A Draft Method For Estimating Urban Landscape Area

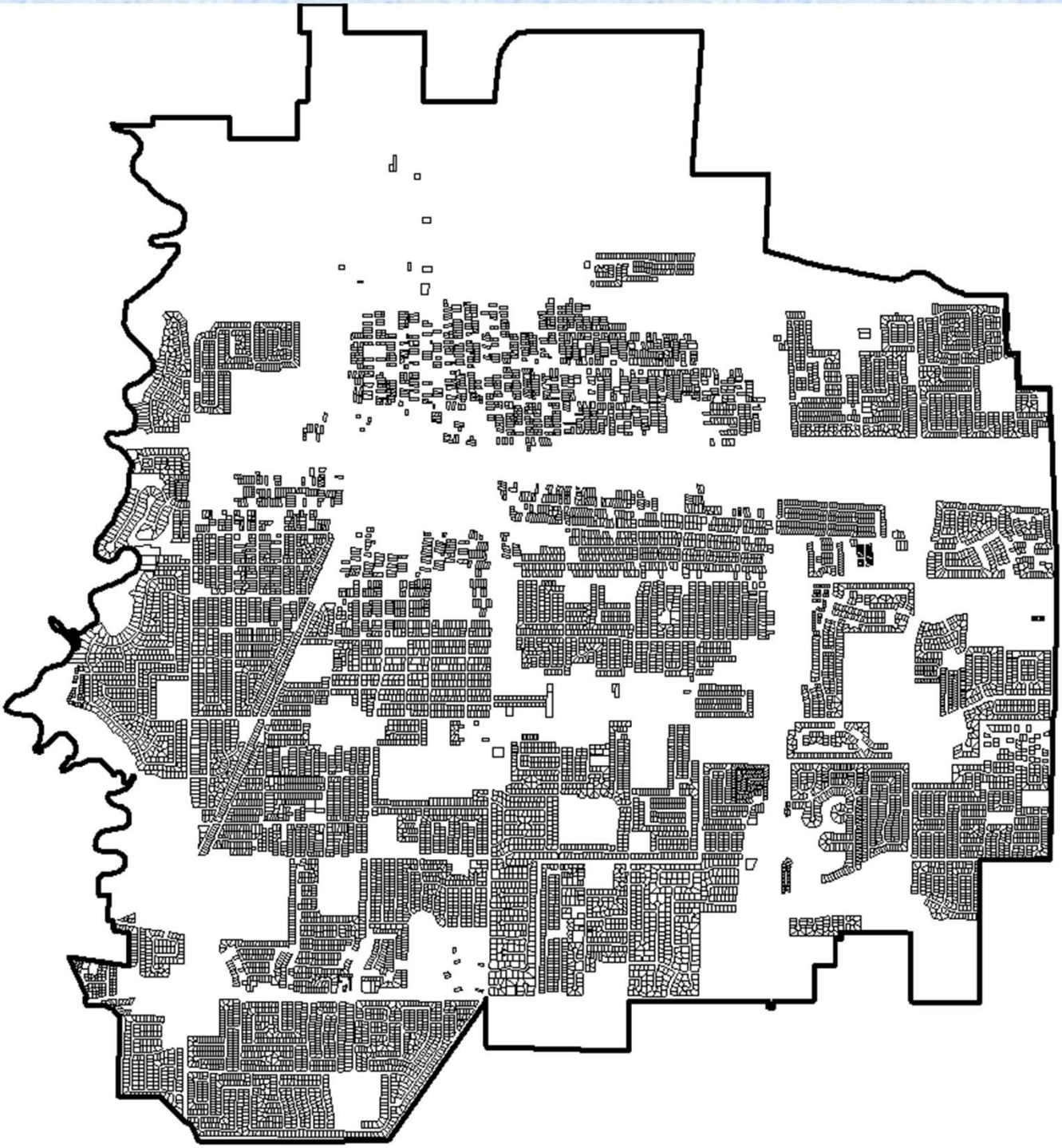
Tom Hawkins
Division of Statewide Integrated Water Management
Department of Water Resource

The City of Lodi was selected to use in the development of the draft method

Acquired parcel data (spatial and attributes) from the California Technology Agency

Acquired the water service area boundary from Department of Public Health

Selected only single family home parcels as the target for developing the landscape area estimate



Developed a sampling method using parcel area

Removed from sampling parcels with an area greater than 24,000 square feet

These parcels would be digitized to determine landscape area

Removed from sampling the smallest parcels, where their total area was 0.5% of all the parcels.

