

**Connecticut Board of Examiners for PE & LS**  
**Statement Concerning Geographic Information Systems**  
**November 11, 2008**

In order to determine which aspects of the use of a Geographic Information System (GIS) fall under the definition of Land Surveying it is important to understand the purpose of the GIS data in question. An important distinction is whether the data are intended for use as (a) an authoritative reference for spatial elements that include property boundaries, fixed works or topography or deal with safeguarding life and property or (b) a non-authoritative reference depicting unqualified approximate boundaries, fixed works or topographic information for the purposes of planning, infrastructure management, tax assessment, etc.

It is the opinion of this Board that spatial data elements under item (a) above require the supervision of a licensed surveyor. Spatial data elements under (b) do not.

For the purposes of this statement, "authoritative" is taken to mean a GIS with components that are declared as equivalent or superior in accuracy to similar data normally depicted in land surveys, or deemed suitable for use for engineering design, peremptive determination of property boundaries or the locations of fixed works or topography, enforcement of regulations that pertain to the location and bulk of improvements or fixed works, or the certification or declaration of positional accuracy of any spatial data therein.

In situations where non-authoritative GIS data may be mistaken for survey data, the Board strongly recommends that GIS professionals include a note, either on map products or as metadata, that the spatial information is not a survey, and is subject to any changes an actual land survey discloses.

Activities that must be accomplished under the responsible charge of a licensed land surveyor (except individuals or agencies exempt under CGS Section 20-309) include, but are not limited to, the following:

1. The creation of maps and georeferenced databases representing authoritative locations for boundaries, the location of fixed works, or topography. This includes maps and georeferenced databases prepared by any person, firm, or government agency where those data are 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 geodetic control, orthoimagery, elevation and hydrographic, fixed works, private and public boundaries, and cadastral information data themes.
3. Certification of positional accuracy of maps or measured positional and/or survey data.
4. Authoritative interpretation of raw survey data.
5. Geographic Information System (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. Authoritative interpretation of maps, deeds, or other land title documents and/or resolution of conflicting data elements.
7. Acquisition of field data required to authoritatively position fixed works or cadastral data relative to established horizontal and vertical datums.
8. Analysis, adjustment or transformation of cadastral data of the parcel layer(s) with respect to the geodetic control layer within a GIS resulting in the affirmation of positional accuracy.

The following items are not to be included as activities within the definition of surveying:

1. The creation of general maps which are: (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 educational institutions for use in the curriculum of any course of study; (d) produced in electronic or print media as an illustrative guide to the geographic location of any event; (e) prepared by laypersons for conversational or illustrative purposes. This includes advertising material and users guides.
2. The transcription of previously georeferenced 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.
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 hard-copy 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 databases 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, geophysicists, biologists, archeologists, historians, or other persons qualified to document such data.
8. Maps and georeferenced databases depicting physical features and events prepared by any government agency where the access to that data is restricted by statute. This includes georeferenced data generated by law enforcement agencies involving crime statistics and criminal activities.

November 11, 2008

Gentlemen:

This letter is in response to a request from the Connecticut Association Of Land Surveyors (CALs), received September 17, 2008, for an opinion from the Board of Examiners for Professional Engineers and Land Surveyors (Board), concerning release of vector CADD drawing files and raster image representations of land surveys to public or private agencies.

In response to five specific questions asked by CALs, the Board has authorized the following responses:

1. "May vector CADD products be released to the public without signature and seal as required by the regulations?" **No**

The release of land surveying maps, plats, reports and other official documentation is subject to the requirements for signature and seal set forth in Sections 20-300-10 and 20-300b-20 of the Regulations of Connecticut State Agencies. Vector CADD files include drawings in any digital format that can be invisibly modified without the knowledge or approval of the preparer, or subsequent users of the data. (Such file types include, but are not limited to, DWG, DXF, SHP and SHX formats.) The Board recognizes the potentially negative consequences of providing, without signature and seal, detailed land surveying information in transparently editable, digital formats to unlicensed individuals, public agencies, or the general public at large.

2. "May CADD files be exchanged between land surveyors and other design professionals working cooperatively on projects, without signature and seal?" **YES**

The Board feels that vector CADD files may be exchanged between licensed design professionals in the interest of accuracy, productivity and efficiency, when working cooperatively on projects.

3. "May raster image files... be provided to public agencies in lieu of vector CADD files?" **YES**

Raster image files are more difficult to alter, and unauthorized changes are easier to detect. To facilitate inclusion of accurate survey information into Geographic Information Systems, raster image files are acceptable for distribution to public agencies. The information contained in the image files should be limited to that which would otherwise be depicted on a printed map. (Raster image files include formats such as PDF, JPEG, TIFF and BMP.)

4. "Shall electronic documents be considered public property if provided to a municipality for public purposes?" ***The Board has no comment on this question***

5. "Are electronic signatures acceptable substitutes for signature and seal?" **No**

The Board has not approved the use of digital or electronic signatures in lieu of the requirements set forth in Sections 20-300-10 and 20-300b-20 of the Regulations of Connecticut State Agencies.

Please do not hesitate to contact the Board if you have further questions concerning the above.

Very Truly Yours,

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Anthony D'Andrea, PE & LS  
Chairman, Board of Examiners for PE & LS