American Congress on Surveying and Mapping
American Society of Civil Engineers
American Society for Photogrammetry and Remote Sensing
Management Association for Private Photogrammetric Surveyors
National Society of Professional Surveyors
National States Geographic Information Council
Urban and Regional Information Systems Association

Joint Task Force on the Model Law
c/o James R. Plasker
5410 Grosvenor Lane, Suite 210
Bethesda, Maryland 20814-2160

October 23, 2000

Ms. Betsy Brown
Executive Director
National Council of Examiners
for Engineering and Surveying (NCEES)
PO Box 1686
Clemson, SC 29633

Dear Ms. Brown:

The above organizations represent important constituencies with a vital interest in recent changes to the NCEES Model Law for Surveying, particularly with regard to the inclusion of references to the use of Geographic Information Systems (GIS) and Land Information Systems (LIS). As a follow-on to our earlier report, originally transmitted to you by letter dated December 2, 1997, the original task force was expanded to address the GIS/LIS-related issues remaining at the conclusion of the previous task force effort.

The expanded Task Force, with representation from each of the above seven organizations, has met continuously since September 1999 to address the issues of most significant concern. The enclosed "GIS/LIS Addendum to the Report of the Task Force on the NCEES Model Law for Surveying" is the product of approximately 60 hours of debate and collaboration. This report has gained the support of each of the organizations and, we believe, if NCEES acts positively on these proposals the broader professional community will also support the outcome.

We have kept several NCEES members and staff informed during the task force deliberations, including Joe Phaneuf, Gail Oliver, Susan King, Rita Lumos and, until just recently, past-president Andrew Liston. In addition, task force member Karen Schuckman has recently discussed the status of the report with Dick Cottingham, and we understand the report will be forwarded to the UP&LG Committee for review.

The Task Force is pleased that the previous recommendations made to NCEES were considered seriously and resulted in substantive positive changes to the Model Law. The Task Force has

spent many hours and significant effort in developing this addendum to the original report, and trusts that the latest recommendations will receive similar consideration. Because a growing number of states are considering modification of their statutes to reflect the latest Model Law language in this area, we would appreciate a timely review of this material.

The leaders of the above organizations continue to embrace your earlier-stated goal "that the effects of [the Model Law for Surveying]..... be beneficial for the public and practitioners," and pledge to you their commitment to work with NCEES in obtaining that outcome. We continue to enjoy a good working relationship with key members of NCEES, and believe that together we can reach that goal.

Sincerely,

Original Signed by

James R. Plasker
Task Force Facilitator

bcc: Task Force members (by email):
John Dailey
David Gibson
Robert C. Burtch
Steven D. Johnson
Karen Schuckman
Doug Fuller
George Gross
Mike Ritchie
Lee Hennes
M. Greg Johnson
Gene Trobia
Lynda Wayne
Bruce Joffe

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American Congress on Surveying and Mapping

Ron Cauthren, Chair
Geomatics Division Executive Committee
American Society of Civil Engineers

Alan M. Mikuni, President
American Society for Photogrammetry and Remote Sensing

Kass Green, President
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Attachment

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GIS/LIS Addendum
to the
Report of the
Task Force on the
NCEES Model Law for Surveying

Prepared by
American Congress on Surveying and Mapping (ACSM)
American Society of Civil Engineers - Geomatics Division (ASCE)
American Society for Photogrammetry and Remote Sensing (ASPRS)
Management Association for Private Photogrammetric Surveyors (MAPPS)
National Society of Professional Surveyors (NSPS)
National States Geographic Information Council (NSGIC)
Urban and Regional Information Systems Association (URISA)

October 20, 2000

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GIS/LIS Addendum
to the
Report of the
Task Force on the
NCEES Model Law for Surveying

Introduction

This report summarizes the deliberations and recommendations of representatives from seven organizations whose constituencies maintain a vital interest in the modification and promulgation of the Model Law for Surveying by the National Council of Examiners for Engineering and Surveying (NCEES). The seven organizations include:

American Congress on Surveying and Mapping (ACSM)
American Society of Civil Engineers - Geomatics Division (ASCE)
American Society for Photogrammetry and Remote Sensing (ASPRS)
Management Association for Private Photogrammetric Surveyors (MAPPS)
National Society of Professional Surveyors (NSPS)
National States Geographic Information Council (NSGIC)
Urban and Regional Information Systems Association (URISA)

Collectively, these organizations represent, at the National level, the general body of GIS/LIS practitioners in the United States, and in particular those GIS/LIS practitioners directly involved in surveying and mapping. Four of these organizations (ACSM, ASCE, ASPRS and NSPS) are also currently members of the NCEES Professional Organizations Liaison Council (POLC).

