

The March to LUCA 2020

Its Different This Time Around

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Census Bureau Mantra

- **Count Every Person, once and only once, in the Right Place at the Right Time**
 - Simple, straightforward, clear statement of mission
 - Accomplishment of goal is much more complex
 - Two huge databases—TIGER and MAF—have to be maintained and updated.

Challenges to Census Bureau Mantra

- U.S.A. is vibrant; its living arrangements and inhabitants are in flux and mobile.
- New homes and other types of structures are being constructed and demolished
- Buildings converted to residences and opposite
- Streets and other geographic features change
- Administrative jurisdictions—sub-county, incorporated places, etc.—become modified through boundary amendments.

Updating TIGER and MAF

- Decades ago updating what we now know as TIGER and MAF was mainly a once in a decade activity.
- It involved an “army” of workers canvassing every inhabited area of the U.S., noting the existence of housing units.
- Today, with BAS, DSF and ACS, Census Bureau attempts to update TIGER and MAF files during the decade between Decennial Censuses.

LUCA and Canvassing

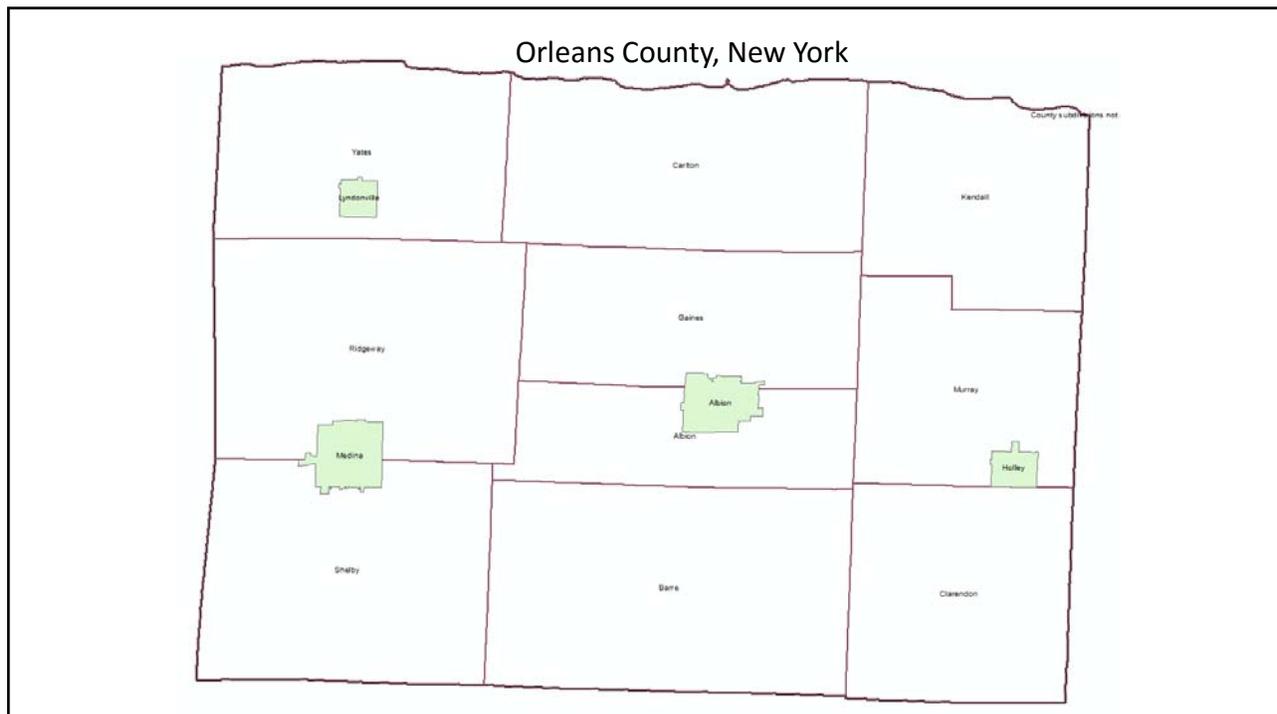
- To insure complete coverage, on the ground canvassing of housing units was the main vehicle for updating TIGER and MAF since the days of Thomas Jefferson.
- Beginning with the 2000 Census, the Local Update Census Addresses (LUCA) program was added (Thanks to Warren Brown, Bob Scardamalia and Joe Salvo).
- This time around (2020 Census) field canvassing has been/will be considerably reduced, replaced by (1) in-office “canvassing” and (2) the Geographic Support System Initiative (GSS-I).

LUCA and GSS-I

- In New York, the GSS-I activity has consisted of
 - The Census Bureau and the NYS GIS Program Office forging a data exchange relationship whereby the later provides address data and coordinates for all structures collected across the state (except NYC) to the Census Bureau.
 - In turn the Census Bureau examines the received data and compares it with the addresses in the MAF and returns a summary report of their findings—total addresses received, residential, matched, accepted, etc.—and number currently in MAF

LUCA and PAD

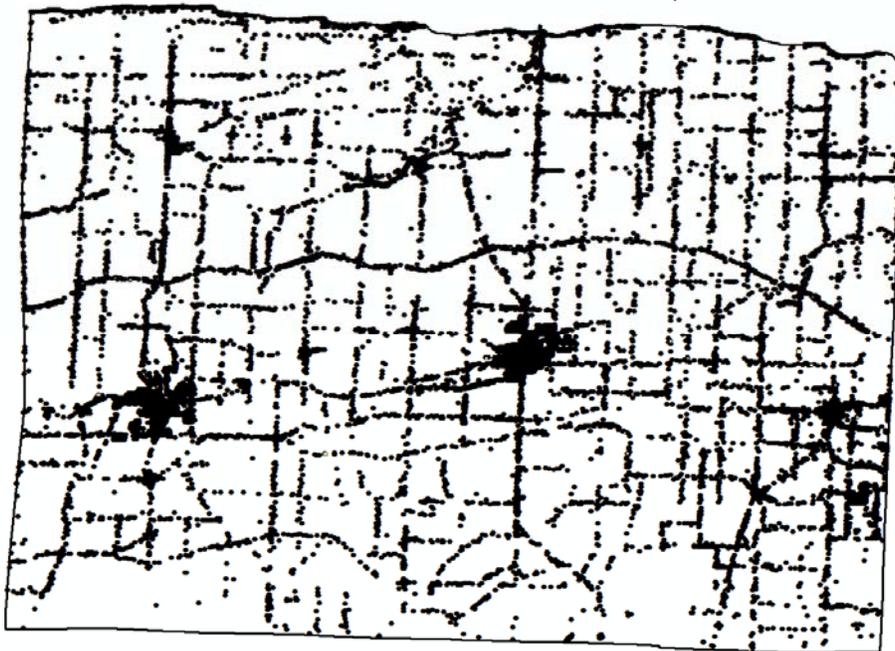
- Recently, the Program on Applied Demographics at Cornell U., under the auspices DOL NY State Data Center, became involved in LUCA preparations.
- Our tasks were
 1. To examine the feedback files provided by the Census Bureau for obvious discrepancies.
 2. Employ local sources of information to compare current MAF summary counts of residential units by blocks.
 3. Offer whatever help we can to all groups involved towards the improvement in the MAF.
- Let me illustrate our work today using Orleans County.



