

**U.S. GEOLOGICAL SURVEY/EROS CENTER  
TECHNICAL REQUIREMENTS DOCUMENT  
for  
TECHNICAL SUPPORT SERVICES CONTRACT SOLICITATION**

**TRD NUMBER**

0014

**PERFORMANCE PERIOD**

Contract Base Year: **April 1, 2010 thru March 31, 2011**

**PROJECT NAME**

Land Characterization and Trends

## **1.0 SCOPE**

The Land Characterization and Trends branch projects provide consistent public domain information on the Nation's current and historical land cover characteristics that are applicable at national, regional, and local scales. Much of this work is accomplished through partnerships with Federal, state and local government agencies, private industry, and non-governmental organizations. The comprehensive sets of scientifically credible geospatial data layers and publications that are produced as a result of these projects are used to support a broad spectrum of applications in land management, environmental studies, modeling, and policy decisions. Land cover and land use data are high priority data themes within the USGS. These data, often combined with other sources of relevant scientific data provide a robust suite of geospatial data that allow informed decisions by managers and the public. These data (and derived products) require continuous production, updating and improvement, in order to provide the most relevant land cover information for the Nation.

These projects will continue to conduct the necessary development, production and dissemination to ensure that users have ready access to the best publicly available land cover and land use data, information, and derivative products. Land cover data processing algorithms, feature extraction from remote sensing data, multi-scale data integration and change characterization will all be necessary to support and enhance current and future content. The overall objective that will guide project activities is to continually upgrade the quality, quantity and relevance of land cover/land use data available to the USGS, and to facilitate access, analysis, application and dissemination of data and information.

This TRD outlines the U.S. Geological Survey (USGS) work requirements for the National Land Cover Database project, the Land Characterization and Trends project, and other land characterization tasks. This TRD delineates the task requirements for this contract period.

This TRD defines requirements to be provided by the Technical Support Services Contract (TSSC) to the USGS EROS staff. Support beyond those identified in this TRD will be addressed by the USGS Project Manager as needed. The TSSC has a respective work manager who shall interface with the staff, monitor performance, and report to the USGS Project Manager. The remainder of this TRD outlines the USGS work requirements that shall be performed subject to available funding.

## **2.0 DELIVERABLES**

### **National Land Cover Database Project**

#### **NLCD Production and Research**

- Provide MRLC/NLCD data staging and delivery through web and media services.

- Coordinate the acquisition and preparation of remote sensing and ancillary data for NLCD production requirements.
- Continue regular support and coordination of USGS NLCD mapping teams at RMMC, Western, Rolla, and Eastern Regional Geography.
- Complete mapping of 60 Landsat path-rows of NLCD Landcover and Imperviousness in support of the NLCD 06 FY10 production goals.
- Participate on the NLCD 2011 design team, and assist in prototyping NLCD 2011 research experiments toward the development of a national land cover monitoring program. Experiments will cover development of new multi-scale land cover methodologies, change protocols, sampling designs and other tasks as assigned to achieve research goals.
- Periodically assist in the production of graphics, posters, maps or other documents to support project goals.
- Communicate with USGS staff via email, telephone, and bi-weekly team meetings.

### **NALCMS Research**

- Initiate and attend conference presentations, papers, web postings, and briefings as appropriate.
- Assist with development of a 2005 -2006 landcover change product for the U.S. to support the North American Land Change Monitoring product (NALCMS).
- Participate in the development of next generation NALCMS products including improving ways to characterize and represent land cover and land cover change in collaboration with Canada and Mexico.
- Communicate with USGS staff via email, telephone, and bi-weekly team meetings.

### **Land Cover Institute (LCI)**

- Represent and advocate for USGS land cover interests in national and international forums to establish visibility and communications for land cover science.
- Maintain LCI Web site to highlight the range of USGS land change activities.
- Continue performing land cover data clearinghouse and advisory functions.
- Periodically assist in the production of graphics, posters, maps or other documents to support LCI goals.

### **Land Characterization Project**

#### **Gulf Land Cover**

- Assist with further high resolution testing in the Northern Gulf of Mexico (NGOM) designed to support broader application of scaled up results in regional analysis.