The representatives to the task force, listed in Appendix A, met 32 times by teleconference during the period September 20, 1999 through October 19, 2000. In addition, several subgroups met face-to-face on multiple occasions to address specific issues. The task force was supported by, and gratefully acknowledges, the U.S. Geological Survey in providing access to a telephone conference bridge to facilitate those meetings. The teleconference meetings alone consumed in excess of 60 clock-hours and an estimated 650 personal hours.

In addition there were many presentations by task force members that addressed the developing task force recommendations and sought feedback for inclusion in the process. These public presentations often included debates among members on both sides of various issues, and many of the resulting presentation materials were further promulgated via the Internet (see http://www.asprs.org/asprs/news/ncees.html). In addition, several members authored articles for publication in prominent GIS magazines serving the broader community in order to ensure wide awareness and ultimately acceptance of the developing recommendations.

There was a conscious effort by all members of the task force during these meetings and presentations to understand and appreciate the varying perspectives on the issues and practices among the represented disciplines. The end result of these debates is a broad-based consensus on a series of

recommendations for NCEES concerning the responsibilities of the professional surveyor with respect to the use of Geographic Information Systems (GIS) and Land Information Systems (LIS).

Background

Changes made by NCEES to the Model Law for Surveying, circa 1995-1996, incorporated the use of photogrammetric and GIS/LIS techniques and technologies within the definition of the practice of land surveying. Prior to that time the Model Law had been silent on these techniques, although a few states included photogrammetric practice within the scope of their licensing or registration acts and at least one state (California) specifically referenced the use of GIS/LIS tools in their regulations.

Based on an April 1997 agreement, five organizations issued an initial report dated December 1, 1997 that addressed the photogrammetric-based issues and made a series of recommendations to NCEES. That report was specifically limited to the photogrammetric issues and purposefully set aside the GIS/LIS issues until a broader coalition of partner organizations could participate in addressing the concerns. During the period 1998 – present, many of the 1997 Task Force Report recommendations concerning photogrammetric practice have been satisfactorily acted upon by NCEES and for that the task force is grateful.

In mid - 1999, the task force expanded its membership to include the National States Geographic Information Council (NSGIC) and the Urban and Regional Information Systems Association (URISA) and turned its attention to the issues related to the use of the GIS/LIS tools in geospatial practice. The GIS-related concerns included a general perception that the language of the current NCEES Model Law on Surveying can be interpreted to over-reach the legitimate professional jurisdiction of the practice of surveying with regard to the creation and maintenance of maps and databases in Geographic Information Systems. In addition, there was recognition by all task force members that GIS/LIS tools are potentially being used by non-registered practitioners in areas of practice that clearly fall within the long-established responsibility of the licensed surveyor. The goal was to recommend modifications to the Model Law that would remove potential ambiguities and clearly identify those activities requiring the services of a registered professional while continuing to safeguard the public health, safety and welfare.

The resulting recommendations proposed herein have gained the support of each of the seven organizations. NCEES can be assured that by acting on these proposals the broader professional community will support the outcome.

Issues

The issues addressed by the GIS/LIS task force included:

> Preamble Paragraph: The existing preamble paragraph to the Definition of Surveying in the Model Law is overly broad, and could be interpreted in a manner to require many

long-recognized layperson activities to be within the sole purview of the registered professional.

Definition of Practice Subsections: The subsections to the Definition of Surveying as originally developed in the 1995 revision to the Model Law, and as subsequently revised in response to the recommendations of the 1997 Task Force Report, make specific reference to the tools of GIS and LIS while remaining silent on the use of numerous other tools utilized by both registered professionals and the laypersons.

