

Redistricting

Quakertown Community School District

Community Committee

October 28, 2014

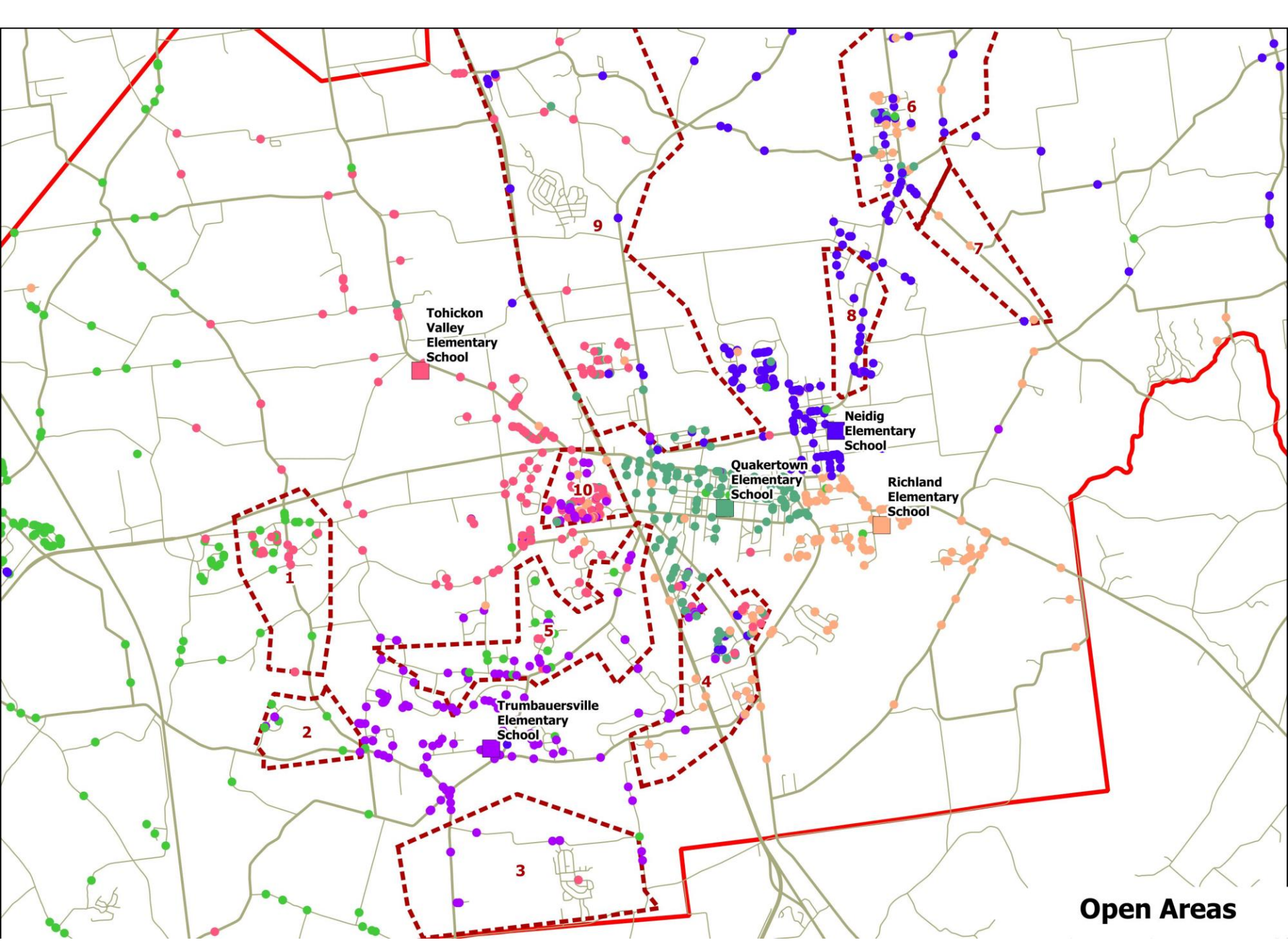
Primary Objective:

