Town of Concord GIS News

Volume 14   July 1, 2019

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1. Land Cover/Land Use

MassGIS recently released a fascinating new data set, bringing together the results of recent Land Use and Land Cover mapping efforts. Here's a sample of the Land Cover view, with all the various categories present in Concord's dataset:

Land Cover

Land Cover Name
- Bare Land
- Cultivated
- Deciduous Forest
- Developed Open Space
- Estuarine Emergent Wetland
- Evergreen Forest
- Grassland
- Impervious
- Palustrine Aquatic Bed
- Palustrine Emergent Wetland
- Palustrine Forested Wetland
- Palustrine Scrub/Shrub Wetland
- Pasture/Hay
- Scrub/Shrub
- Water
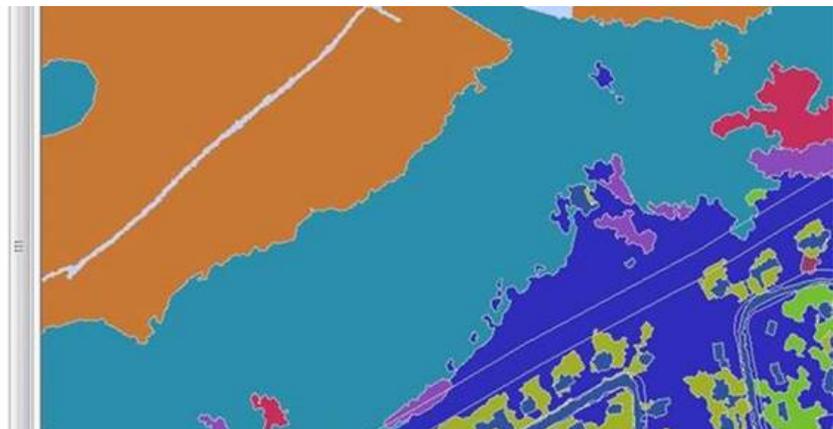
And the Land Use view:

Land Use

Generalized Use Name
- Agriculture
- Commercial
- Forest
- Industrial
- Mixed use, other
- Mixed use, primarily residential
- Open land
- Recreation
- Residential - multi-family
- Residential - other
- Residential - single family
- Right-of-way
- Tax exempt
- Unknown
- Water

The thin gray lines bordering each polygon above indicate that the data has been cut both ways (Cover and Use). The real fun comes in using these two together. For example, here's a display of the portions of Residential (Land Use) parcels used as Developed Open Space (Land Cover) – otherwise known as lawns and the like – yellow with an orange outline. These portions constitute about 6% of Concord's total land area.

For more details about how the data was developed, visit MassGIS' data layer description.

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2. Route Mapping with GIS

As anyone who uses Google Maps, Waze (etc.) knows, maps are THE tool for comparing alternative paths to a particular destination. Route mapping has been the subject of a couple of recent Concord GIS projects

School Bus Routes: CPW Engineering recently requested the mapping of existing school bus routes, in support of an ongoing traffic study. The 158 (!) bus routes are documented in PDF list form on the school district's School Bus Routes web page and include both public and private school routes for the eleven schools in town.

21	7:26 am	36-38 WILLIAMS RD
22	7:28 am	OLD MARLBORO RD & UPLAND RD
23	7:28 am	OLD MARLBORO RD & S MEADOW RDG
24	7:29 am	OLD BRIDGE RD & OLD MARLBORO RD
25	7:30 am	MACARTHUR RD & OLD MARLBORO RD
26	7:30 am	OLD MARLBORO RD & ORCHARD RD
27	7:31 am	EMERSON RD & OLD MARLBORO RD
28	7:32 am	FLORIO DR & MAIN ST
29	7:33 am	COOLIDGE RD & MAIN ST
30	7:34 am	MAIN ST & WOOD ST
31	7:34 am	MAIN ST & RIVER ST
32	7:39 am	CCHS (CCHS)

22	7:34 am	598 LEXINGTON RD
23	7:35 am	ALCOTT RD & LEXINGTON RD
24	7:41 am	CCHS (CCHS)