LUCA and Local Data Sources

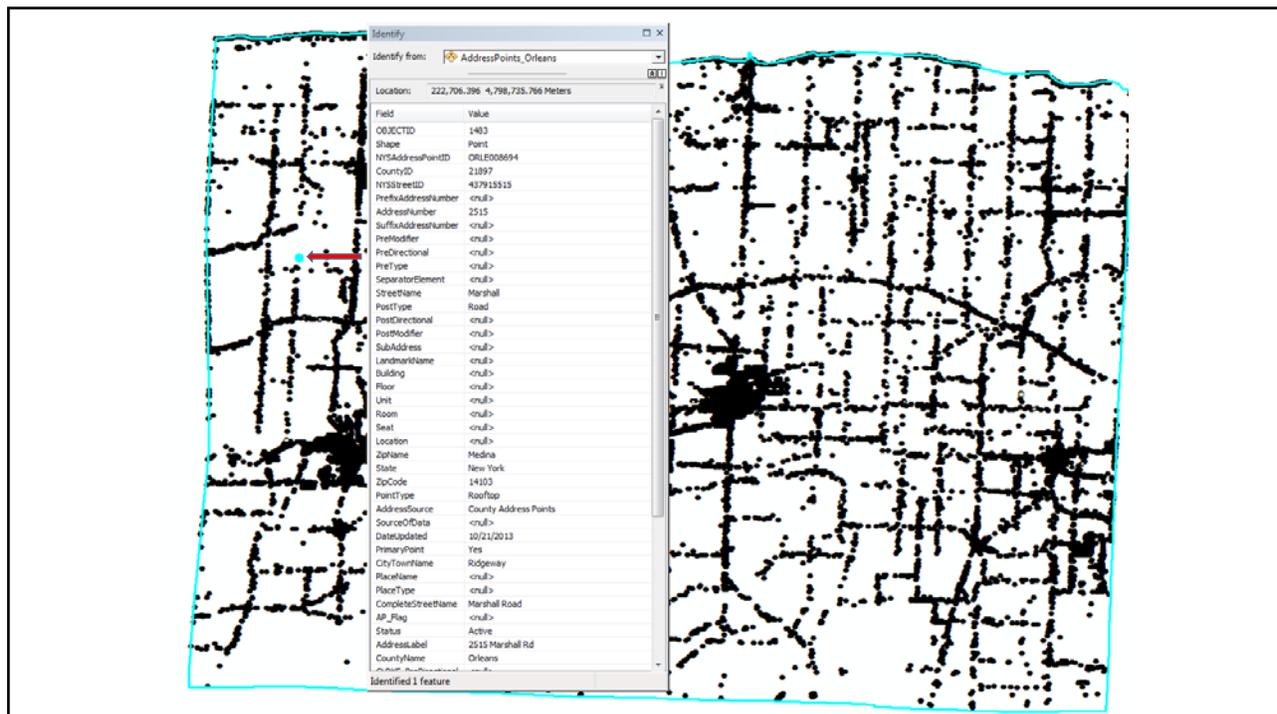
- How to proceed?
- Two most obvious local datasets to examine were the SAM address point dataset and county parcel datasets.
- In the absence of on-the-ground canvassers, we are fortunate that Cheryl Benjamin's group had undertaken the arduous task of compiling/checking a huge database of addresses and geographic coordinates for every structure in NYS.
- Likewise we are fortunate that Bob Gehrer's group had begun compiling/updating a statewide parcel database.

Address Points of Structures in Orleans County



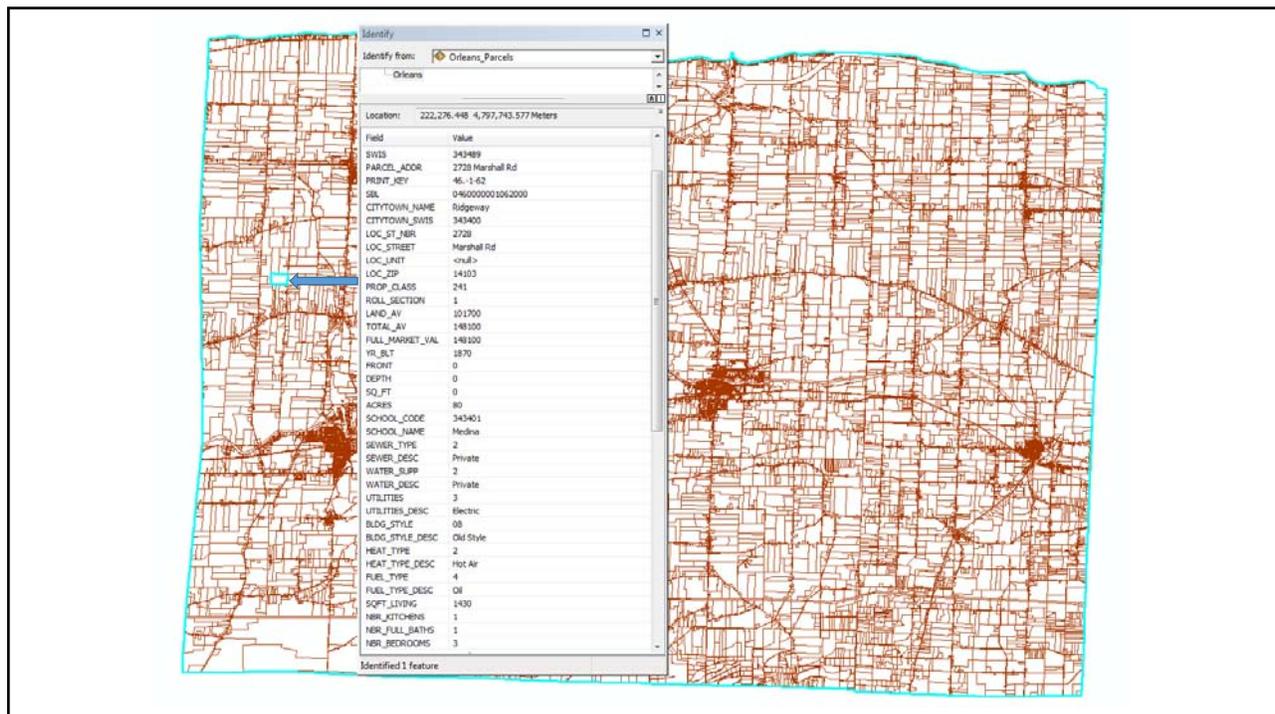
Benefits of SAM

- Abundant, Accurate, useful locational information.
- Conforms to Federal Geographic Data Committee Addressing Standards
- Checked with local GIS personnel for verification
- Has a maintenance program for updating information.
- Available to users through the NYS GIS Clearinghouse in two formats:
 - Downloadable release updated quarterly
 - ArcGIS Web Service updated more frequently



Limitations of SAM

- No information currently about what kind of structures correspond to those map points, particularly housing units versus businesses, etc.
- Our efforts provide an opportunity to enhance the current SAM and MAF database by joining it with information from the tax parcel databases.
- Here's a look at the 2015 tax parcel database in Orleans County.