Redistrict K-8 to Assign Students in a Neighborhood to One School

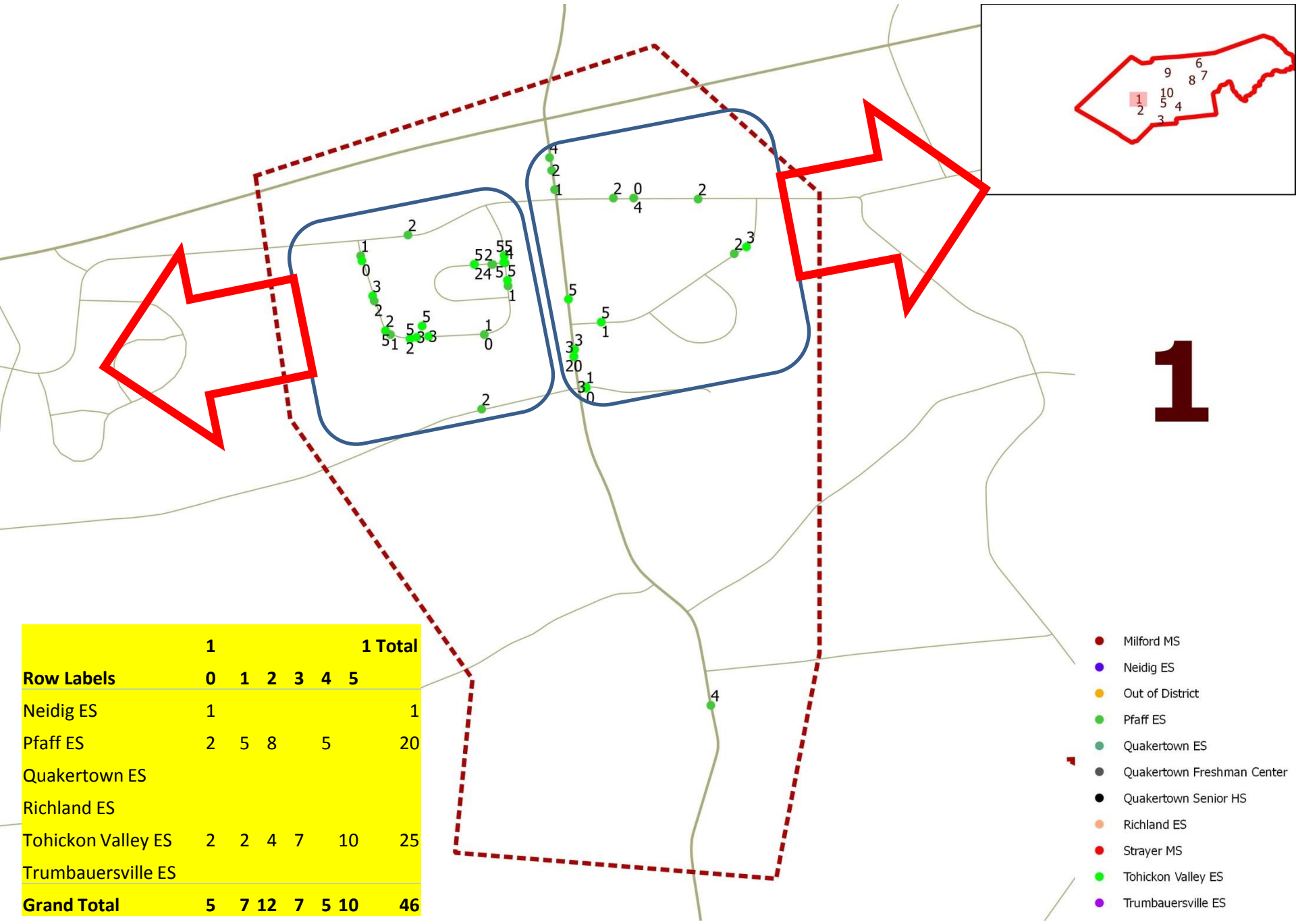
- Background
 - QCSD has used Open Areas to balance class size for many years
 - Many students in these neighborhoods do not go to the same schools as their neighbors
- The Challenge of this Project:
 - Reassign students without causing:
 - Unbalanced class sizes that require more teachers
 - Overcrowding some elementary schools, which are already at capacity. In these schools, some educational spaces have been used for regular classrooms and other uses such as special education have been sent to buildings with extra space.
 - Adverse impacts to the hundreds of students who may be involved

Understanding the Situation

- 750 students live in Open Areas
- All schools receive students from the Open Areas
- The number of students at each grade level varies widely as students progress through the grades. This means that a solution that works one year may leave unbalanced class sizes the next.
- A Geographic Information System (GIS) has been implemented to facilitate decision making. It allows quick understanding of the issues, creation of many alternatives, and the ability to test the sustainability of options over a four year period.