Exclusion of Practice: Within the current practical use of GIS/LIS tools, techniques, and technologies, there exist functions which are of low regulatory interest to the jurisdictions and which should not be included in the application of the current definition of surveying within the Model Law. Conversely, these tools also provide the capability for many users, including those not currently licensed, to accomplish tasks that affect the health, safety or welfare of the public and therefore are clearly within the purview of the licensed professional.

Philosophy

The task force debated at great length the difference between the licensure of practice and the arbitrary control of the use of tools utilized in a practice. As is true with many sophisticated techniques and technologies, a layperson and a licensed practitioner may be able to accomplish what appear to be similar functions utilizing a common tool-set, and often the purposes for those activities may appear to parallel each other at a high level. Historically the guiding principle as to when an activity or function must be restricted to a licensed practice is when the public health, safety or welfare is at stake. Thus, it is critical that GIS/LIS-related functions be carefully analyzed to determine whether practice restrictions should apply, not based simply upon the tool or technique used but rather based upon the service, product, or advice delivered. Among the criteria the task force used to distinguish between the use of GIS technology for survey purposes versus uses of GIS-based techniques and technologies for other lay purposes were the following:

1. GIS databases and maps prepared to be simply referential, representational, or diagrammatic portrayals of existing source documents, many of which were compiled by licensed professionals and are a matter of public record, should not automatically fall under the requirement for supervision by licensed professionals unless they require certification as to accuracy or unless the use of the databases and/or maps are intended to serve as authoritative public records for geographic location.

2. GIS-based databases and maps that are intended to be used as the authoritative document for the location of parcels, fixed works, survey monuments, elevation measurements, etc., must be accomplished under the responsible charge of a Professional Surveyor or Land Surveyor.

3. Because geospatial technologies are changing very rapidly, references to specific technologies

should be removed from the Model Law. The language of the Model Law should concentrate on the practices to be covered regardless of the technologies employed.

4. Because there often is very little difference in the actual application of GIS/LIS-based technology to distinguish between a function and/or activity requiring licensure from those that do not, there appears to be a need for additional guidelines to be promulgated and/or codified in order to assist regulators, legislators, and the public in making these distinctions.

Recommendations

Preamble Paragraph

The task force spent considerable time and effort reviewing the preamble paragraph, particularly concerning its breadth of coverage. While to the best knowledge of the task force no jurisdiction has utilized the current language of the paragraph to attempt to require registration of lay-person GIS practitioners, the existing language is viewed as potentially threatening by the GIS community – a fact that none of the members of the task force disagreed upon. It was casually observed that if the current preamble paragraph were to be interpreted literally, even the weather reporter on the nightly televised news would need to be registered. As such, it was agreed that the existing language needed to be sharpened to reflect the intent to require registration for only those activities clearly within the purview of a professional surveyor and that have the potential to affect the public health, safety and welfare in their conduct.

Appendix B includes the current (1999) preamble language and alternative language as developed by the task force. The task force **recommends** that section 5.b.2 of the Model Law be replaced with the revised language as presented in Appendix B of this report.

Definition of Practice Subsections

The task force debated the issue of licensing the use of tools, versus the specific acts of professional practice, at considerable length. It was quickly acknowledged that the existing definition of the practice of surveying treated the tools of the practice in a disparate manner. For instance, while the Model Law calls out GIS/LIS tools explicitly, it makes no similar reference to the Global Positioning System (GPS); in reality there is just as much potential for a layperson to encroach on the practice of surveying through the use of GPS as there is with GIS.

In addition, modern technologies are being developed very rapidly and it is therefore difficult for a Model Law that addresses new technologies in detail to be kept current. For example, remote elevation data acquisition technologies such as Light Detection and Ranging (LIDAR) are not currently addressed in the Model Law, and would not likely have even been recognized when the last major revision to the Model Law occurred just five years ago, in 1995.

Among the possible alternatives discussed by the task force was the possibility of including a comprehensive list of geospatial technologies as part of the definition subsections of the Model

Law. However, it quickly became obvious that such a list was meaningless, and even if it could be compiled it would quickly become outdated. Consistent with the overall philosophy of focusing the Model Law on areas of practice and limiting the references in the Model Law to specific tools, the task force therefore **recommends** that the definition of surveying used in Section 5.b.2 of the Model Law avoid explicit reference to tools and incorporate the changes to the subsections as outlined in Appendix C of this report.