Benefits of Statewide Parcel Database

- For those counties willing to share their tax parcel databases—property boundaries and features on the parcel—considerable information is available about the number and characteristics of structures inside the parcel boundaries.
- Indicate primary usage of parcel by property code

- 100 - Agricultural - Property used for the production of crops or livestock.
- 200 - Residential - Property used for human habitation. Living accommodations such as hotels, motels, and apartments are in the Commercial category - 400.
- 300 - Vacant Land - Property that is not in use, is in temporary use, or lacks permanent improvement.
- 400 - Commercial - Property used for the sale of goods and/or services.
- 500 - Recreation & Entertainment - Property used by groups for recreation, amusement, or entertainment.
- 600 - Community Services - Property used for the well being of the community.
- 700 - Industrial - Property used for the production and fabrication of durable and nondurable man-made goods.
- 800 - Public Services - Property used to provide services to the general public.
- 900 - Wild, Forested, Conservation Lands & Public Parks - Reforested lands, preserves, and private hunting and fishing clubs

Benefits of Statewide Parcel Database

- Information about other (secondary) usages of the parcel are also indicated.
- This is key to discovery of housing units located on parcels not among the “usual suspects”—those coded in the 200-299 classification codes.
- To illustrate for parcel coded 322, Residential Vacant Land:

The screenshot displays a GIS interface with a table of parcel data and an aerial map. A blue arrow points from a row in the table to a red circle on the map, which is then linked to an 'Identify' window showing detailed parcel information.

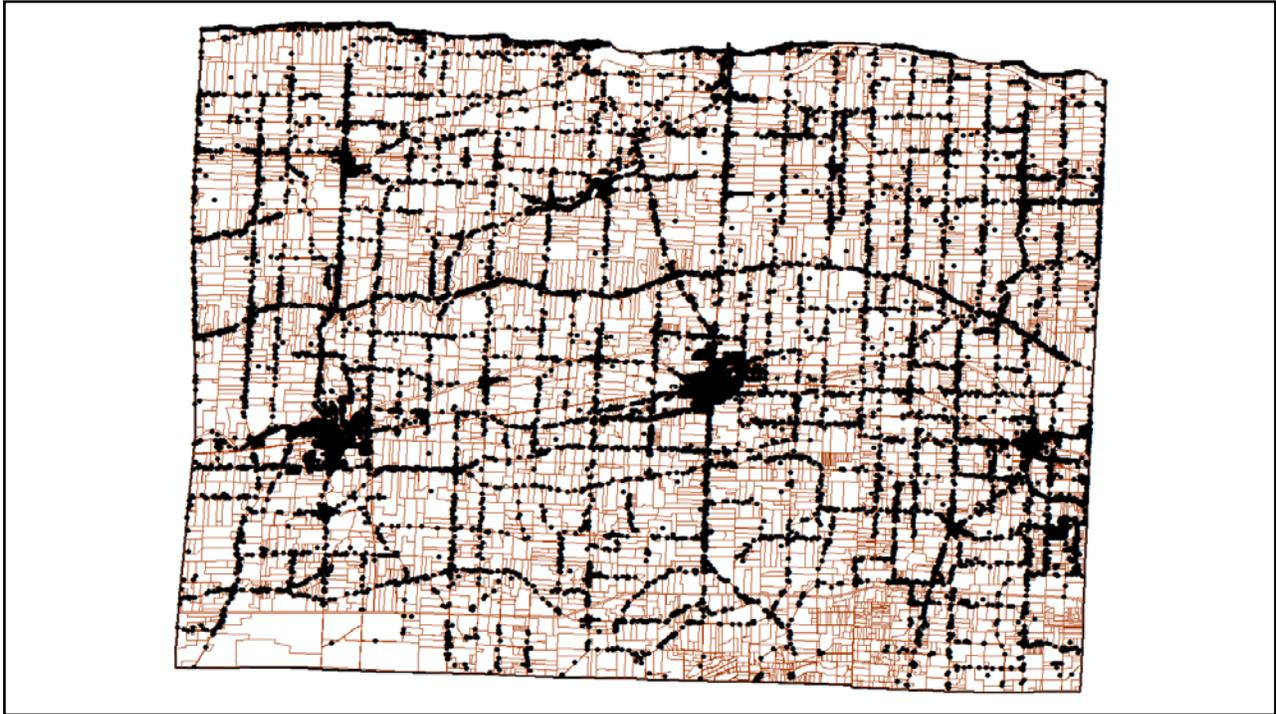
OBJECTID*	Join_Count	PARCEL_ADDR	PRINT_KEY	LOC_ST_NBR	LOC_STREET	PROP_CLASS	Residential	Possible_Resid	NumberHUs	Type_Res
13197	0	Maple Ridge Rd	80.17-1-17.1	<null>	Maple Ridge Rd	322	Yes	<null>	1	Residential Vacant Land over 40 Acres
10059	3	12-16 Mechanic St	88.21-1-40	18	Mechanic St	405	Yes	<null>	3	Apartment
4450	1	Silvwater Rd	16-1-50	<null>	Silvwater Rd	41	Yes	<null>	1	Commercial with Living Accommodations
5511	1	13221 Hampton Rd	27.4-1-11.11	13221	Hampton Rd	41	Yes	<null>	1	Commercial with Living Accommodations
125	4	228 Linwood Ave	62.19-1-43	228	Linwood Ave	41	Yes	<null>	4	Apartment
168	6	14050 Rt 31 West	72-2-20	14050	Rt 31 West	41	Yes	<null>	6	Apartment
235	29	Lydon Dr Ext	62.14-1-1.22	<null>	Lydon Dr Ext	41	Yes	<null>	29	Apartment
373	8	LOTE Lydon Dr	62.15-1-30	LOTE	Lydon Dr	41	Yes	<null>	8	Apartment
298	9	269 Main St	62.19-1-67	269	Main St	41	Yes	<null>	8	Apartment

The 'Identify' window shows the following details for the selected parcel (OBJECTID 13197):

- OBJECTID: 13197
- Join_Count: 0
- PARCEL_ADDR: Maple Ridge Rd
- PRINT_KEY: 80.17-1-17.1
- LOC_ST_NBR: <null>
- LOC_STREET: Maple Ridge Rd
- PROP_CLASS: 322
- Residential: Yes
- Possible_Resid: <null>
- NumberHUs: 1
- Type_Res: Residential Vacant Land over 40 Acres
- ROLL_SECTION: 0
- LAND_AY: 77600
- TOTAL_AY: 77600
- FULL_MARSHET_VAL: 77600
- YR_BLT: 2015
- FRONT: 0
- DEPTH: 0
- SQ_FT: 0
- ACRES: 2
- SCHOOL_CODE: 343-01
- SCHOOL_NAME: Medina

