

## MEMORANDUM OF UNDERSTANDING

Between

STATE CARTOGRAPHER'S OFFICE, UNIVERSITY OF WISCONSIN-MADISON

And

THE DEPARTMENT OF ADMINISTRATION, DIVISION OF INTERGOVERNMENTAL RELATIONS

### Regarding V7 Statewide Parcel Map Database Project

January 1, 2021 to December 31, 2021

#### 1. Purpose

The purpose of this document is to define the scope of work for the State Cartographer's Office (SCO) role in the "Version 7 Statewide Parcel Map Database Project" (V7 Project). The V7 Project is a joint effort with the Wisconsin Department of Administration (DOA) Division of Intergovernmental Relations (DIR) to run between January 1, 2021 and December 31, 2021. This scope of work refers only to the V7 Project, not to the larger Statewide Digital Parcel Map Initiative (Parcel Initiative) nor subsequent phases of the Parcel Initiative that may be covered by other scope of work documents.

#### 2. Background

Wisconsin Act 20, the biennial state budget for 2013-2015, created statutory directives for state and local governments to coordinate on the development of a statewide digital parcel map. As required by state statute 59.72(2)(a), counties are now required to have certain parcel information online in a standardized searchable format. These statutory directives can be grouped together as the Statewide Digital Parcel Map Initiative and will continue to be fulfilled by the V7 Project.

The V7 Project follows successful collaboration between DOA and SCO on similar efforts. DOA and SCO have partnered on projects to create statewide parcel layers for the LinkWISCONSIN Address Point and Parcel Mapping Project and the Version 1-6 Projects. Each iteration of the project has created a statewide parcel database and map layer based on an aggregation of existing local parcel datasets. Counties must submit data according to the "Searchable Format," a set of standards for parcel data that followed from the directives in Act 20. Attaining the Searchable Format entails meeting certain benchmarks for county parcel data improvement, which are tied to Wisconsin Land Information Program (WLIP) Strategic Initiative grant requirements. V7 is necessary to continue progress toward and achieve the Searchable Format standard statewide in a way that can be continuously maintained. Because DOA has followed an iterative model that further develops the map with each new annual version, V7 seeks to build on efficiencies, and further improve and enhance the statewide parcel map.

#### 3. Project Goals

- **Tracking progress.** The statewide parcel layer is built in an iterative fashion. V7 will continue to track the progress made with investments to local governments, specifically on benchmarks for parcel dataset development instituted with the 2016 WLIP grant application and continued in the 2017, 2018, 2019, and 2020 grant applications.
- **Incremental and continuous improvement.** Improvement of the statewide parcel layer itself, as well as the workflow and methods for each step in the aggregation process, with each new version of the layer. As with the database, the hosting and display should keep pace with current technology and be continually improved to meet users' needs. Intake and aggregation process should become more efficient with time, facilitating other improvements and/or opportunities for value-added products.
- **Authoritative Automated Asynchronous Aggregation.** A long-term goal is to achieve the "Four A's" so county data stewards can submit datasets at any time or interval by automatically merging local data with the most current statewide database. The objective for this project is to

move toward a more efficient, automated process for data aggregation where the locus of standardization labor is on the data contributors rather than the aggregator. Such a process would require fewer state resources be dedicated to the aggregation process and thereby reduce state costs for sustaining the statewide digital parcel map.

- **Outreach and technical assistance to counties.** This may take the form of further development of existing technical tools or the creation of new tools for counties and municipalities to use. It could also involve virtual or site visits and direct assistance.
- **Lean government principles and efficiency.** The V7 Project should seek to create and realize efficiencies in general, eliminate waste, and integrate or collaborate with other state GIS services where possible.
- **Responsiveness to public needs and economic development goals.** Evaluate parcel layer user suggestions and implement improvements where feasible.