These parcels would use the landscape percentage developed for the strata with the smallest parcels

Developed four strata which were equal area, where the total area was divided evenly between the four strata, in descending order

From the four strata, a total of 80 parcels were randomly selected to be digitized

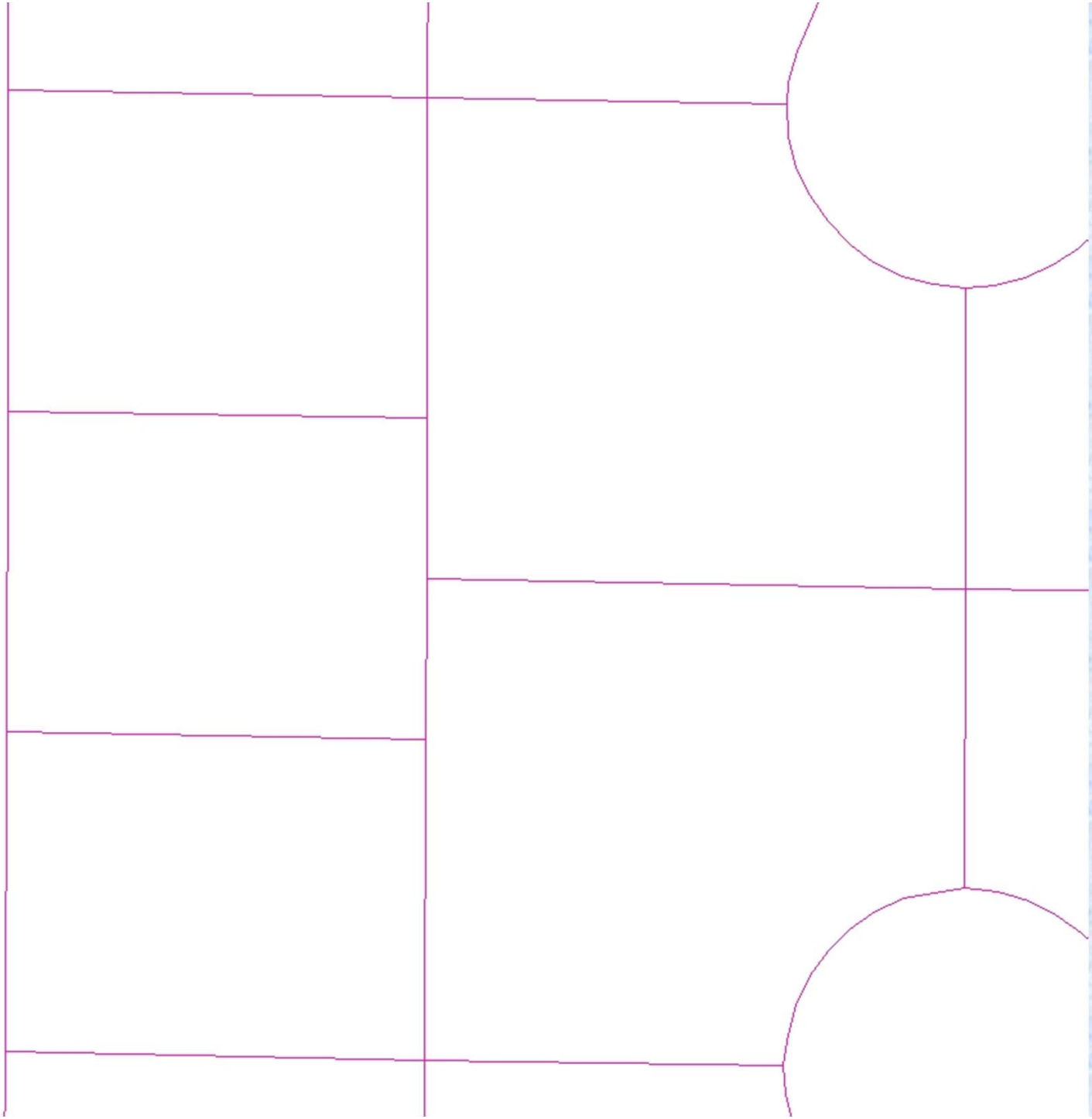
Needed to digitize 80 parcels from the four strata, and 38 parcels larger than 24,000 sq-ft.