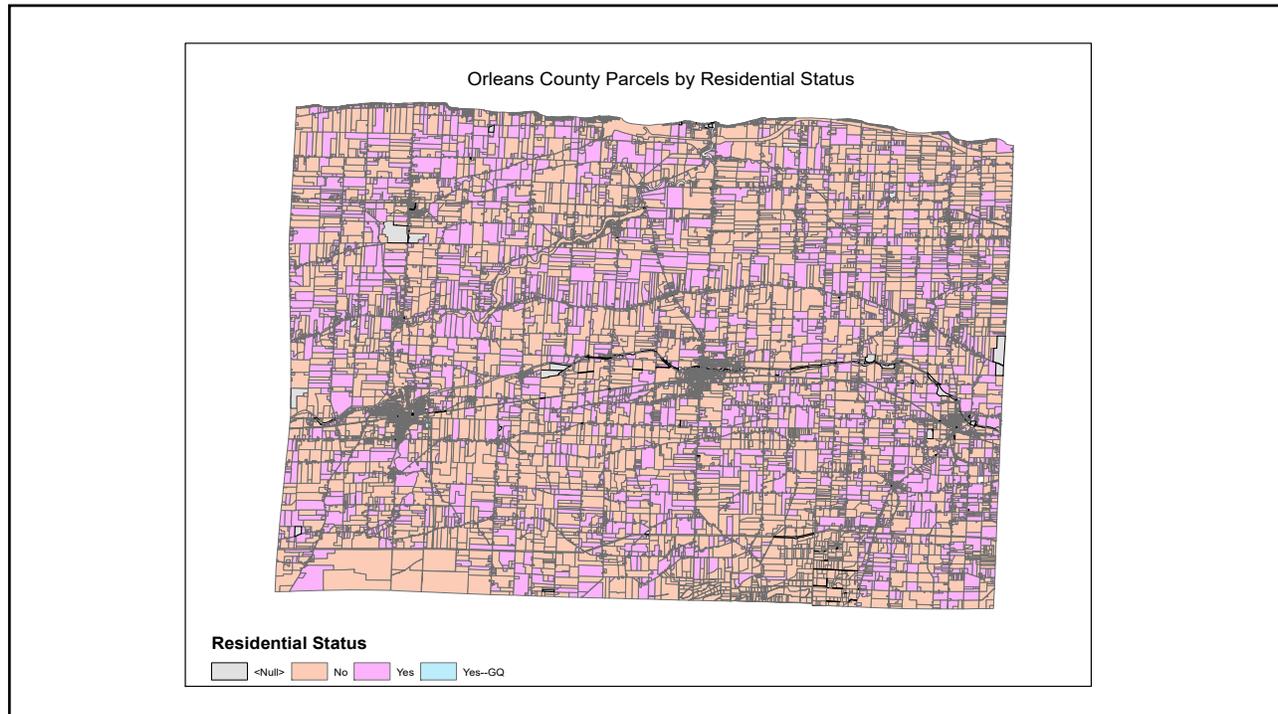
Limitations of Statewide Parcel Database

- Another limitation is that it may not readily alert user to number of different structures on parcel.
- For example, a parcel with two separate single family year-round residences, but tax parcel only tells the primary usage is single family year-round residences, not how many.
- Same for multiple mobile homes—how many? Three or thirty.
- Likewise for apartments. How many HUs in building?
- The following map shows the potential benefit of overlaying the SAM location information with the parcel database.



Overlay SAM & Statewide Parcel Database

- Many benefits by overlaying or joining the two databases into a new geospatial layer.
 - See spatial patterns of different kinds of housing arrangements across the county.
 - Combination of attribute information from both SAM and parcel source files.



Overlay SAM & Statewide Parcel Database

- In addition to being able to tabulate the total number of housing units in the county, can aggregate by various characteristics—primary usage, type of housing unit, units in structure, year structure built, year-round vs seasonal, etc.
- The following set of slides illustrate tabulation of HUs by primary usage.

Parcels with Primary Classification as Agriculture

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: Create a new selection

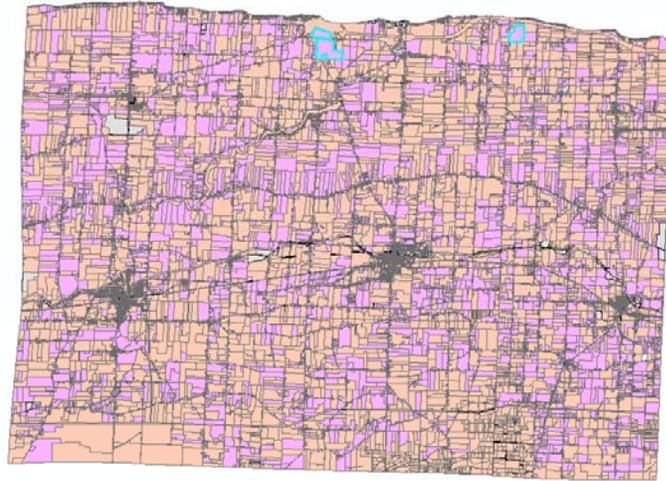
LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like NULL
> >> And 'No'
< << Or 'Yes'
() Not 'Yes-Go'

Get Unique Values Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS <=199 AND Residential = 'Yes'

Clear Verify Help Load... Save...
Apply Close



Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
12225	1	13607 Lakeshore Rd	<Null>	13607 Lakeshore Rd	<Null>	120	120	Yes	<Null>	1	Field Crops with Residential
4310	1	13409 Roosevelt Hwy	13409	Roosevelt Hwy	<Null>	14411	151	Yes	Yes	1	Apples, Pears, Peaches, Cherries, etc
4469	1	13409 Roosevelt Hwy	13409	Roosevelt Hwy	<Null>	14411	151	Yes	Yes	1	Apples, Pears, Peaches, Cherries, etc

14 1 (3 out of 20529 Selected)
Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Residential

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: Create a new selection

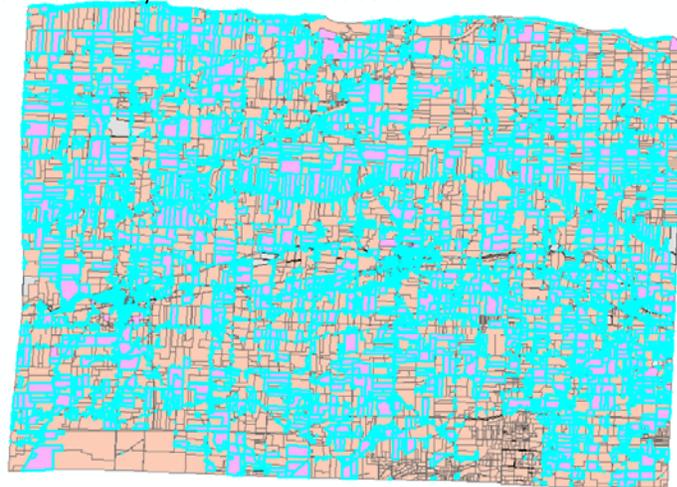
LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
> >> And
< << Or
() Not