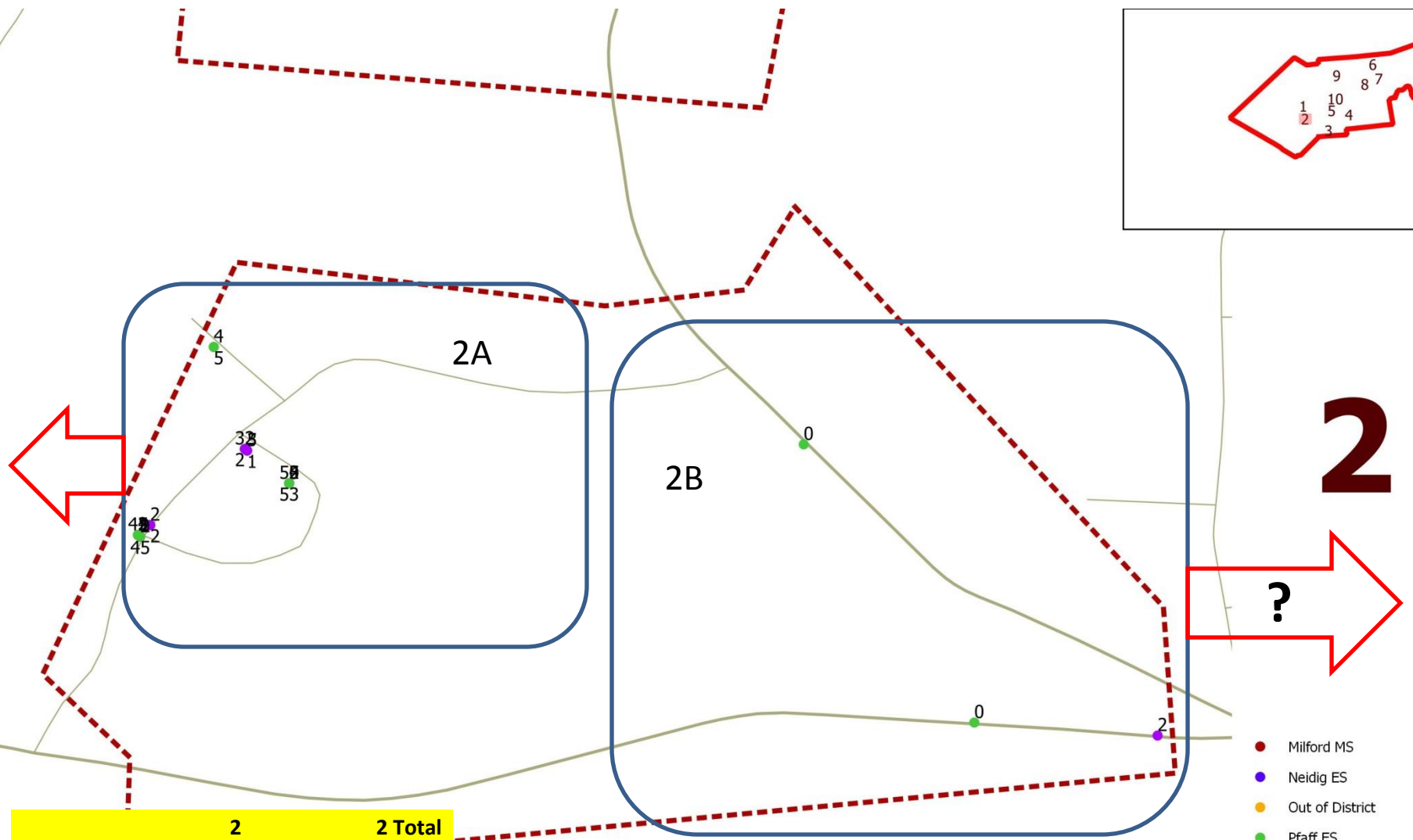
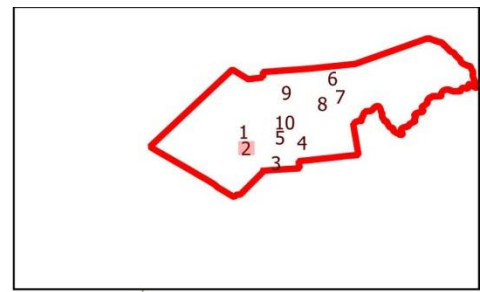


Open Areas



	1					1 Total
Row Labels	0	1	2	3	4	5
Neidig ES	1					1
Pfaff ES	2	5	8		5	20
Quakertown ES						
Richland ES						
Tohickon Valley ES	2	2	4	7	10	25
Trumbauersville ES						
Grand Total	5	7	12	7	5	10

- Milford MS
- Neidig ES
- Out of District
- Pfaff ES
- Quakertown ES
- Quakertown Freshman Center
- Quakertown Senior HS
- Richland ES
- Strayer MS
- Tohickon Valley ES
- Trumbauersville ES