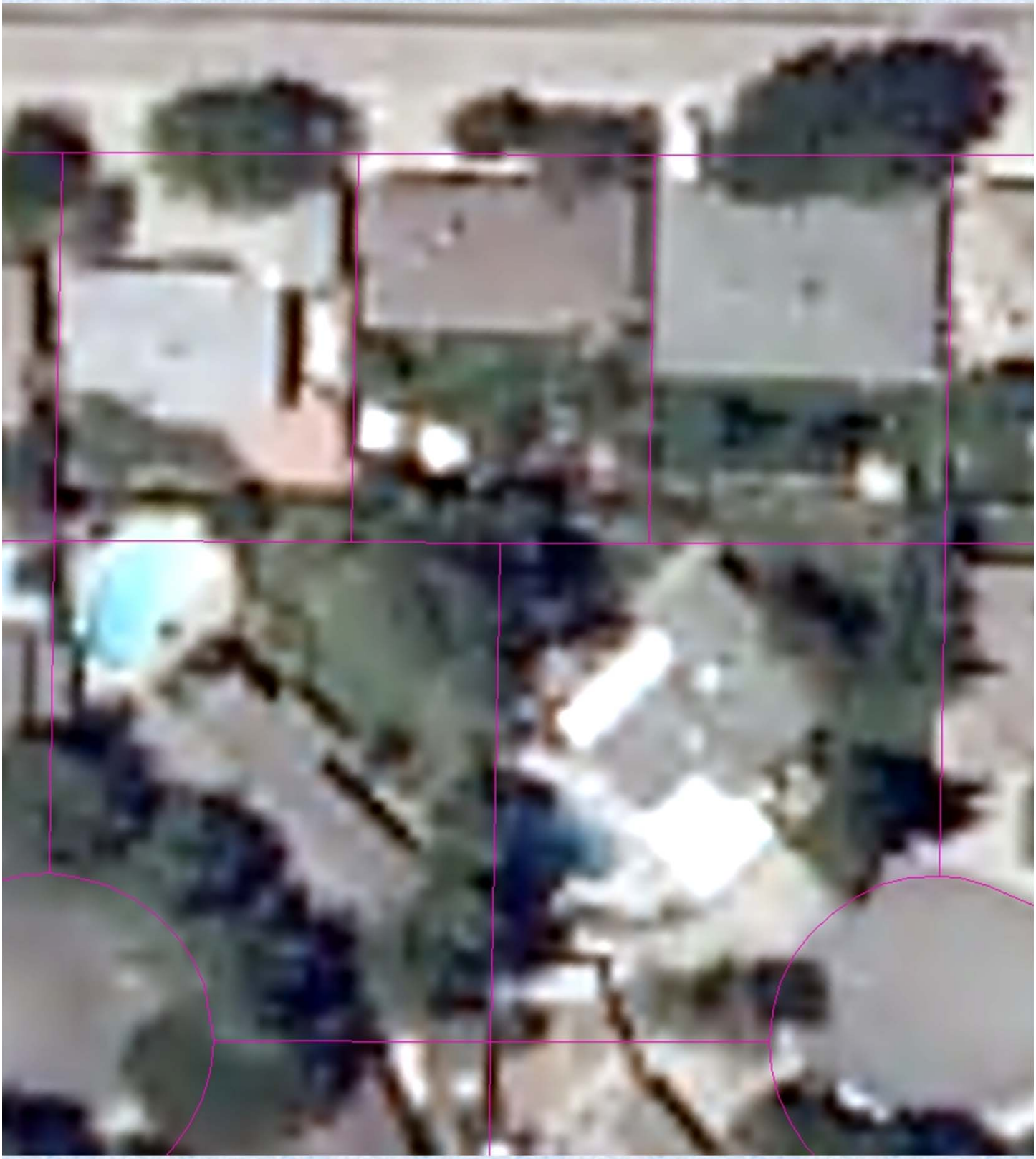
All parcels were digitized in ARCGIS

Acquired the 2010 National Agriculture Imagery Program
1 meter natural color imagery
at no cost

Purchased 2008 Digital Globe one foot natural color imagery, about $450

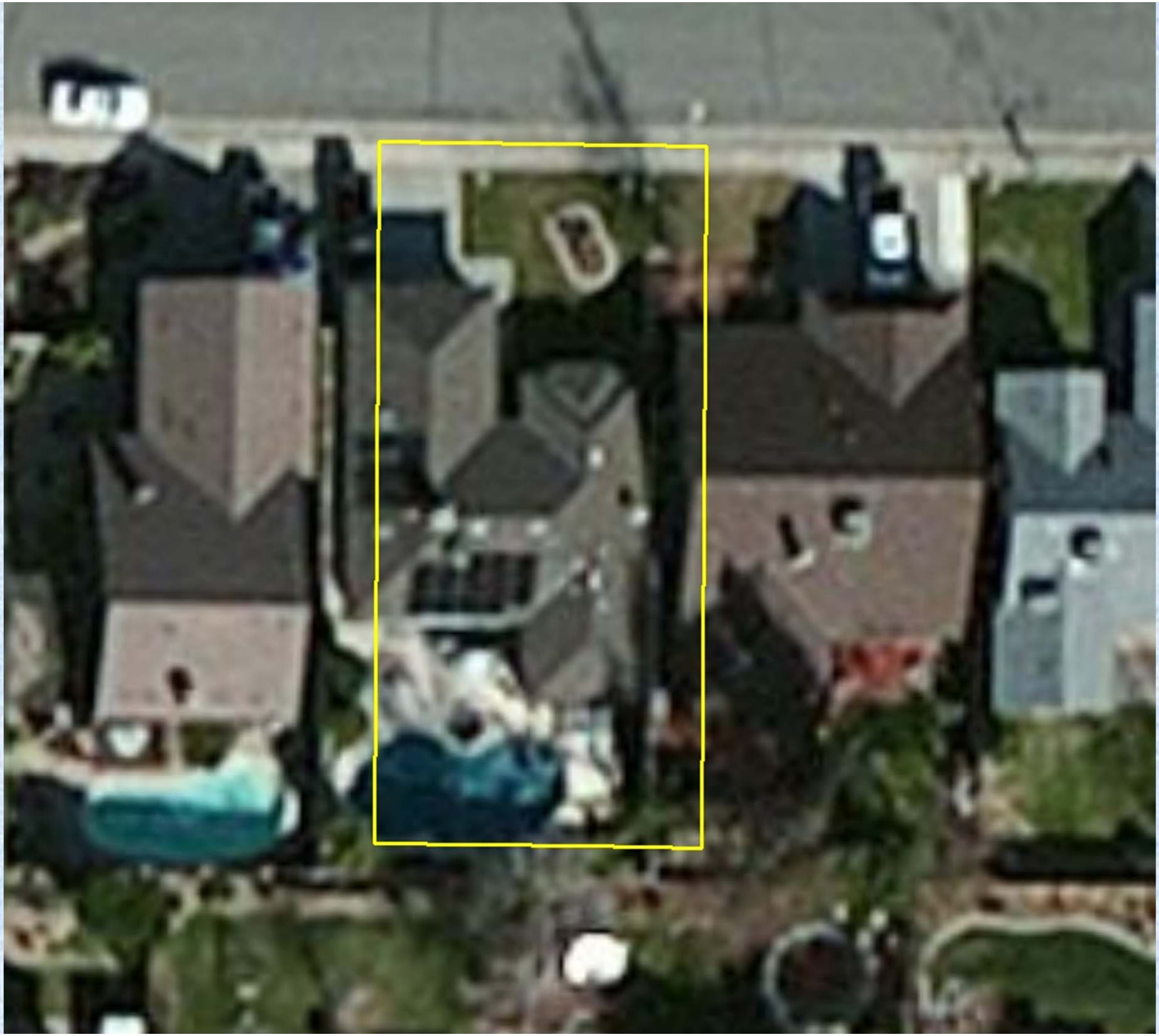
Within ARCGIS, have access at no cost to Microsoft's Bing Maps aerial imagery