#### 4. Project Deliverables

##### Data Request Materials

- **Data request with submission instructions.** Provide technical and GIS-specific elements of call for data and the submission instructions that counties are to follow in order to prepare and submit data.
- **Automated validation of county data submissions and tools.** Create an automated mechanism for evaluating county data submissions for fitness to submission requirements and data model while accounting for individual county differences, along with a report of possible deviations from the schema and directives on how to rectify errors. For those essential data preparation and standardization functions that cannot be built into the data validation tool, supply up-to-date geoprocessing tools. If information is available indicating a significant number of counties have moved or will be moving to the platform *ArcGIS Pro*, convert tools to Python 3 for compatibility.
- **Data Collection.** Assist in the collection of county data submissions. In addition to parcel data collection, this also entails collection and delivery of ancillary data layers to the UW-Madison Arthur H. Robinson Map Library, including county-maintained zoning layers that are not collected and/or aggregated by another government entity.
- **County data preparation assistance/outreach.** Conduct outreach with and offer assistance to counties that have in the past experienced problems preparing or submitting data. Focus should be on a small subset of counties that have encountered recurring problems with data submissions, those that are characteristic of specific types of problems that occur across multiple counties, and those that are representative of the most common tax parcel software vendors in the state. The goal is to better understand what challenges counties face preparing and submitting parcel and tax roll data, provide solutions where possible, and document roadblocks so that they may be targeted in the future.

##### Data Assessment Materials

- **Intake assessment data.** Conduct assessment of incoming data submissions, and communicate to DOA the receipt of each adequate county submission. For those submissions that are incomplete or appear to fall short of Searchable Format requirements, provide comments to DOA in a fashion consistent with benchmarking evaluation in order to facilitate follow-up with the county.
- **Benchmarking data.** Provide data evaluating counties against current benchmarks, with parcel benchmark data as uniform as possible, generated contemporaneously as part of data intake process and ready to be provided to counties within six weeks after successful data submission date. For each county, include checks on values for all attributes called for by s.59.72(2)(a) and the Searchable Format.

- **Workflow documentation.** Document the data intake and processing workflow in human-readable format in as few files as possible, with attention to differentiating aspects of workflow that are/are not and can/cannot be automated, any conditions in local government data that comprise legitimate data model exceptions (e.g., from prior years' notes, intake notes, county submission form content, qualifying language/examples in submission documentation, data validation tool programming, et cetera), and other obstacles in local data conditions that could hinder future efforts at automation. Employ cross-references and hyperlinks to other databases and files as appropriate. Provide both draft and final versions.

#### **Statewide Parcel Map Database**

- **A draft V7 statewide parcel database and map layer** aggregated from existing county and municipal parcel datasets for purposes of internal quality assurance/quality control.
- **A statewide parcel database and map layer** aggregated from existing county and municipal parcel datasets in both GIS and CSV formats, using a documented update process that, at a minimum, includes the parcel attributes required by s. 59.72(2)(a), those listed in the parcel schema and Searchable Format standard detailed by the *V7 Submission Documentation* and recommended in the *V6 Final Report*, is aligned as closely as feasible with the property tax bill content prescribed by state statute and the Wisconsin Department of Revenue, and, if statewide benefits clearly outweigh the costs of implementation, enhanced with additional data fields.
- **Database documentation for users.** Make available basic metadata for end-users of the statewide database, as well as schema documentation that includes explanatory notes that aid end user understanding of the dataset.
- **Hosting and display of V7 parcel layers.** Employ a hosting solution for the statewide parcel database and map layer (with the potential for a third-party hosting solution), and publicly display the database and map layer and end user schema documentation, with delivery through platform(s) that provide a mechanism for linking to publicly available county land information websites, land information officer contact information, and other publicly available county GIS data layers and web mapping services. Incorporate modern software tools if a web app is deployed. Offer download/export of data and data subset capabilities, including a download by filter or download subset function, as well as individual county downloads.

#### **Statewide PLSS Database Sub-Project**

- **Edition 3 Statewide PLSS database.** Collection of PLSS corner data as part of V7 call for data, for the purposes of creating an Edition 3 (E3) statewide PLSS database aggregated from current county datasets using a documented process that, at a minimum, has the following characteristics:
  - Builds on and from the Edition 0, Edition 1, and Edition 2 statewide PLSS databases
  - Based on accurate county corner coordinate values where available, incorporating new and updated corner records provided by counties, with the potential for integration of data for section center points where such data is applicable and exists in digital format and realized to the extent possible in E3
  - Includes a "change detection" tool developed for E3 to identify new and modified PLSS corner records from each county
  - Uses an automated update method to add or revise corners within the current layer
  - Contains polygons down to the section level at minimum based on best-available corner coordinate data with incorporation of quarter section corners and meanders in the creation of polygon boundaries.
  - Update polygons (to section level) boundaries based on new data as applicable
  - Allows users some option or method to access a representation of quarter section and quarter-quarter section lines that may optionally not be based on section-center points

but derived by other methods, along with a disclaimer of spatial accuracy for any interpolated data

