to determine applicability to project objectives.

As directed, the Associate Remote Sensing/GIS Analyst will provide requested data to end users via a database "front end" or hardcopy products. Take queries from team members; create projects and print maps and reports. Perform a vast array of spatial and tabular queries using the available tools in the GIS and remote sensing software. Import and export any spatial and/or tabular data with the GIS and remote sensing software.

The Associate Remote Sensing/GIS Analyst manipulates and edits in GIS and remote sensing mapping software. Performs basic programming in appropriate languages, such as Python, EML, or EASI to automate GIS/remote sensing tasks. Assists in field data integration, accuracy assessment, hardware/software maintenance (GPS, field computers, etc.) and the data flow processes.

#### Minimum Education/Certifications

- Bachelor's degree in Forestry, Ecology, Soils, Geology, Hydrology, Geography, Computer Science, Mathematics or Earth Science.
- A Master's degree in any of the same disciplines accounts for one year experience.

#### Minimum Experience/Training

- One (1) year of intensive and progressive experience in a field requiring extensive use of remote sensing and GIS related tools.

Or

#### Alternate Requirements

- Eleven (11) years of intensive and progressive experience in a field requiring extensive use of remote sensing and GIS related tools accompanied by a High School degree or equivalent.

### **Natural Resources GIS Analyst/Programmer (Senior)**

#### Duties/Responsibilities

The Senior Natural Resources GIS Analyst/Programmer's responsibilities may include: the coordination of GIS projects, building and maintaining a GIS system, and the building and maintaining of a corporate-wide Intranet site to disseminate GIS maps. Expert knowledge of and demonstrated skill in the use of the following software: ESRI GIS products including ArcGIS,

ArcServer for various interactive mapping themes and ArcGIS, SDE Oracle, and Access (Microsoft) databases and numerous other programs running on a client's Intra/Extranet servers. Tasks may include 3D modeling, slope, volume, area, hillshade analysis, raster rectification, spatial modeling, 3D animations, surface modeling, image analysis, cartography, demographic modeling, travel time and cost analysis, dynamic segmentation, route analysis, training and creation of FGDC metadata.

Additional responsibilities may include: providing any combination of GPS and GIS services to create original mapping, format conversion, infrastructure analysis and facilities management services, database management and report preparation for various customers. Projects require a multitude of applications for a variety of disciplines including, forestry, wildlife, fire, pest management, inventory and modeling, land use analysis, hydrographic and hydrologic profiling, digital orthophoto imagery preparation, planimetric mapping services, demographics, and training.

The Senior Natural Resources GIS Analyst/Programmer will interface with the data management team, understand end user needs and objectives, optimize workflow, research and keep abreast of all available and applicable data, technology and standards for geographic information systems (GIS) output, as well as, integrating internal and external resources (staff, hardware/software, support services) necessary to meet project objectives. If appropriate, provide requested data to end users via a database "front end", Internet GIS or other end user interface for GIS applications. Take queries from team members; create projects and print maps and reports. Perform a vast array of spatial and tabular queries using the available tools in the GIS software, including integration with relational databases. Import and export any spatial and/or tabular data with the GIS software. Identify, categorize and update major GIS feature classes.

The Senior Natural Resources GIS Analyst/Programmer manipulates and edits using GIS Map software. Performs programming in appropriate languages, such as Visual Basic .Net, C++, C#, and Python to automate GIS tasks and provide tools for others. Converts outdated routines to run on the latest GIS and relational database system. Coordinates with Database Administrator to integrate collected data (tabular, spatial and otherwise) into a comprehensive database. Helps coordinate field data collection, accuracy, hardware/software (GPS, field computers, etc.) and the data flow processes involved.

Minimum Education/Certifications

- Bachelor's degree in Forestry, Ecology, Wildlife Biology, Soils, Geology, Hydrology, Geography or Earth Science.
- Master's degree from an accredited college or university in GIS is highly desired.

Minimum Experience/Training

- Ten (10) years of intensive and progressive experience in a field requiring extensive use of GIS and related tools.