CCHS Route 16 - AM

Bianco, Anthony

	TIME	LOCATION
1	6:45 am	BUS TERMINAL
2	7:17 am	CAMBRIDGE TPKE & SIDNEY LN(ON CALL)
3	7:18 am	CAMBRIDGE TPKE & SANDY POND RD(ON CALL)
4	7:19 am	CAMBRIDGE TPKE & MILDRED CIR(ON CALL)

This was a perfect opportunity to use one of my favorite mapping tools: the Tracing tool which snaps to a feature (e.g. a street centerline) and builds a new feature as the cursor is moved along the existing features:
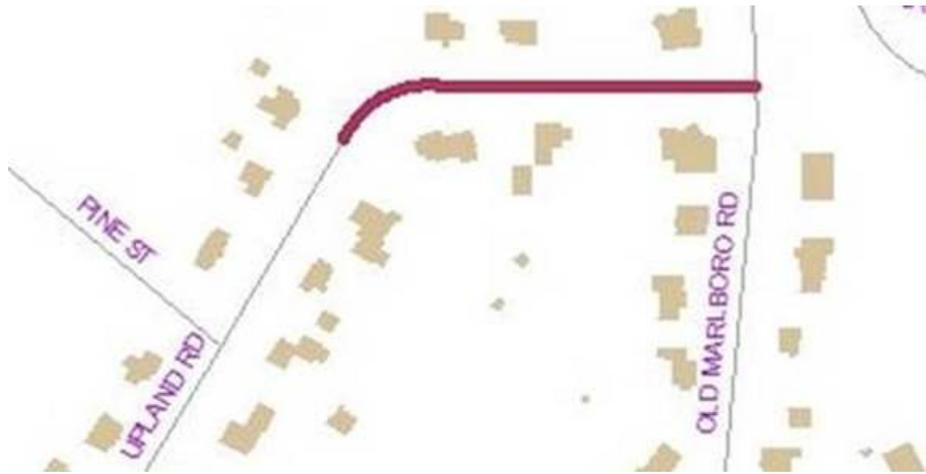
See the Map Gallery to view the plethora (well, 18…) of resulting maps.

Walking Distance: Around the same time, Planning asked for Walking Distance routes based on 5 and 10 minute strolls from three locations in town: Main and Walden, Thoreau Station and West Concord Station. The Trace tool again came in handy. Here's a sample, showing what's within a 5-minute walking distance of West Concord Station:

Let me know if you are ever in the market for a route map, and I'll be (very) happy to get out my Trace tool again!

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3. Coordinate Geometry

A recent Planning Board ANR (Approval Not Required) request brought to light a small land transfer from 1948 (!) which had not yet been reflected in Concord's Parcel layer. Carolyn in Assessing asked if I could use the deed to determine the acreage of the lot which received the small land transfer.

Land deeds generally include a series of professionally-surveyed traverses in verbal form, to describe the boundaries of the parcel involved. For example:

Beginning at a point on said Oak Road at the Northeasterly corner of the premises five (5) feet southwesterly from a stone bound at said Road and thence running:

NORTH 28°40' WEST   by land formerly of Strout, crossing the brook, to an iron pipe two hundred six and 7/10 (206.7) feet; thence

SOUTH 71°44' WEST   to a pipe near said brook fifty-five (55) feet more or less; thence
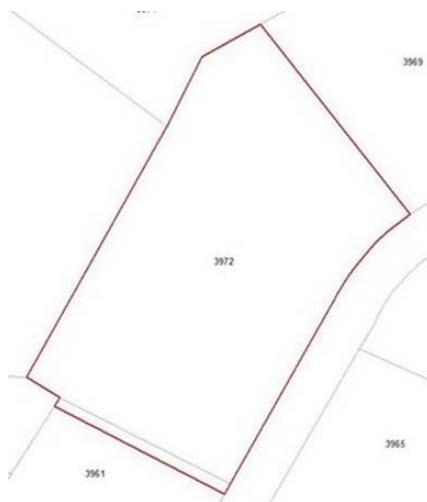
SOUTH 47° WEST   by land now or formerly of Diskin to a stone bound three hundred three and 8/10 (303.8) feet; thence