- Uses the Wisconsin Department of Natural Resources 1996 PLSS layer (*Landnet*) corner coordinates where county data is not available
- Accommodates for the inclusion of multiple spatial representations of corner points
- Uses standardized indexing system for corner point identification throughout the state
- Provides mechanism to separate non-PLSS areas
- Based on existing federal PLSS standards tailored to the specific needs of Wisconsin
- Is integrated with other web mapping application services offered by the SCO where appropriate (e.g., *Survey Control Finder*)
- Uses industry-standard format for delivery and distribution
- Edition 3 Statewide PLSS database publication. Make the E3 database (completed by September 17, 2021) publicly available for download and publicize as an update to *Landnet*. Include basic metadata and E3 end-user documentation. Documentation may overlap with and repeat E3 PLSS report content (completed by November 12, 2020). Include data model specifications, attribute definitions with attribute names appearing as they appear in the database, change log-type content, explicit notes on data that does not exist at the local level and thus may appear as missing data, notes on differences and improvements over the *Landnet* dataset, a crosswalk to *Landnet* attributes, notes on the *Landnet+* layer, and link to the latest Wisconsin PLSS *CadNSDI* dataset. Also speak to the purposes and functionality of *Survey Control Finder* versus the statewide PLSS database. Make E3 available as a feature service or map service potentially hosted by a third party, in consultation with other relevant entities such as the Wisconsin Department of Natural Resources (compared to DNR's *Landnet* services and *OpenData* downloads).

### **Reporting Requirements**

- **A final project report**, on the V7 statewide parcel database project, written in collaboration with DOA. At a minimum, the report shall address:
  - Project Background
  - Technical Approach
  - Summary-Level Workflow Documentation
  - Benchmark Progress Assessment – Assessment of where each county is at in terms of meeting the four benchmarks listed by the *V1 Interim Report* and the requirements for counties to achieve by the V8 call for data deadline in 2022.
    - Benchmark 1 – Parcel and Zoning Data Submission
    - Benchmark 2 – Extended Parcel Attribute Set Submission
    - Benchmark 3 – Completion of County Parcel Fabric
    - Benchmark 4 – Completion and Integration of PLSS
  - County Data Preparation Assistance Overview and Outcomes
  - Recommendations for V8 – Recommendations for V8, not limited to but addressing the Four A's. Recommendations should include those for a hypothetical subsequent year's parcel aggregation project and data request.
- **Final report on E3 PLSS sub-project**, containing:
  - PLSS Sub-Project Background – PLSS sub-project background with brief overview of PLSS data model (which may repeat or refer back to end-user schema documentation)
  - Technical Approach – High-level overview with description of change detection tool developed for E3 and of automated update method to add or revise corners.
  - Evaluation & Analysis – Evaluation of local PLSS datasets, evaluation and analysis of the PLSS deliverable, evaluation and analysis of improvements over *Landnet* and statewide

PLSS datasets aggregated by other entities, evaluation and analysis of progress on the E0, E1, E2, and E3 PLSS databases, and, if any, deficiencies in the E3 deliverable. Carry over and include any metrics utilized in previous years' PLSS reporting in a manner consistent with and facilitating comparisons over time. If there is PLSS end user feedback, include as an appendix.

- Policy Recommendations. Recommendations related to WLIP policy, particularly as it relates to county land information plan PLSS status tables, the "Project Plan for PLSS" requirement outlined with directions that appear in the annual WLIP grant application, including analysis of and recommendations relating to the requirement for "survey-grade" accuracy tags. Provide an evaluation of the usefulness of this information for statewide PLSS layer creation and for general PLSS analysis, as well as recommendations for future WLIP policy as it relates to these items.
- Recommendations – Provide recommendations as to whether to continue any potential future statewide PLSS aggregation efforts as part of the Parcel Initiative, including details pertaining to the content of any subsequent PLSS data requests, future projections for *Survey Control Finder*, and recommendations for future growth and development. Evaluate the estimated resources necessary for full statewide coverage of spatially accurate quarter section polygons based on locally-created section center point data. Provide reasoning and evidence for basis to support funding any future statewide PLSS aggregation efforts.