Or

Alternate Requirements

- Twenty (20) years of intensive and progressive experience in a field requiring extensive use of GIS and related tools accompanied by a High School degree or equivalent.

### **Natural Resources GIS Analyst/Programmer (Intermediate)**

Duties/Responsibilities

The Intermediate Natural Resources GIS Analyst/Programmer's responsibilities may include, building and maintaining a GIS system, and the building and maintaining of a corporate-wide Intranet site to disseminate GIS maps. Knowledge of and demonstrated skill in the use of the following software: ESRI GIS products including ArcGIS, ArcServer for various interactive

mapping themes, and SDE, Oracle and Access (Microsoft) databases and numerous other programs running on a client's Intra/Extranet servers. Tasks may include 3D modeling, slope, volume, area, hillshade analysis, raster rectification and registration, spatial modeling, 3D animation, surface modeling, image analysis, cartography, demographic modeling, travel time and cost analysis, dynamic segmentation, route analysis, training and creation of FGDC metadata. Additional responsibilities may include: providing any combination of GPS and GIS services to create original mapping, format conversion, infrastructure analysis and facilities management services, database management and report preparation for various customers. Projects require a multitude of applications for a variety of disciplines including, forestry, wildlife, fire, pest management, inventory and modeling, land use analysis, hydrographic and hydrologic profiling, digital orthophoto imagery preparation, planimetric mapping services, demographics, and training.

As directed, the Intermediate Natural Resources GIS Analyst/Programmer will perform a vast array of spatial and tabular queries using the available tools in the GIS software. Import and export any spatial and/or tabular data with the GIS software. Identify, categorize and update major GIS feature classes.

The Intermediate Natural Resources GIS Analyst/Programmer manipulates and edits using GIS map software. Performs programming in appropriate languages, such as Visual Basic .Net, C++, C# and Python to automate GIS tasks and provide tools for others. Converts out dated routines to run on the latest GIS and relational database systems. Coordinates with Database Administrator to integrate collected data (tabular, spatial and otherwise) into a comprehensive database. Helps coordinate field data collection, accuracy, hardware/software, (GPS, field computers, etc.) and the data flow processes involved.

Minimum Education/Certifications

- Bachelor's degree in Forestry, Ecology, Wildlife Biology, Soils, Geology, Hydrology, Geography or Earth Science.
- Master's degree from an accredited college or university in GIS is highly desired.

Minimum Experience/Training

- Five (5) years of intensive and progressive experience in a field requiring extensive use of GIS and related tools.

Or

Alternate Requirements

- Fifteen (15) years of intensive and progressive experience in a field requiring extensive use of GIS and related tools accompanied by a High School degree or equivalent.

### **Natural Resources GIS Analyst/Programmer (Associate)**

Duties/Responsibilities

The Associate Natural Resources GIS Analyst/Programmer's responsibilities may include: assisting in the building and maintaining of a GIS, and the building and maintenance of a corporate-wide Intranet site to disseminate GIS maps. Knowledge in the use of the following software: ArcGIS (ESRI) and ArcSDE for various interactive mapping and editing tasks. Tasks may include 3D modeling, slope, volume, area, hillshade analysis, raster rectification and registration, spatial modeling, 3D animations, surface modeling, image analysis, cartography, demographic modeling, travel time and cost analysis, dynamic segmentation, route analysis, training and creation of FGDC metadata.

Additional responsibilities may include: providing assistance with any combination of GPS and GIS services to create original mapping, format conversion, infrastructure and analysis and facilities management services, database management and report preparation for various customers. Projects require a multitude of applications for a variety of disciplines including

forestry, wildlife, fire, pest management, inventory and modeling, land use analysis, hydrographic and hydrologic profiling, digital orthophoto imagery preparation, planimetric mapping services, and demographics.

As directed, the Associate Natural Resources GIS Analyst/Programmer assists in a vast array of spatial and tabular queries using the available tools in the GIS software. Import and export any spatial and/or tabular data with the GIS software. Identify, categorize and update major GIS feature classes.