Inclusions and Exclusions of Practice

The task force reviewed recent efforts to implement the GIS/LIS language of the 1995-version of the Model Law in several states, including both North and South Carolina. In both of those instances, it was widely recognized that GIS technology has many potential uses not directly related to the health, safety and/or welfare of the public; likewise GIS technology forms the foundation for numerous analytical activities underlying many other professions. The task force therefore believes it is important that representative examples be incorporated into NCEES-related documents, policies and/or processes that clearly illustrate those GIS-related activities that require the responsible charge of a Professional Surveyor or Land Surveyor and those that do not carry that requirement.

These clarifications could be promulgated by NCEES as policy or guidance to the member Boards; however, the task force **recommends** that NCEES incorporate the Inclusion and Exclusion clauses outlined in Appendix D of this report **directly within the Model Law itself**. The effects of this recommendation would be to draw a clear distinction between those GIS/LIS-related functions that affect the public health, safety and welfare from those that do not.

The task force recognizes that this recommendation varies slightly from the recommendation of the 1997 Task Force Report [see Appendix G of the earlier report]; however, the current recommendation reflects the fuller debate of the broader coalition addressing the GIS-related issues and is therefore grounded in a more extensive analysis.

Summary

Each of the seven organizations has contributed significantly to the development of these recommendations and is willing to assist NCEES in their full implementation. While only four of the organizations are currently members of POLC, one additional organization (URISA) has previously made application to join and is currently considering reapplication. All seven of the organizations are committed to assisting NCEES in clarifying the licensing and/or registration of GIS specialists. Consideration by NCEES of the recommendations outlined in this report will be an important step in that process.

List of Appendices

Appendix A

Task Force Participants

Joint Task Force
on the
Model Law for Surveying

ACSM

John Dailey, PLS – Chief Surveyor and Division Manager, Wheeler & Melena Division, Michael Benza and Associates, Inc., Cleveland, Ohio. Past-president, Professional Land Surveyors of Ohio; Past-president, NSPS; Past-president, ACSM.

David W. Gibson, PSM – Associate Professor and Geomatics Program Director, University of Florida, Gainesville, Florida. Past-chair, Florida Board for Professional Surveyors and Mappers; survey consultant to NCEES.

ASCE

Robert C. Burtch, PS, CP – Professor of Surveying Engineering, Ferris State University, Big Rapids, Michigan. Treasurer, Michigan Society of Professional Surveyors.

Steven D. Johnson, PLS – Associate Professor of Civil Engineering (Geomatics Area), Purdue University, West Lafayette, Indiana. Past Chair, ASCE Geomatics Division.

ASPRS

Karen Schuckman, LS, CP – President and CEO, Earthdata International of North Carolina, High Point, North Carolina. Past-director, ASPRS Photogrammetric Applications Division, ASPRS representative to NCEES POLC.

Doug Fuller, CP, CMS – Contract Administrator, Aero-Metric, Inc., Sheboygan, Wisconsin. Past-member, Board of Directors ASPRS; Past-director, ASPRS Professional Practice Division.

MAPPS

George Gross, PE – President and CEO, Spencer B. Gross, Inc., Portland, Oregon. Past-president, MAPPS.

G. Michael Ritchie, PLS, PE, CP – President and CEO, Photo Science, Inc. of Kentucky, Lexington, Kentucky. President-elect, MAPPS; member, Board of Directors, American Consulting Engineers Council.

NSPS

Lee Hennes, PLS – City Surveyor, San Diego, California. Past-president, California Land Surveyors Association; Member, California Geographic Information Council

M. Greg Johnson, PLS, PE – Supervisor, Land Engineering, Georgia Power, Inc., Atlanta, Georgia. Member, Board of Directors, NSPS

NSGIC

Lynda Wayne – GIS Research Consultant, Asheville, North Carolina. Past-director of the Louisiana GIS Center, member, former Louisiana State University representative to UCGIS.