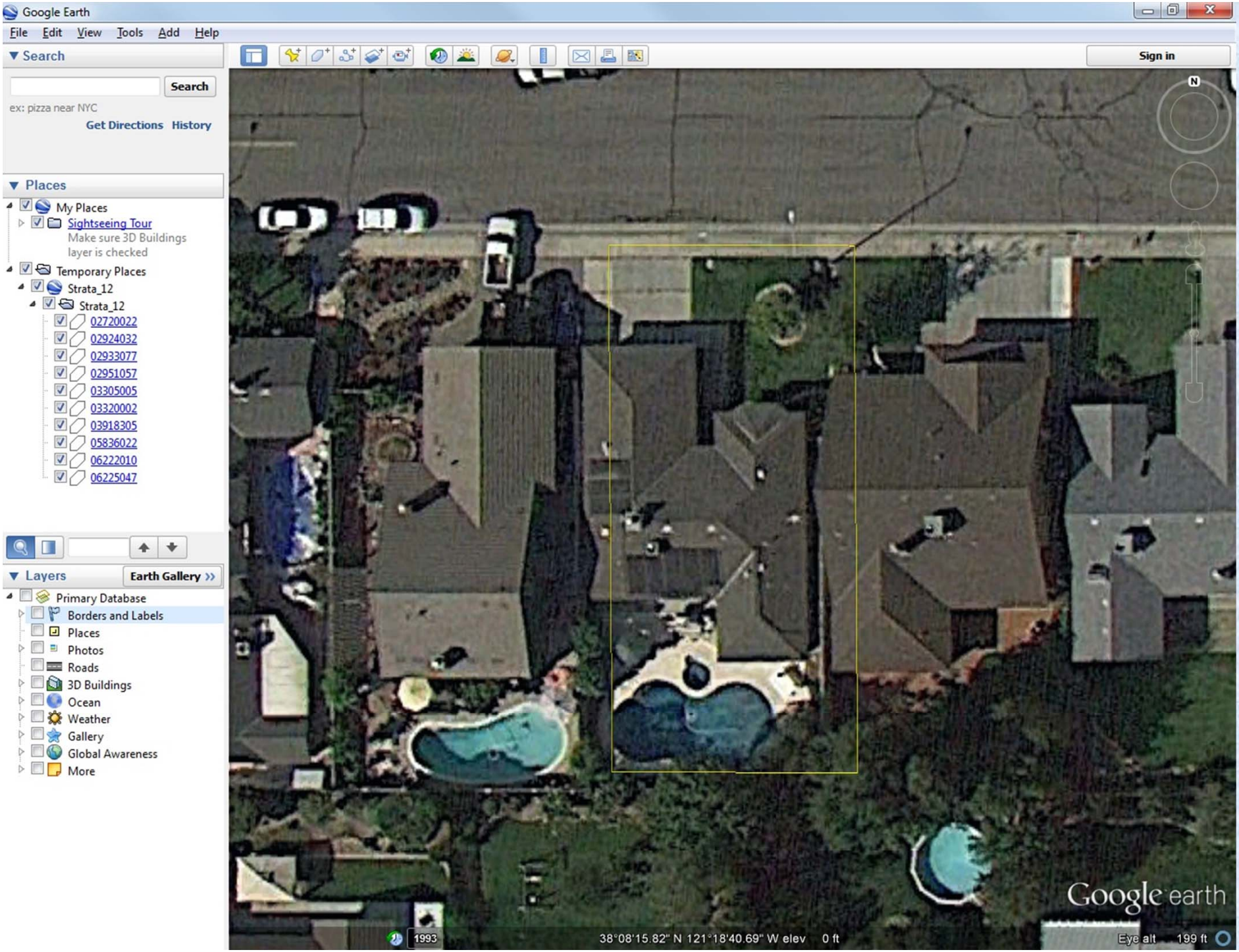


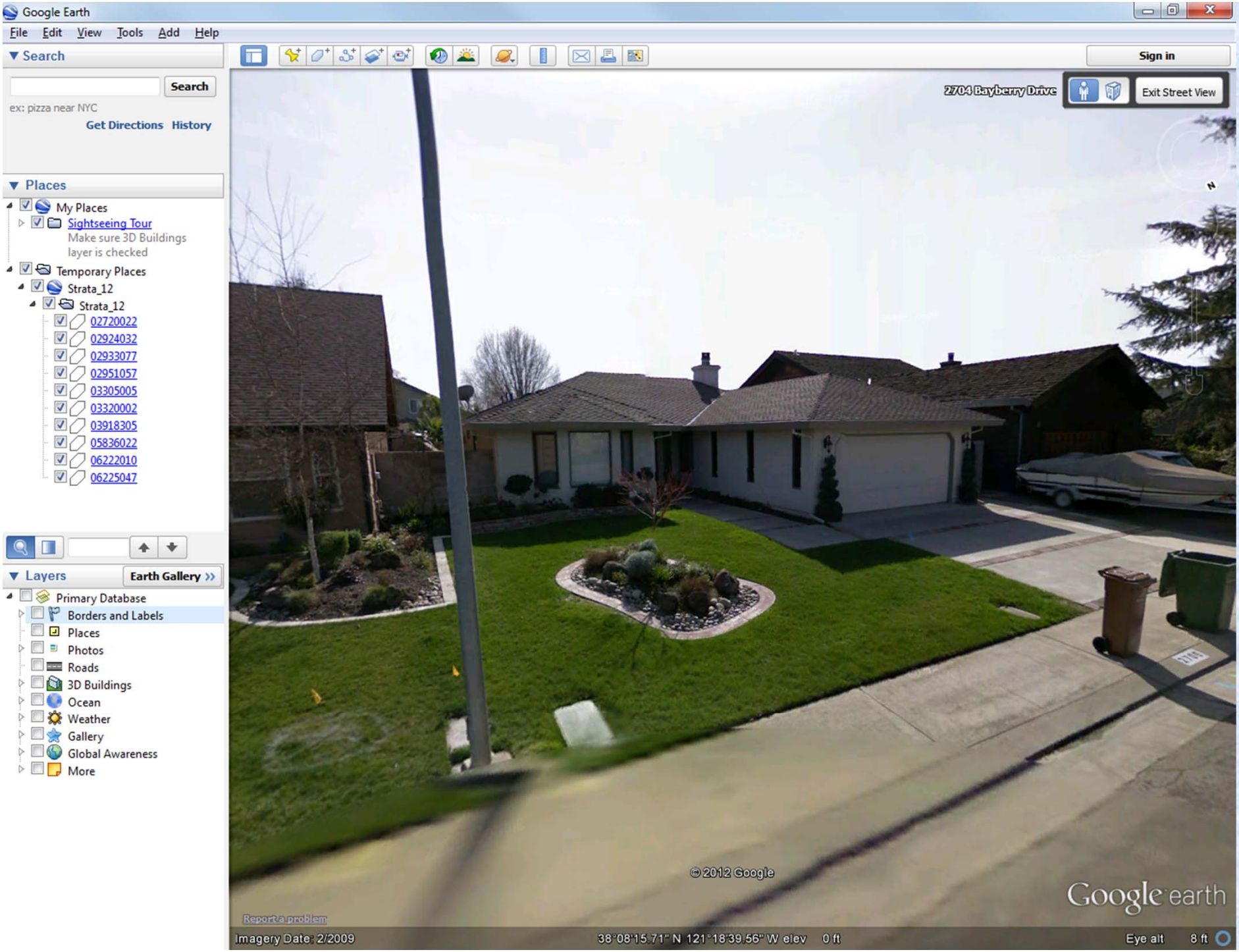


Used the Landscape Model Ordinance' definition of landscape area for digitizing parcels

“landscape area” means all the planting areas, turf areas, and water features in a landscape design plan subject to the Maximum Applied Water Allowance calculation. The landscape area does not include footprints of buildings or structures, sidewalks, driveways, parking lots, decks, patios, gravel or stone walks, other pervious or non-pervious hardscapes, and other non-irrigated areas designated for non-development (e.g., open spaces and existing native vegetation).