The Associate Natural Resources GIS Analyst/Programmer manipulates and edits using GIS Map software. Performs simple programming in appropriate languages, such as Visual Basic .Net, C++, C#, and Python to automate GIS tasks and provide tools for others. Assists in the conversion of outdated routines to run on the latest GIS and relational database systems.

Coordinates with the Database Administrator to integrate collected data (tabular, spatial and otherwise) into a comprehensive database. Assists with field data collection, accuracy, hardware/software (GPS, field computers, etc.) and the data flow processes involved.

Minimum Education/Certifications

- Bachelor's degree in Forestry, Ecology, Wildlife biology, Soils, Geology, Hydrology, Geography or Earth Science.
- Master's degree from an accredited college or university in GIS is highly desired.

Minimum Experience/Training

- One (1) year of intensive and progressive experience in a field requiring extensive use of GIS and related tools.
- Master's degree in GIS accounts for one (1) year experience.

Or

Alternate Requirements

- Eleven (11) years of intensive and progressive experience in a field requiring extensive use of GIS and related tools accompanied by a High School degree or equivalent.

### **GIS Mapping Technician (Senior)**

The Senior GIS Mapping Technician provides high-level functional and analysis skills in Geographic Information Systems (GIS) integration, documentation and implementation; assists with problem solving, which requires a thorough knowledge of GIS technical subject matter.

Applies principles and methods of the functional area to difficult problems in technical areas to arrive at automated solutions.

Duties/Responsibilities

The Senior GIS Mapping Technician plans, designs, and prepares technical reports and related documentation. Plans, designs, and accomplishes work related to data capture, scanning, digitizing, controlled aerial photo-to-map data transfer, map attributing, editing, plotting and reporting. Completes simple to highly complex GIS tasks for database queries, feature class edgematching, overlaying, updating, appending, map design, map edit, and data conversion.

Minimum Education/Certifications

- High School graduate or equivalent.

Minimum Experience/Training

- Ten (10) years of intensive and progressive experience in GIS technology, database and analysis of subject matter closely related to the work to be accomplished.

### **GIS Mapping Technician (Intermediate)**

The Intermediate GIS Mapping Technician provides mid-level functional and analysis skills in Geographic Information Systems (GIS) integration, documentation, and implementation, assists

with problem solving, which requires a thorough knowledge of GIS technical subject matter. Applies principles and methods of the functional area to difficult problems in technical areas to arrive at automated solutions.

#### Duties/Responsibilities

The Intermediate GIS Mapping Technician designs and prepares technical reports and related documentation. Performs routine data capture, scanning, digitizing, controlled aerial photo-to-map data transfer, map attributing, editing, plotting and reporting. Completes simple to moderately complex GIS tasks for database queries, feature class edgematching, overlaying, updating, appending, map design, map edit and data conversion.

#### Minimum Education/Certifications

- High School graduate or equivalent.

#### Minimum Experience/Training

- Five (5) years of intensive and progressive experience in GIS technology, database and analysis of subject matter closely related to the work to be accomplished.
- A GIS Technical Certificate may substitute for one (1) year experience.

### **GIS Mapping Technician (Associate)**

The Associate GIS Mapping Technician provides basic-level skills in Geographic Information Systems (GIS) integration, documentation, and implementation. Assists with problem solving, which requires a thorough knowledge of GIS technical subject matter.

#### Duties/Responsibilities

The Associate GIS Mapping Technician designs and prepares technical reports and related documentation. Performs routine data capture, scanning, digitizing, controlled aerial photo-to-map data transfer, map attributing, editing, plotting and reporting. Completes simple GIS tasks, including database queries, feature class edgematching, overlaying, updating, appending, map design, map edit and data conversion.

#### Minimum Education/Certifications

- High School graduate or equivalent.

#### Minimum Experience/Training

- One (1) year of intensive and progressive experience in GIS technology, database and analysis of subject matter closely related to the work to be accomplished.
- A GIS Technical Certificate may substitute for one (1) year experience.