Gene Trobia – Arizona State Cartographer, Phoenix, Arizona. Member, Board of Directors, NSGIC.

URISA

Bruce Joffe, AICP – Principal and Founder, GIS Consultants, Oakland, California. Past-chair, California Geographic Information Coordinating Council; Member, Board of Directors, URISA.

Task Force Facilitator

James Plasker, PE – Executive Director, ASPRS, Bethesda, Maryland. Associate chief (retired), National Mapping Division, US Geological Survey; Past-president, ACSM.

Credential Abbreviations

AICP	American Institute of Certified Planners
CMS	Certified Mapping Scientist
CP	Certified Photogrammetrist
PE	Professional Engineer
PLS	Professional Surveyor, Registered Land Surveyor, or Professional Land Surveyor
PSM	Professional Surveyor and Mapper

Appendix B

Preamble Paragraph

Model Law for Surveying

Preamble Paragraph

Although the task force is not aware of any jurisdiction that has utilized the current language of the preamble paragraph within the definition of surveying section of the Model Law for Surveying to attempt to require registration of lay-person GIS practitioners, the existing language is broadly viewed as potentially threatening by the GIS community – a fact that none of the members of the task force disagreed upon. It was casually observed that if the current preamble paragraph were to be interpreted literally, even the weather reporter on the nightly televised news would need to be registered. As such, it was agreed that the existing language needed to be sharpened to reflect the intent to require registration for only those activities clearly within the purview of a professional surveyor and that have the potential to affect the public health, safety and welfare in their conduct.

The 1999 NCEES Model Law preamble paragraph (Section 2.b.5) follows:

> The term "Practice of Surveying or Land Surveying," within the intent of this Act shall mean providing professional services such as consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting reliable scientific measurements and information relative to the location, size, shape, or physical features of the earth, improvements on the earth, the space above the earth, or any part of the earth, and utilization and development of these facts and interpretation into an orderly survey map, plan, report, description, or project. The practice of surveying or land surveying includes, but is not limited to, any one or more of the following:

While the task force considered a number of alternatives to the existing paragraph, including an much more abbreviated version that is currently utilized in some sates, including California, the task force agreed to **recommend** the following replacement language:

> The term "Practice of Surveying or Land Surveying" within the intent of this Act shall mean providing, or offering to provide, professional services involving both (1) the making of geometric measurements of, and gathering related information pertaining to, the physical or legal features of: the earth, improvements on the earth, the space above the earth, or any part of the earth; and (2) utilization and/or development of these facts into survey products such as graphics, digital data, maps, plans, reports, descriptions, and/or projects. Professional services include acts of consultation, investigation, testimony evaluation, expert technical testimony, planning, mapping, assembling, and interpreting gathered measurements and information related to any one or more of the following:

Appendix C

Definition of Practice Subsections

Model Law for Surveying

Definition Subsections

The current (1999) version of the Model Law [Section 2.b.5] makes specific references to the tools of land information systems (LIS) and geographic information systems (GIS). [See subsections (d) and (h) below.] The **task force** debated the issue of licensing the use of tools, versus the specific acts of professional practice, at considerable length. It was quickly acknowledged that the existing definition of the practice of surveying treated the tools of the practice in a disparate manner. For instance, while the Model Law calls out GIS/LIS tools explicitly, it makes no similar reference to the Global Positioning System (GPS); in reality there is just as much potential for a layperson to encroach on the practice of surveying through the use of GPS as there is with GIS.

The 1999 NCEES Model Law lists the following subsections within the definition of surveying:

> **(a)** Determining the configuration or contour of the earth's surface or the position of fixed objects thereon by measuring lines and angles and applying the principles of mathematics or photogrammetry.
>
> **(b)** Performing geodetic surveying which includes surveying for determination of the size and shape of the earth utilizing angular and linear measurements through spatially oriented spherical geometry.
>
> **(c)** Determining, by the use of principles of surveying, the position for any survey control (non-boundary) monument or reference point; or setting, resetting, or replacing any such monument or reference point.
>
> **(d)** Creating, preparing, or modifying electronic or computerized data, including land information systems, and geographic information systems, relative to the performance of the activities in the above described items (a) through (c).
>
> **(e)** Locating, relocating, establishing, reestablishing, laying out, or retracing any property line or boundary of any tract of land or any road, right of way, easement, alignment, or elevation of any of the fixed works embraced within the practice of engineering.
>
> **(f)** Making any survey for the subdivision of any tract of land.
>
> **(g)** Determining, by the use of principles of land surveying, the position for any survey monument or reference point; or setting, resetting, or replacing any such monument or reference point.
>
> **(h)** Creating, preparing, or modifying electronic or computerized data, including land information systems, and geographic information systems, relative to the performance of the activities in the above described items (e) through (g).