Google Earth
File Edit View Tools Add Help
Search
Search
ex: pizza near NYC
Get Directions History
Sign in
Places
My Places
Sightseeing Tour
Make sure 3D Buildings layer is checked
Temporary Places
Strata_12
Strata_12
02720022
02924032
02933077
02951057
03305005
03320002
03918305
05836022
06222010
06225047
Layers
Earth Gallery
Primary Database
Borders and Labels
Places
Photos
Roads
3D Buildings
Ocean
Weather
Gallery
Global Awareness
More
N
Google earth
1993
38°08'15.82" N 121°18'40.69" W elev 0 ft
Eye alt 199 ft


Google Earth
File Edit View Tools Add Help
Search
Search
ex: pizza near NYC
Get Directions History
Places
My Places
Sightseeing Tour
Make sure 3D Buildings layer is checked
Temporary Places
Strata_12
Strata_12
02720022
02924032
02933077
02951057
03305005
03320002
03918305
05836022
06222010
06225047
Layers
Earth Gallery
Primary Database
Borders and Labels
Places
Photos
Roads
3D Buildings
Ocean
Weather
Gallery
Global Awareness
More
Sign in
2704 Bayberry Drive
Exit Street View
© 2012 Google
Google earth
Report a problem
Imagery Date: 2/2009
38°08'15.71" N 121°18'39.56" W elev 0 ft
Eye alt 8 ft