- Continue to assist in development of next generation wetland characterization protocols that address both local NGOM needs, as well as nest within a national wetland protocol.
- Initiate and attend conference presentations, papers, web postings, and briefings as appropriate.
- Communicate with USGS staff via email, telephone, and bi-weekly team meetings.
- Provide quarterly progress briefings and one annual written report.

### **HealthyLands Initiative - WLCI**

- Assist in developing new research protocols that address using analysis of Landsat derived rangeland component change to achieve monitoring goals.
- Continue to develop and optimize new production techniques, and integrate these techniques into improving component accuracy.
- Assist in development of relevant graphics and documents to communicate task results

### **DOI on the Landscape**

- Assist in researching new methods to further develop the accuracy of Landsat derived rangeland components in Wyoming using evolving classification protocols.
- Continue to develop and optimize new production techniques, and integrate these techniques into improving component accuracy.
- Assist in development of relevant graphics and documents to communicate task results
- Stratify and analyze an additional 5 Quickbird scenes in Wyoming to enable effective field sampling in 2010.
- Communicate with USGS staff via email, telephone, and bi-weekly team meetings.

### **Digital Data Products – Landcover**

- Deliver woodland tint processed to National Geospatial Program office specifications (National Map) from NLCD 2001 Tree Canopy in vector form for 20 states.
- Develop prototype map graphics generated for up to 50 1:24,000 maps using experimental themes (e.g. urban tint from imperviousness, NLCD on shaded relief, NLCD on imagery base), with various scales and format options (e.g. GeoPDF, GeoTIFF, paper maps).

### **Land Cover Status and Trends Project**

#### **Ecoregion Assessments**

- Create image maps of the land use and land cover on 5-different dates for at least 30 Land Cover Trends sample blocks in selected Upper Midwest and Mississippi Gulf Coast ecoregions.

- Produce block summaries describing the landscape characteristics of each sample block interpreted.
- Develop a geo-referenced database of five dates of Landsat data and aerial photography covering each sample block in the North Central Hardwood Forests ecoregion.
- Communicate with USGS staff via email, telephone, and bi-weekly team meetings.
- Quarterly Progress Reports are required for fiscal year quarters 1-3 as well as a detailed summary report for Quarter 4 describing the work completed and other accomplishments. All the above needs to be completed by 3/31/11.

### **Ecoregion Summaries**

- Prepare ecoregion summary reports for the Canadian Rockies, Middle Rockies, and North Central Hardwood Forests ecoregions on the types, rates, and temporal variability of land cover changes over the past 30 years.
- Assist in the analysis of land cover change statistics and related literature in selected ecoregions.
- Assist in the development of a journal publication on how Western U.S land change varies due to contrasting environmental and socioeconomic factors.
- Initiate and attend professional conferences, present papers, posters, and briefings as appropriate.
- Quarterly Progress Reports are required for fiscal year quarters 1-3 as well as a detailed summary report for Quarter 4 describing the work completed and other accomplishments. All the above needs to be completed by 3/31/11.

### **3.0 SCHEDULE**

All work is to be performed in a timely manner as determined by the USGS EROS Project Manager working in coordination with the TSSC Management.

### **4.0 COMMUNICATION**

In addition to the communication deliverables listed, the USGS will meet with TSSC Management weekly, or at a frequency requested by the USGS, to discuss progress, problems, expenditures, and changing requirements. The contractor shall keep the Government project manager informed of all activities, such as work successes, problems, and potential problems as soon as they are known. They are encouraged to inform the Government project manager of new and innovative work approaches, procedures, and techniques. Other communications required by the USGS in support of work may include periodic briefings, special reviews, and presentations at key events.

The contractor will understand requirements of the project and ensure expectations are met by:

- Developing the associated work plan and monitoring its execution/progress.
- Coordinating and contributing to weekly status reports, delivering system requirements reviews (SRR) and design reviews (DR), collecting and /or editing content; and coordinating ad-hoc data calls, presentations, or visitors.

- Testing the system and ensuring it's operational.
- Tracking tasks to identify and communicate system performance issues and changes.
- Identifying and reporting new resources required to meet project deliverables.
- Identifying areas of overall or specific risk and participate in mitigation strategies.
- Coordinating with Finance staff to assist with income calls and updates
- Reporting expenses from ITS.