Lancaster County, NE
Precision Mapping on the PLSS
Erik J. Hubl
Scott C. Robinson
Geography
Lancaster County, Nebraska
Mean Center Mathematical Centroid Lancaster County

Population Weighted Mean Center Lancaster County
Source:  http://lancaster.ne.gov
Population Estimate July 1, 2014: 301,795
Source: www.census.gov/
Highest elevation runs about 1525’ in the northwest to about 1066’ where Salt Creek leaves the County. County physiography is essentially glacial till and loess.
The Plan

PLSS – Public Land Survey System
The POB of the Public Land Survey System was set in 1785
The 6th Principal Meridian was set in 1855/56 and covers all or parts of 5 states.
Charley Manners – GLO Surveyor
NE Corner
SEC. 31-07-08
The Design

GPS – Surveying the base control
A township network tied to NGS monuments. Section and quarter corners tied to this network. The goal is to achieve centimeter positioning at all locations and to serve as the foundation for GIS development.
County Grid – Low Distortion Projection

Create a Central Meridian through the center of Lancaster County
Thaddeus ‘TV’ Vincenty

Geodesist, National Geodetic Survey
Architect of the 1983 North American Horizontal Datum Readjustment
NOAA Meritorious Service Award 1982
Assisted Lancaster County Engineering Department with Creation of Low Distortion Projection ‘County Grid’ and County Grid Parameters for use in AshTech software.
LANCASTER COUNTY, NEBRASKA

The ellipsoid height of National Geodetic Survey control points were used to confirm the scale factor selected for County Grid. The Low Distortion Projection reduces the difference between distances depicted in a GIS when compared to field surveyed real-world distances.

County Grid is based on the central meridian which has been raised slightly from a tangent (scale factor) to a position that accommodates local elevation differences.
Lancaster County Grid Low Distortion Projection in ArcGIS 10.2.2
The Build
GIS – Mapping the Legal Lots
COGO is our friend

- Coordinate Geometry
- Survey and Deed adjustment and closure
- Measurements in feet
- Calculates closure
- Calculates acres
- Allows various adjustments (Crandall, Transit, Compass, Least Squares)
Operate Within the Infrastructure Lifecycle
1989 to 2015

Many new releases and upgrades

- Arc/Info 4.0 to ArcGIS 10.2.2
- Ashtech – Sokkia – Trimble GPS
- Command Line, AML to ArcGIS
- One Department to over 20
- New employees to train
- New challenges to tackle
On Wednesday and Thursday, May 6 – 7, 2015 nearly 10 inches of rain fell in Lancaster County with much of it falling along the Salt Creek Watershed.

Data Source: National Weather Service
District Supervisors, using a Samsung (Android) Tablet, captured pictures at locations of storm damage.

Each picture was time-stamped and geo-coded (GPS coordinates) and brought into the County-City GIS.

1,776 pictures were taken and after screening, 838 were selected to tag with additional information.
There were over 550 locations where water was over the road.
Building and Coding a Complete ROW Layer
Database Maintenance and Subdivision Challenges
Database Maintenance and Subdivision Challenges
LiDAR Database Management and Testing for Applications
LiDAR Database Management and Testing for Applications
2022 – New Geodetic Datum
Pamela L. Dingman
County Engineer

Kenneth D. Schroeder
County Surveyor

Survey Team:
Jerry Penry
Rick Lassek
Grant Heser
Jim Jurgens

Research Team:
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