Get Unique Values Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= 200 AND PROP_CLASS <= 299 AND Residential = 'Yes'

Clear Verify Help Load... Save...
Apply Close



Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
2	0	3890 Long Bridge Rd	3890	Long Bridge Rd	<Null>	14411	210	Yes	<Null>	1	One Family Year-Round Residence
3	1	14055 Alben Rd	14055	Alben Rd	<Null>	14411	210	Yes	<Null>	1	One Family Year-Round Residence
4	1	3769 Riches Corners Rd	3769	Riches Corners Rd	<Null>	14411	210	Yes	<Null>	1	One Family Year-Round Residence
7	1	512 Denmore St	512	Denmore St	<Null>	14411	210	Yes	<Null>	1	One Family Year-Round Residence

14 1 (13874 out of 20529 Selected)
Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Vacant Land

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: **Create a new selection**

LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= 300 AND PROP_CLASS <= 399 AND Residential
= 'Yes'

Clear Verify Help Load... Save... Apply Close

Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberHUs	Type_Res
13197	0	Maple Ridge Rd	<Null>	Maple Ridge Rd	<Null>	14103	322	Yes	<Null>	1	Residential Vacant Land over 40 Acres

1 (1 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Commercial

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: **Create a new selection**

LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= 400 AND PROP_CLASS <= 499 AND Residential
= 'Yes'

Clear Verify Help Load... Save... Apply Close

Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberHUs	Type_Res
10029	3	12-16 Mechanic St	16	Mechanic St	<Null>	14470	400	Yes	<Null>	3	Apartment
4458	1	Sollivater Rd	<Null>	Sollivater Rd	<Null>	410	410	Yes	<Null>	1	Commercial with Living Accommodations
5511	1	13221 Hanlon Rd	13221	Hanlon Rd	<Null>	14411	410	Yes	<Null>	1	Commercial with Living Accommodations
125	4	220 Linwood Ave	220	Linwood Ave	<Null>	14411	411	Yes	<Null>	4	Apartments

363 (363 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Recreational and Entertainment

Select by Attributes

Enter a WHERE clause to select records in the table window.

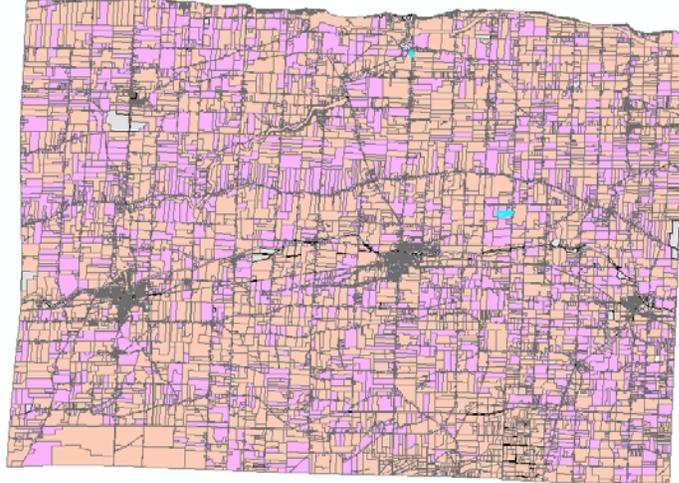
Method: Create a new selection

LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
And
Or
Not
In
Null
Get Unique Values
Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= '500' AND PROP_CLASS <='599' AND Residential
= 'Yes'

Clear Verify Help Load Save
Apply Close



Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
2725	1	14239 Roosevelt Hwy	14239	Roosevelt Hwy	<Null>	14411	570	Yes	<Null>		1 Mantras
5163	0	5052 Transit Rd	5052	Transit Rd	<Null>	<Null>	502	Yes	<Null>		1 Camping Facilities

1 < 1 > 2 (2 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Community Services

Select by Attributes

Enter a WHERE clause to select records in the table window.

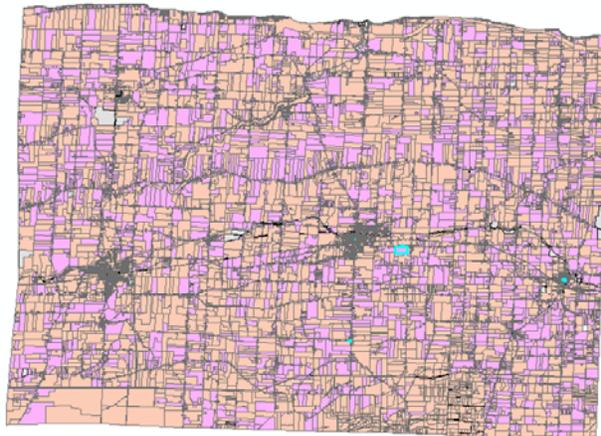
Method: Create a new selection

LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
And
Or
Not
In
Null
Get Unique Values
Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= '600' AND PROP_CLASS <='699' AND Residential
= 'Yes'

Clear Verify Help Load Save
Apply Close



Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
2143	2	South Main St	<Null>	South Main St	<Null>	14411	620	Yes	<Null>		1 Religious—with Room/Dorm
4233	3	4706 Oak Orchard Rd	<Null>	4706 Oak Orchard Rd	<Null>	<Null>	620	Yes	<Null>		1 Religious with Single Family Year-Round Residence
9609	1	11 S Main St	11	S Main St	<Null>	14470	620	Yes	<Null>		1 Religious with Converted Apt.
317	1	14600 Rt 31 East	<Null>	14600 Rt 31 East	<Null>	14411	695	Yes	<Null>		1 Cemeteries—with Garden Apt
909	2	14626 Rt 31 East	<Null>	Rt 31 East	<Null>	14411	696	Yes	<Null>		2 Cemeteries—with Garden Apts

1 < 1 > 7 (7 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Industrial

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: Create a new selection

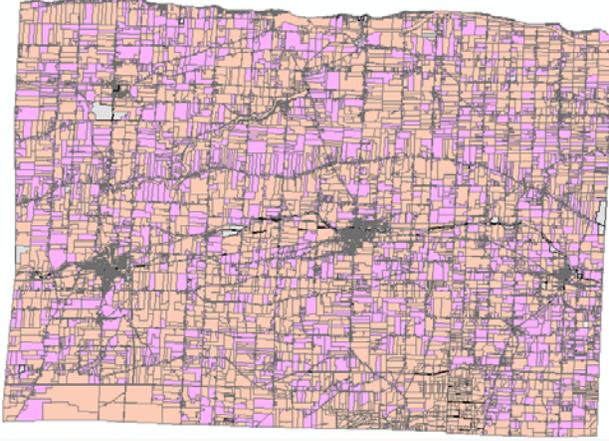
LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
And
Or
Not
Null
Get Unique Values

Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= 700 AND PROP_CLASS <= 799 AND Residential = Yes

Clear Verify Help Load... Save...
Apply Close



Table

Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
14	0										

14 0 (0 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Public Services

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: Create a new selection

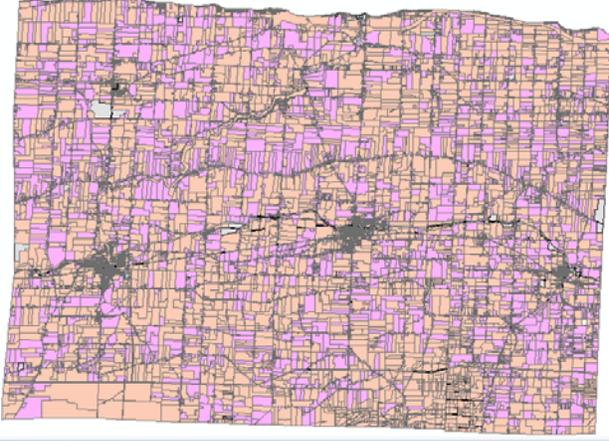
LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
And
Or
Not
Null
Get Unique Values

Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE
PROP_CLASS >= 800 AND PROP_CLASS <= 899 AND Residential = Yes

Clear Verify Help Load... Save...
Apply Close



Table

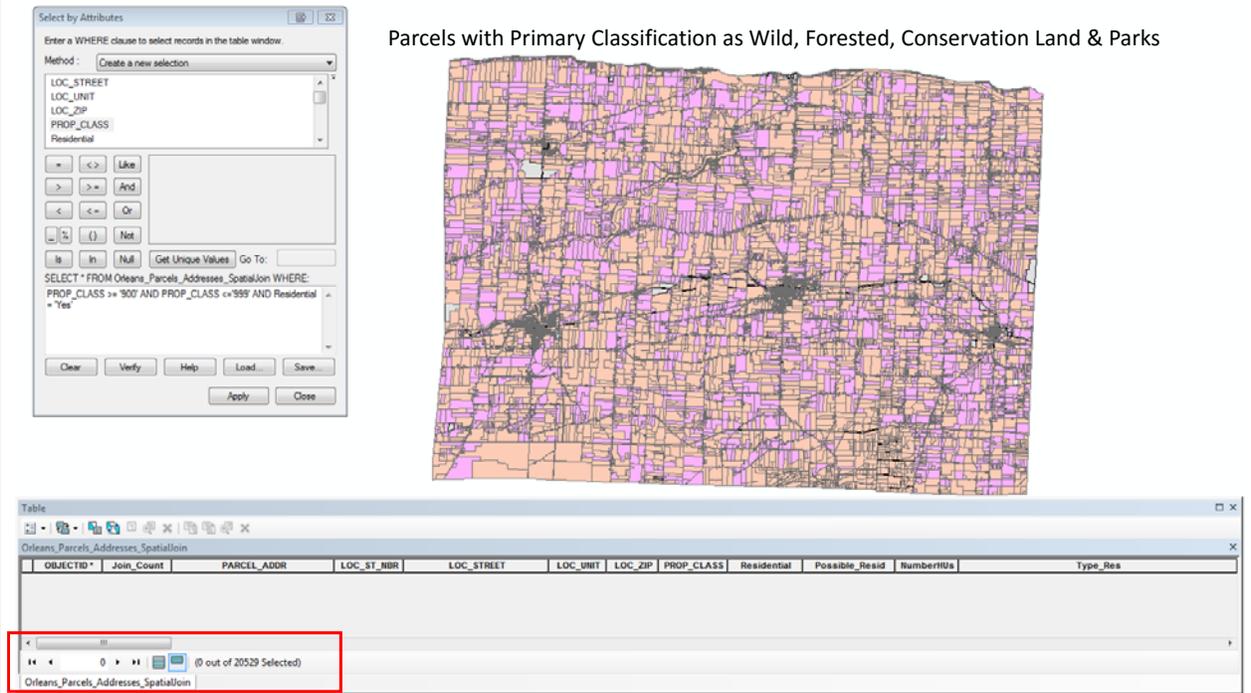
Orleans_Parcels_Addresses_SpatialJoin

OBJECTID*	Join_Count	PARCEL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	NumberRtUs	Type_Res
14	0										

14 0 (0 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

Parcels with Primary Classification as Wild, Forested, Conservation Land & Parks



Method: Create a new selection

LOC_STREET
LOC_UNIT
LOC_ZIP
PROP_CLASS
Residential

Like
And
Or
Not

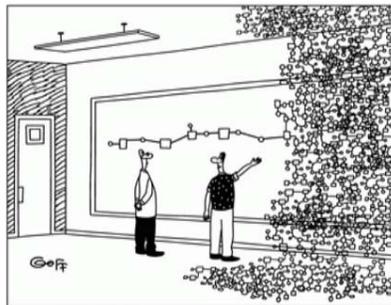
Get Unique Values Go To:

SELECT * FROM Orleans_Parcels_Addresses_SpatialJoin WHERE:
PROP_CLASS >= 900 AND PROP_CLASS <= 999 AND Residential = Yes

OBJECTID	Join_Count	PARCELL_ADDR	LOC_ST_NBR	LOC_STREET	LOC_UNIT	LOC_ZIP	PROP_CLASS	Residential	Possible_Resid	Number104	Type_Res
0 out of 20529 Selected											

Counting Housing Units & LUCA

- Now for a bit more detail



"This is where it starts getting a little complicated."

- Goal is to determine the number of housing units at the Census Block level and compare with what the Bureau has in their MAF.

Counting Housing Units & LUCA

- When you overlay (spatially join) the Street Address Mapping/Maintenance points with the county Tax Parcels, one of the derived pieces of new information is how many address points correspond with each Parcel.
- However, important to recognize is that this “join count” isn’t always equal to the number of housing units.
- Below is an example of one structure but 8 housing units.
- On other occasions you can have multiple points but either none or one is a housing unit.