2708 Bayberry Drive, Lodi, ×

maps.google.com

+You Search Images Maps Play YouTube News Gmail Drive Calendar More

Google

2708 Bayberry Drive, Lodi, CA

Sign in

Get directions My places

2708 Bayberry Dr
Lodi, CA 95242

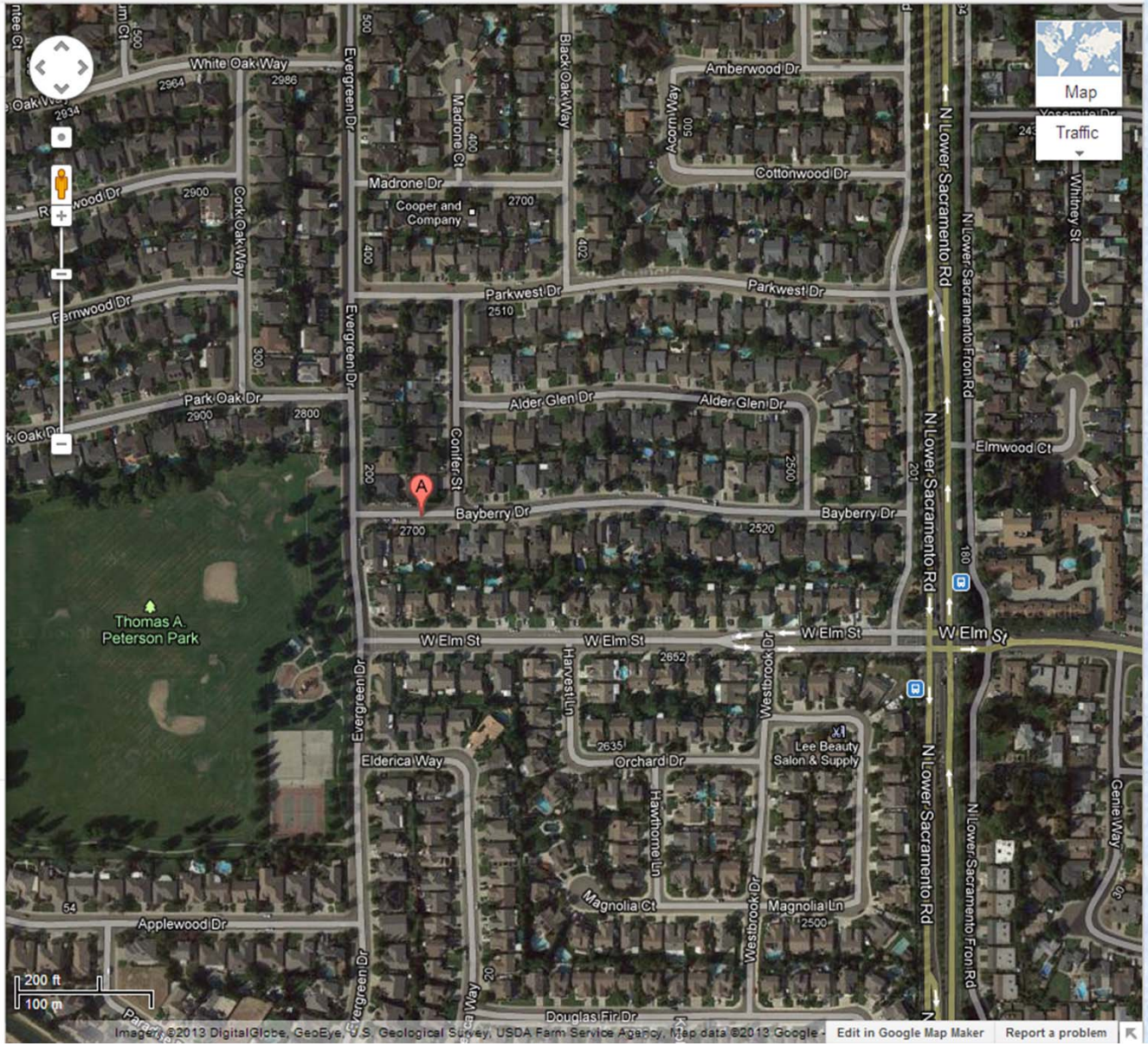
Directions Search nearby more

It's here.
Google Maps
for iPhone®

Get the app

Maps Labs - Help

Google Maps - ©2013 Google - Terms of Use - Privacy



2708 Bayberry Drive, Lodi,

maps.google.com

maps.google.com wants to use your computer's location. Allow Deny Learn more

+You Search Images Maps Play YouTube News Gmail Drive Calendar More

Google 2708 Bayberry Drive, Lodi, CA Sign in

Get directions My places

2708 Bayberry Dr
Lodi, CA 95242

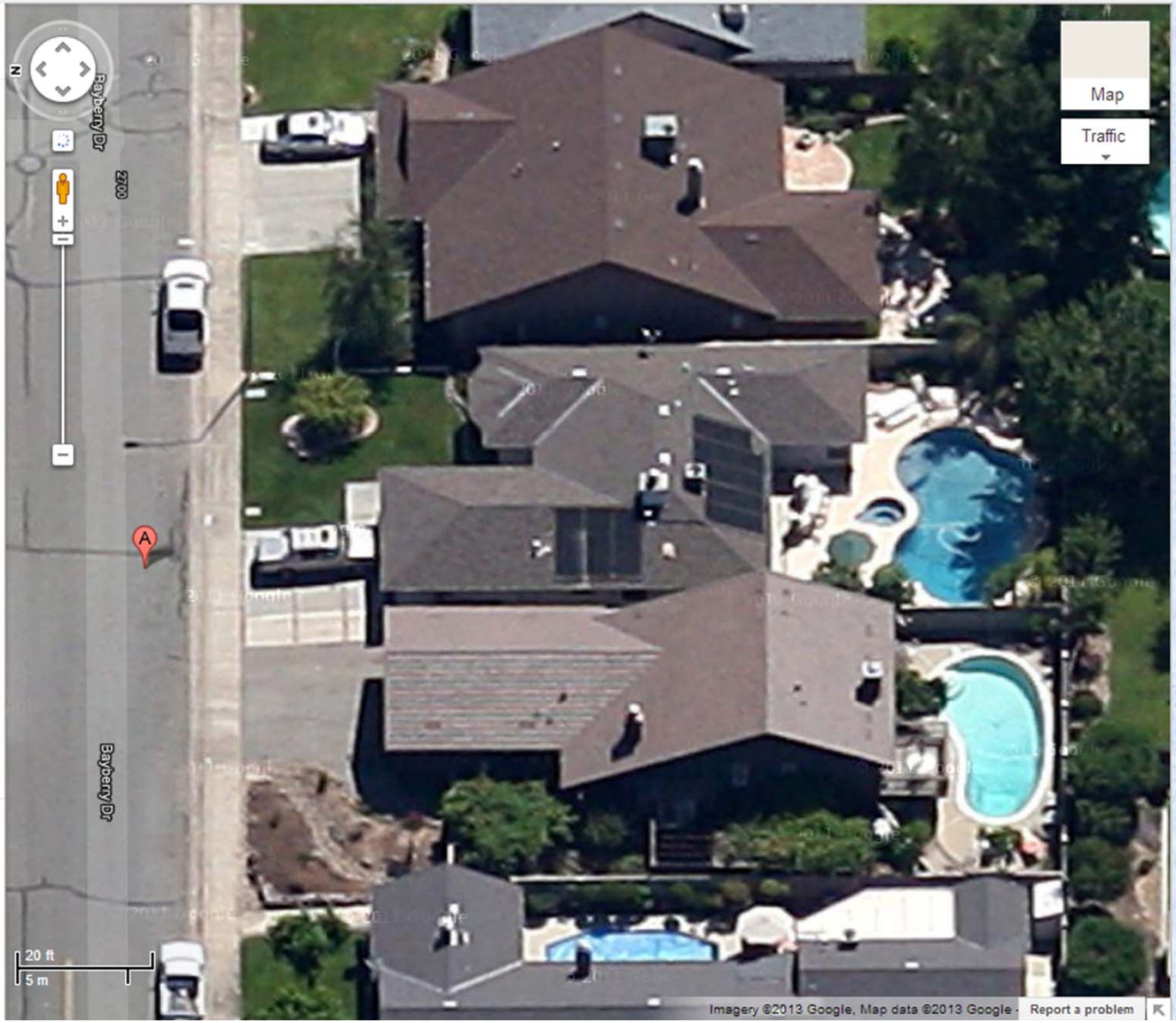