SOUTH 43° EAST   by land now or formerly of Flagg to a stone bound

For this task, I used COGO (Coordinate Geometry) tools to create a series of line segments from the surveyor traverses in the deed, each with the proper length and orientation.
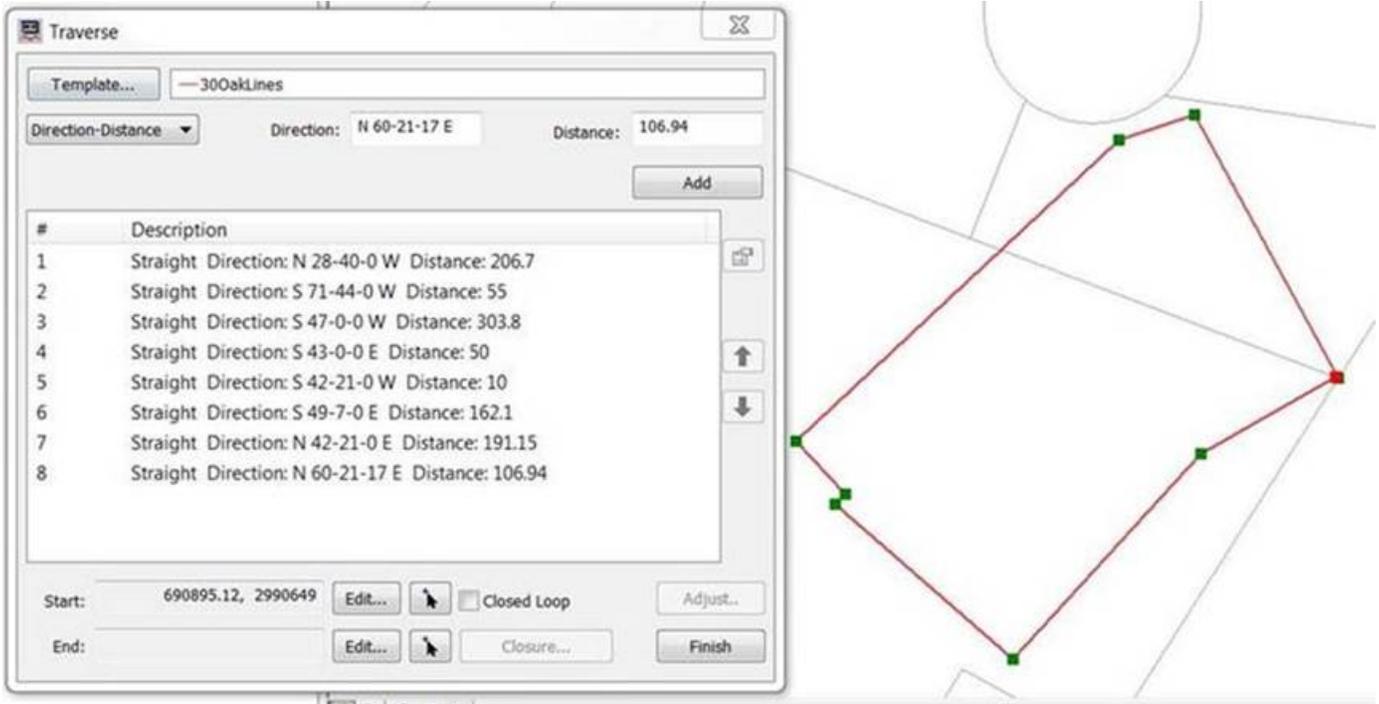
Then I created a revised parcel polygon based on the traverse lines, and calculated the new area (1.56 ac) for Carolyn.

This is what I call fun – at least at work!

4. Map / App Gallery

CTRL-Click on a thumbnail to view the app or map

Web App: Town-Owned Conservation Land		Lori Capone, Natural Resources, requested another phone app, to assist NRC volunteers in the field monitoring Town Conservation Land.
Bus Routes		Nathan Chin, CPW Engineering, requested development of a GIS data layer based on the 158 (!) Concord-Carlisle School District bus routes.
Flood Zone Maps		Lane Partridge, Town Assessor, requested a couple of Flood Zone-based maps to assist in presenting a Land Court case involving a proposed 'distressed' parcel.
Town-Owned Land		Marcia Rasmussen, Planning, requested a large map highlighting selected Town-Owned parcels for an Affordable Housing discussion with the League of Women Voters.