Municipality of Village of Albion, Albion

BWIS:	34201	Tax ID:	73-5-29
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Inventory

Overall Eff. Year Built:	0
Overall Condition:	Fair
Overall Grade:	Economy
Overall Desirability:	2

Buildings

Air Cond. %:	0	Speaker %:	0	Alarm %:	0	Elevators:	0	Basement Type:	0	Year Built:	1965	Condition:	Normal	Quality:	Average	Gross Floor Area:	3932	Stories:	2
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Utilities

Sewer Type:	Comm/public
Water Supply:	Comm/public
Utilities:	Gas & elec

Site Uses

Use:	Residential Area	Remainable Area:	3,592 sq. ft.	Total Units:	
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Counted apt: 0



Table

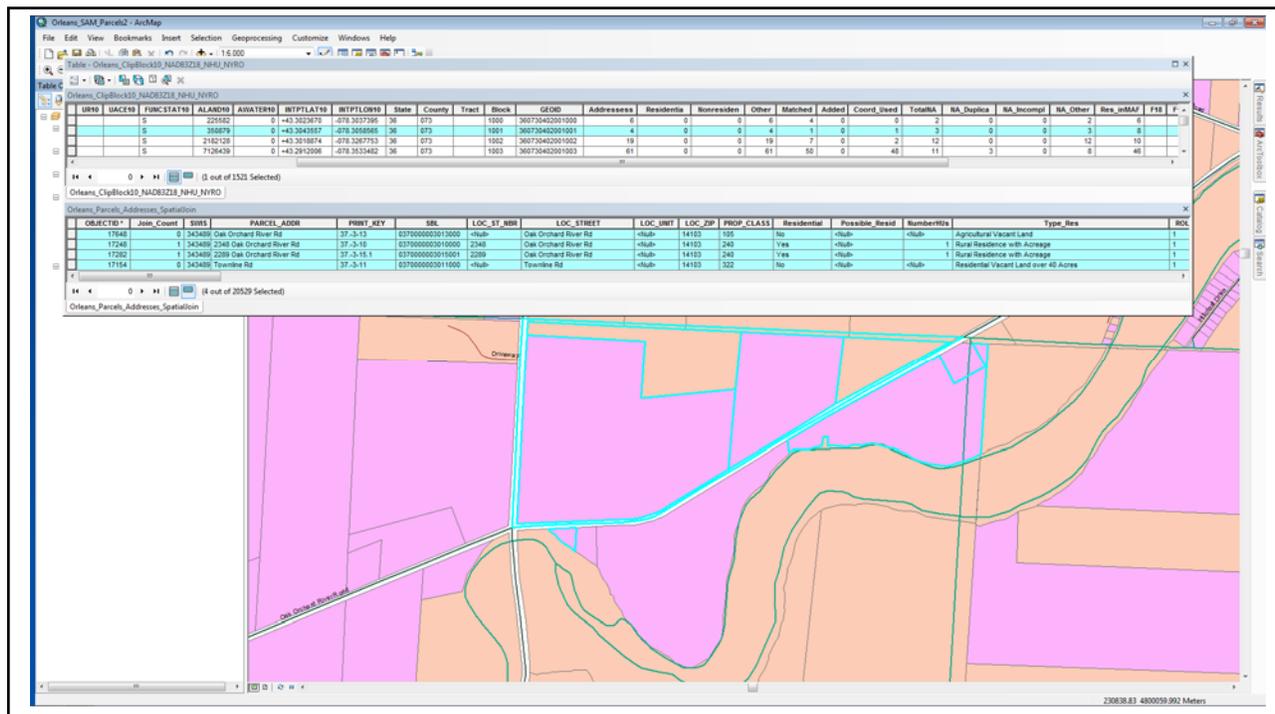
OBJECTID	Join_Count	PARCEL_ADDR	PRNT_KEY	LOC_ST_NBR	LOC_STREET	PROP_CLASS	Residential	Possible_Resid	NumberHUs	Type_Res
1319	8	122 South Main St	73-6-7-24	122	South Main St	411	Yes	<null>	5	Apartments
1397	5	126 West Bank St	73-6-2-2	126	West Bank St	411	Yes	<null>	4	Apartments
1418	5	182 Clarendon St	73-11-1-16	182	Clarendon St	411	Yes	<null>	4	Apartments
1435	2	218 West Park St	73-6-7-70	218	West Park St	411	Yes	<null>	4	Apartments
1578	5	305 Washington St	73-5-2-7-2	305	Washington St	411	Yes	<null>	5	Apartments
1581	1	205 West State St	73-5-2-29	205	West State St	411	Yes	<null>	8	Apartments
1629	6	116 East Bank St	73-6-3-76	116	East Bank St	411	Yes	<null>	4	Apartments
1692	8	111 West St	73-25-1-38	111	West St	411	Yes	<null>	4	Apartments
1742	9	340 Caroline St	62-19-5-22-2	340	Caroline St	411	Yes	<null>	8	Apartments

14 24 (198 out of 20529 Selected)