## 5. Responsibilities and Logistics

Responsibilities of the SCO and DIR will be essentially the same as with the V1-V6 Projects. SCO will be responsible for the following logistics:

- **Data development.** The SCO will perform all data development for the V7 Project including data model, database design, interpretation, ingest, ETL, editing, attribute mapping, spatial manipulation, data assembly, and integration, QA/QC, and data assessment.
- **Standards development.** Identification of specific standards to improve the efficiency of data integration, data submission standards, timetables, and benchmarks for counties.
- **Benchmarking.** SCO to generate benchmark data by county and document benchmark progress contemporaneously as part of data intake process, based on benchmarks developed in consultation with DOA.
- **Public access to data.** SCO will be responsible for working to locate and configure an appropriate solution and technology for visualization of and access to the final statewide parcel map database. Features such as data hosting, tiered governmental and public access, and other features beyond simple display, search, and query functions are beyond the scope of the SCO's responsibilities.
- **Project management.** Project management and administration will reside primarily in the SCO for the V7 Project. This includes hiring, managing, and oversight of GIS staff and students.
- **Technical assistance for statewide parcel map layer hosting and display.** The SCO will provide technical assistance for maintaining a functional statewide parcel layer application online.
- **Final deliverables.** The SCO will deliver the final V7 database, E3 PLSS database, and other deliverables. Reports will be written in collaboration with DOA. In the event of a conflict in executing the scheduled creation of deliverables, those deliverables specifically related to the statewide parcel layer database shall take precedence over the PLSS sub-project deliverables.

DIR will be responsible for the following logistics:

- **Data acquisition.** The DIR will be responsible for making formal data requests to county and/or municipal GIS offices, including follow-up steps such as open records requests.
- **Data sharing.** The DIR will review and implement licensing agreements as needed and document data sharing issues.
- **Software and hosting/display technology.** Provide access to commercially-licensed desktop GIS software. DOA will provide access to three basic desktop ArcGIS licenses for the SCO use on the project, access to ArcGIS Online, and all necessary credits for ArcGIS Online.

Both the SCO and DIR will participate in community outreach efforts. In consultation with DIR, the SCO will conduct outreach and publicize project goals and status. Both the SCO and DIR will provide project liaisons to facilitate collaboration.

## 6. Project Timeline

Date	Milestone
January 1, 2021	V7 Project start
January 15, 2021	V7 data validation and geoprocessing tools finalized
January 25, 2021	Call for data materials ready
January 29, 2021	Call for data
February 1, 2021	Begin county data preparation assistance/outreach
February 26, 2021	V7 workflow documentation draft
March 31, 2021	V7 data submissions due
June 1, 2021	Benchmarking data ready for sharing with counties
June 10, 2021	Draft V7 database for purposes of QA/QC
June 28, 2021	Any V7 parcel map web app updates complete
June 30, 2021	V7 parcel map available online
September 17, 2021	Final E3 PLSS database
September 30, 2021	E3 PLSS end user documentation
October 29, 2021	V7 final report
November 12, 2021	E3 PLSS final report and E3 database publication
December 3, 2021	V8 data validation tool finalized
December 17, 2021	V8 call for data ready

## 7. Payments to SCO

SCO shall receive, during the term of this scope of work, reimbursement of expenses up to the amount of \$125,851 for staff time, materials and incidental expenses in executing the V7 Project. SCO shall submit invoices to the DOA on a quarterly basis. Such invoices will include major budget category detail, e.g., salary, fringe, supplies, travel, etc. The final invoice shall be submitted to the DOA within 60 days of contract end date.

## 8. Project Budget

Item	Description	Amount
Staff salary and fringe	Ana Wells, 50%; Thomas Kazmierczak, 100%	\$92,124
Student assistant(s) and fringe	~1500 hours	\$12,312
Travel and supplies	Computer hardware, conference travel, outreach travel	\$5,000
Indirect	15%	\$16,415
<b>TOTAL</b>		<b>\$125,851</b>

**9. Primary Project Contacts**

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For the University of Wisconsin-Madison

For the Department of Administration,  
Division of Intergovernmental Relations



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Robert Gratzl  
Assistant Director of Contracts

8/20/2020

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Date



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Administrator  
Division of Intergovernmental Relations

08/20/2020

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Date