In addition, the **task force** recognized that modern technologies are being developed very rapidly and it is therefore difficult for a Model Law that addresses new technologies to any significant degree of detail to be kept current. For example, remote elevation data acquisition technologies such as Light Detection and Ranging (LIDAR) are not currently addressed in the Model Law, and would not likely have even been recognized for such recognition when the last major revision to the Model Law occurred just five years ago, in 1995.

Among the alternatives discussed by the task force was the possibility of including a comprehensive list of geospatial technologies as part of the definition subsections of the Model Law. However, it quickly became obvious that such a list was meaningless, and even if it could be compiled it would quickly become outdated.

Consistent with the overall philosophy of focusing the Model Law on areas of practice and limiting the references in the Model Law to specific tools, the task force therefore **recommends** that the definition of surveying avoid the explicit reference to tools and incorporate the changes to the subsections as follows:

> **(a)** Determining the configuration or contour of the earth's surface or the position of fixed objects thereon by measuring lines and angles and applying the principles of mathematics or photogrammetry.
>
> **(b)** Determining the size and shape of the earth, or any point on the earth, by performing geodetic surveys utilizing angular and linear measurements through spatially oriented spherical geometry.
>
> **(c)** Determining, by the use of principles of surveying, the position for any survey control (non-boundary) monument or reference point; or setting, resetting, or replacing any such monument or reference point.
>
> **(d)** Creating, preparing, or modifying electronic or computerized data relative to the performance of the activities in the above described items (a) through (c).
>
> **(e)** Locating, relocating, establishing, reestablishing, laying out, or retracing any property line or boundary of any tract of land or any road, right of way, easement, alignment, or elevation of any of the fixed works embraced within the practice of engineering.
>
> **(f)** Making any survey for the subdivision of any tract of land.
>
> **(g)** Determining, by the use of principles of land surveying, the position for any survey monument or reference point; or setting, resetting, or replacing any such monument or reference point.
>
> **(h)** Creating, preparing, or modifying electronic or computerized data relative to the performance of the activities in the above described items (e) through (g).

Appendix D

Inclusions and Exclusions of GIS-related Practice

Inclusions and Exclusions of Practice

Introduction

A literal reading of the definition of Surveying as outlined in the 1999 NCEES Model Law includes any graphical representation of any physical or cultural feature on the surface of the earth, within the earth, or in the air above the earth. All media and data storage, either in hard copy form or electronic form is included in this definition of surveying. This interpretation of the definition of surveying is overly broad and requires further explanation, particularly with respect to the creation of geospatially-referenced data bases and the use of modern spatial data technologies, including geographic information systems (GIS), land information systems (LIS) and the Global Positioning System (GPS). The ability for registered professionals outside the traditional field of surveying and mapping to locate and map geospatial features has expanded dramatically with the availability of these advanced technologies.

A distinction must be made in the use of electronic systems between making or documenting original measurements in the creation of survey products, versus the copying, interpretation, or representation of those measurements in such systems. Further, a distinction must be made according to the intent, use, or purpose of measurement products in electronic systems to determine a definitive location versus the use of those products as a locational reference for planning, infrastructure management, and general information.

In order to protect the public, it is imperative that allied professions clearly understand those practices that constitute surveying as defined in the registration act as well as those practices that are considered outside the domain of surveying. This document is intended to provide clear examples of work that are both included in, and excluded from, the practice of surveying. This interpretative material is intended to provide guidance rather than be exhaustive in its content.