Orleans_Parcels_Addresses_SpatialJoin

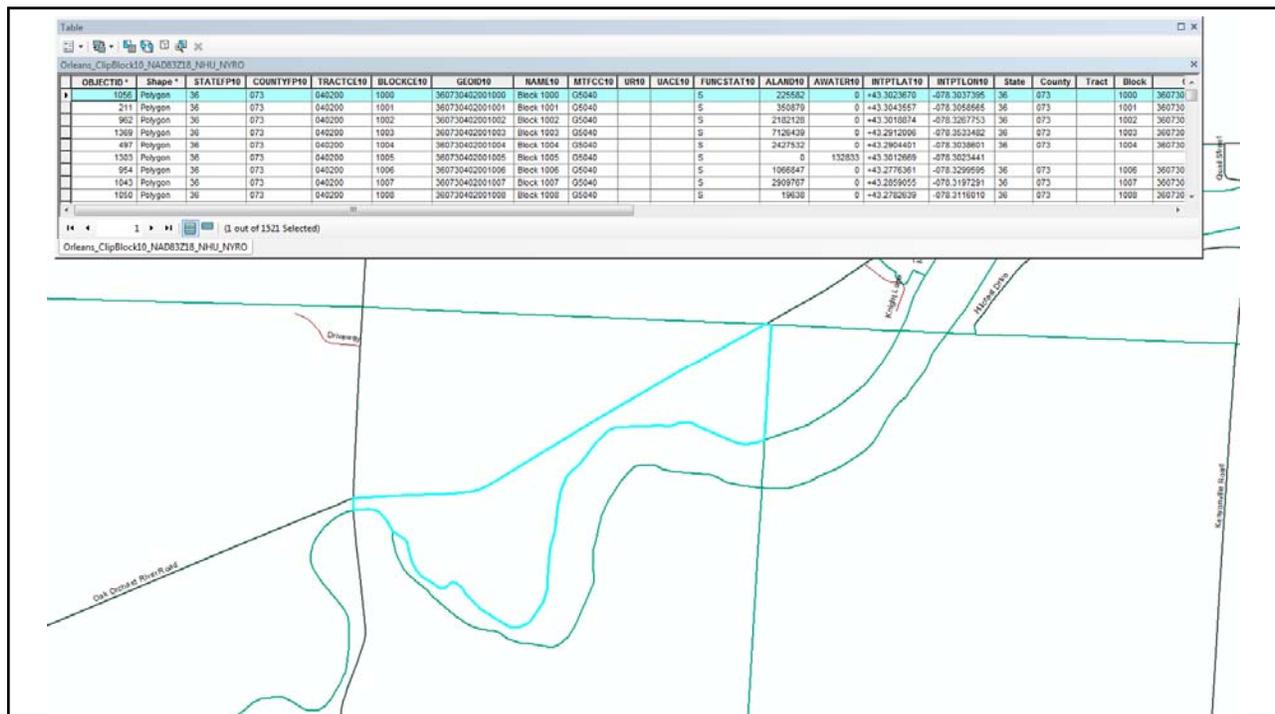
Counting Housing Units & LUCA

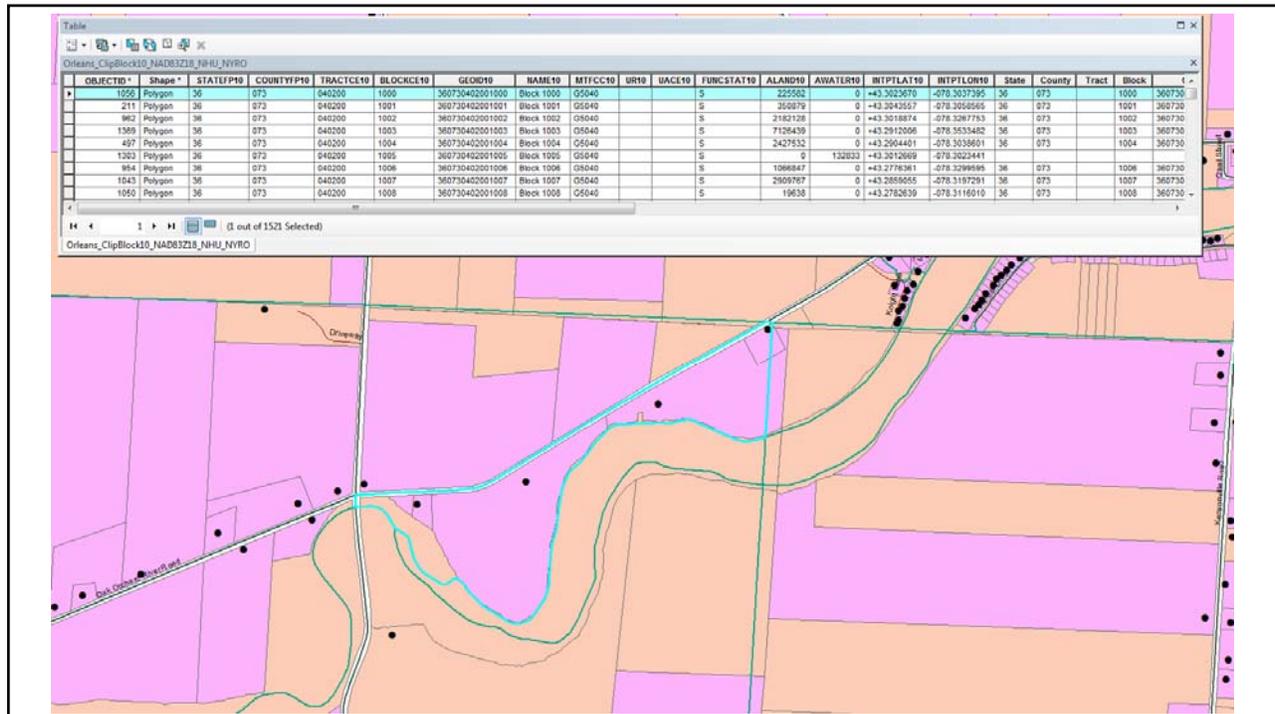
- Overlaying the spatially joined parcel/SAM file with the 2010 Census Blocks to achieve a summary count presents other challenges as the following slides illustrate.
- The first shows a Census Block containing four parcels, two of which have a single housing unit and two that have no housing units.
- The dark green lines indicate the block boundaries and the block selected is outlined in teal.



Counting Housing Units & LUCA

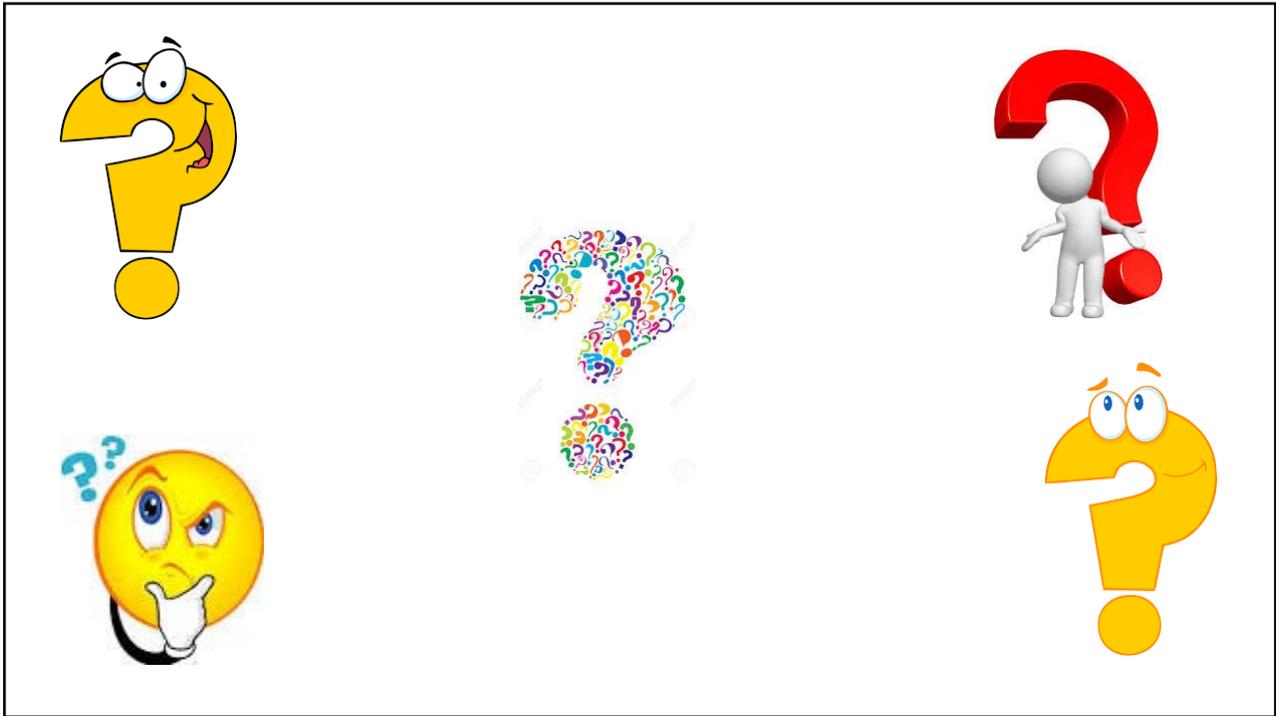
- While the above illustration is clean and straightforward, the following two slides shows the messiness that can occur when parcels overlap block boundaries.
- First we view the block boundaries, then overlay the parcels with housing unit address location information.





Basic Stats on SAM Points

- All but 48 out of 20530 or 0.23% have meaningful relationship between SAM spots and tax parcels—amazing
- 14280 out of 20530 or 69.56% have parcels designated as residential
- 6126 out of 20530 or 29.84% designated as non-residential



Thank You