Directions Search nearby more

It's here.
Google Maps
for iPhone®

Get the app

Maps Labs - Help

Google Maps - ©2013 Google - Terms of Use - Privacy



2708 Bayberry Drive, Lodi,

maps.google.com

maps.google.com wants to use your computer's location. Allow Deny Learn more

+You Search Images Maps Play YouTube News Gmail Drive Calendar More

Google 2708 Bayberry Drive, Lodi, CA Sign in

Get directions My places

2708 Bayberry Dr
Lodi, CA 95242

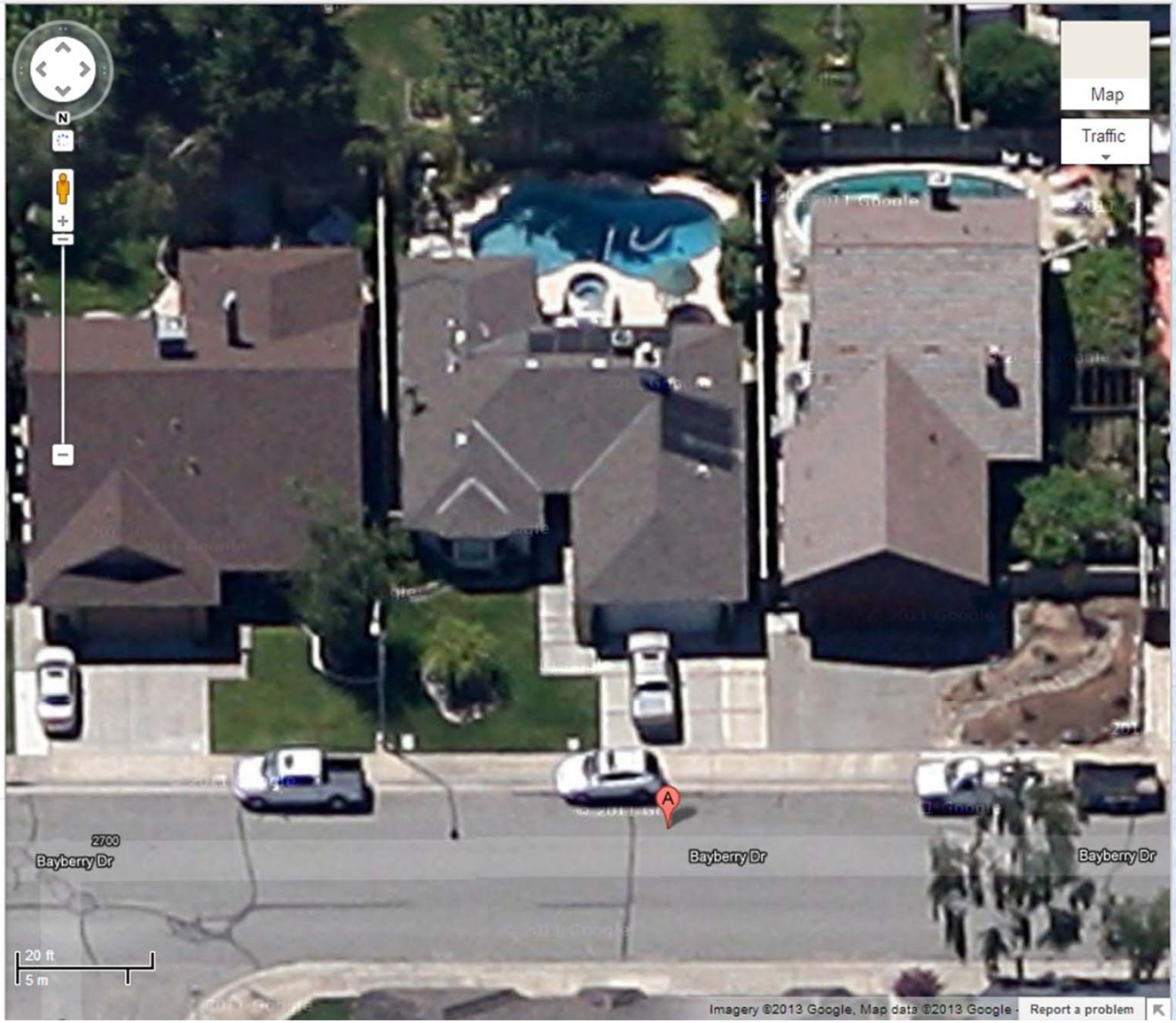
Directions Search nearby more

It's here.
Google Maps
for iPhone®

Get the app

Maps Labs - Help

Google Maps - ©2013 Google - Terms of Use - Privacy



	Percent	Total	Landscape
Strata	Landscape	Parcel Size	Area
Small Parcels	38.0	640,976	243,391
1	38.0	23,428,803	8,896,358
2	29.9	23,906,428	7,155,198
3	38.4	23,906,694	9,170,532
4	44.4	24,388,486	10,825,847
Large Parcels	40.6	1,233,945	501,055
Total	37.7	97,505,332	36,792,380

Comparison of two staff's landscape percentage and acreage

	Staff #1	Staff #2
Strata	Landscape%	Landscape%
1	39.5	36.7
2	29.4	31.0
3	38.3	36.1
4	44.4	43.4

This resulted in a difference of less than 3% in total landscape area

Comparison of the two staff's time for digitizing parcels

Staff #1 - 10 Parcels/Hour
Staff #2 - 6 Parcels/Hour

Cost Estimates for determining landscape area for SFR for 52 water agencies

Using DWR staff: $162,000
Using RS company: $168,000

Questions/Comment?

Tom Hawkins
916-651-0171
Tom.Hawkins@water.ca.gov