Because it is important that other professionals, as well as the lay public, clearly understand the GIS/LIS-based activities that fall within or outside the practice of surveying, the task force believes the following material should be promulgated by NCEES in a manner that receives wide and continuing attention. While distribution as a policy or guideline may satisfy that need, the task force **recommends** that the following clauses be incorporated directly within the Model Law for Surveying:

A. Activities Included within Surveying Practice

Activities that must be accomplished under the responsible charge of a Professional Surveyor or Land Surveyor (unless specifically exempted in Section B. below) include, but are not limited to, the following:

1. The creation of maps and geo-referenced databases representing authoritative locations for boundaries, the location of fixed works, or topography, by either terrestrial surveying methods, photogrammetric or GPS locations. This includes maps and geo-referenced databases prepared by any person, firm, or government agency where that data is provided to the public as a survey product.

2. Original data acquisition, or the resolution of conflicts between multiple data sources, when used for the authoritative location of features within the following data themes: geodetic control, orthoimagery, elevation and bathymetry, fixed works, government boundaries, and cadastral information.

3. Certification of positional accuracy of maps or measured survey data.

4. Measurement, adjustment, and authoritative interpretation of raw survey data.

5. GIS-based parcel or cadastral mapping used for authoritative boundary definition purposes wherein land title or development rights for individual parcels are, or may be, affected.

6. Interpretation of maps, deeds, or other land title documents to resolve conflicting data elements within cadastral documents of record.

7. Acquisition of field data required to authoritatively position fixed works or cadastral data to geodetic control.

8. Adjustment or transformation of cadastral data to improve the positional accuracy of the parcel layer(s) with respect to the geodetic control layer within a GIS for purposes of affirming positional accuracy.

B. Activities Excluded from Surveying Practice

A distinction must be made in the use of electronic systems between making or documenting original measurements in the creation of survey products, versus the copying, interpretation, or representation of those measurements in such systems. Further, a distinction must be made according to the intent, use, or purpose of measurement products in electronic systems to determine a definitive location versus the use of those products as a locational reference for planning, infrastructure management, and general information. The following items are not to be included as activities within the definition of surveying:

1. The creation of general maps:

    a) Prepared by private firms or government agencies for use as guides to motorists, boaters, aviators or pedestrians;

    b) Prepared for publication in a gazetteer or atlas as an educational tool or reference publication;

    c) Prepared for or by education institutions for use in the curriculum of any course of study;

    d) Produced by any electronic or print media firm as an illustrative guide to the geographic location of any event;

    e) Prepared by lay persons for conversational or illustrative purposes. This includes advertising material and users guides.

2. The transcription of previously geo-referenced data into a GIS or LIS by manual or electronic means, and the maintenance thereof, provided the data are clearly not intended to indicate the authoritative location of property boundaries, the precise definition of the shape or contour of the earth, and/or the precise location of fixed works of humans.

3. The transcription of public record data, without modification except for graphical purposes, into a GIS- or LIS-based cadastre (tax maps and associated records) by manual or electronic means, and the maintenance of that cadastre, provided the data are clearly not intended to authoritatively represent property boundaries. This includes tax maps and zoning maps.

4. The preparation of any document by any Federal government agency that does not define real property boundaries. This includes civilian and military versions of quadrangle topographic maps, military maps, satellite imagery, and other such documents.

5. The incorporation or use of documents or databases prepared by any Federal agency into a GIS/LIS, including but not limited to, federal census and demographic data, quadrangle topographic maps and military maps.

6. Inventory maps and databases created by any organization, in either hardcopy or electronic form, of physical features, facilities or infrastructure that are wholly contained within properties to which they have rights or for which they have management responsibility. The distribution of these maps and/or data bases outside the organization must contain appropriate metadata describing, at a minimum, the accuracy, method of compilation, data source(s) and date(s), and disclaimers of use clearly indicating that the data are not intended to be used as a survey product.

7. Maps and databases depicting the distribution of natural resources or phenomena prepared by foresters, geologists, soil scientists, geophysicists, biologists, archeologists, historians, or other persons qualified to document such data.

8. Maps and geo-referenced databases depicting physical features and events prepared by any government agency where the access to that data is restricted by statute. This includes geo-referenced data generated by law enforcement agencies involving crime statistics and criminal activities.