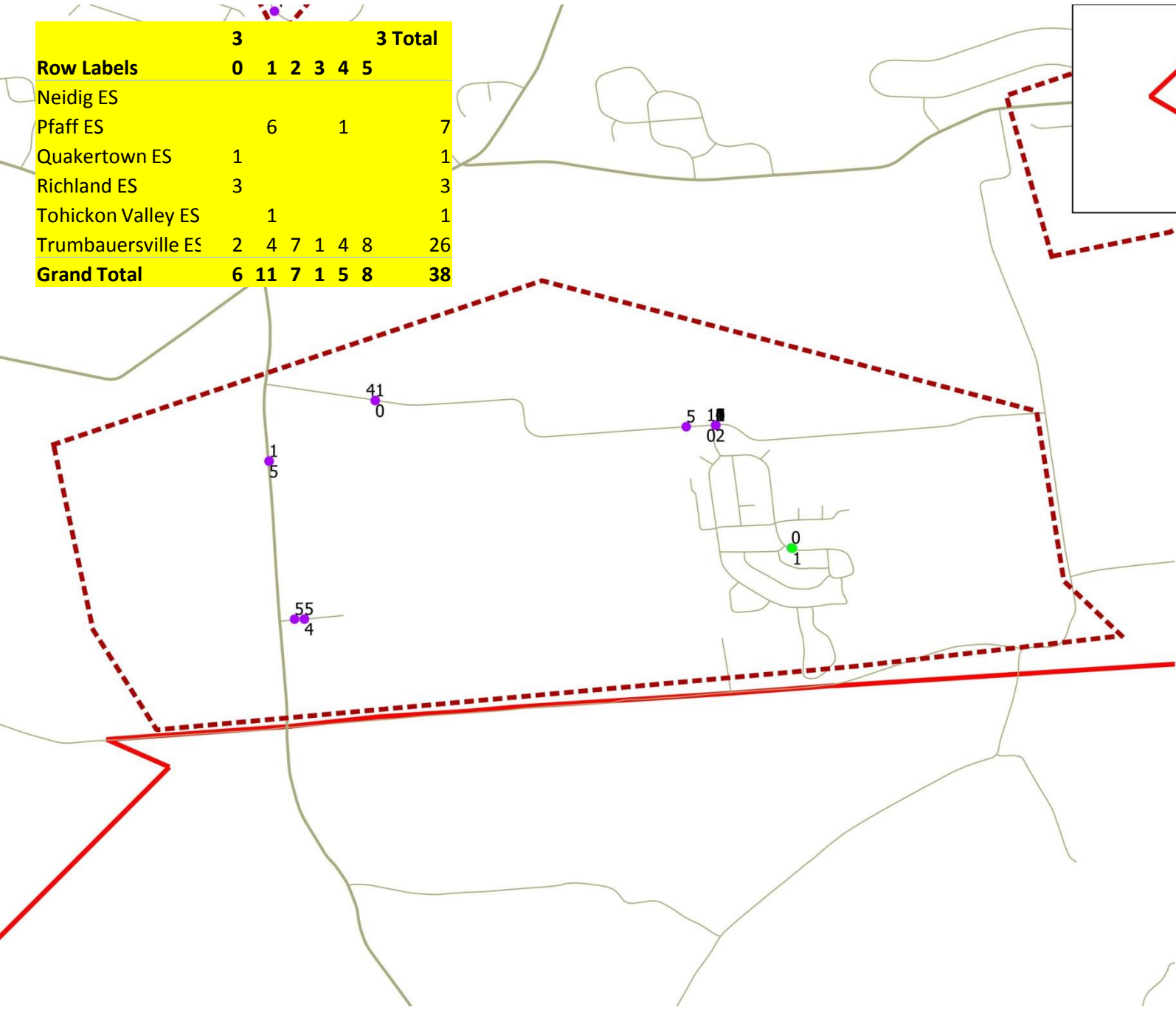
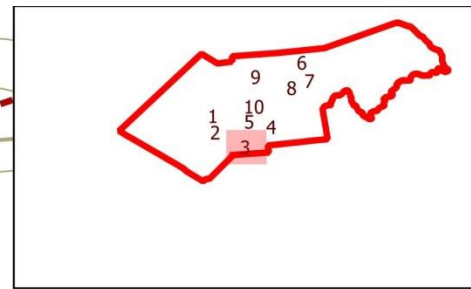
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- Milford MS
- Neidig ES
- Out of District
- Pfaff ES
- Quakertown ES
- Quakertown Freshman Center
- Quakertown Senior HS
- Richland ES
- Strayer MS
- Tohickon Valley ES
- Trumbauersville ES

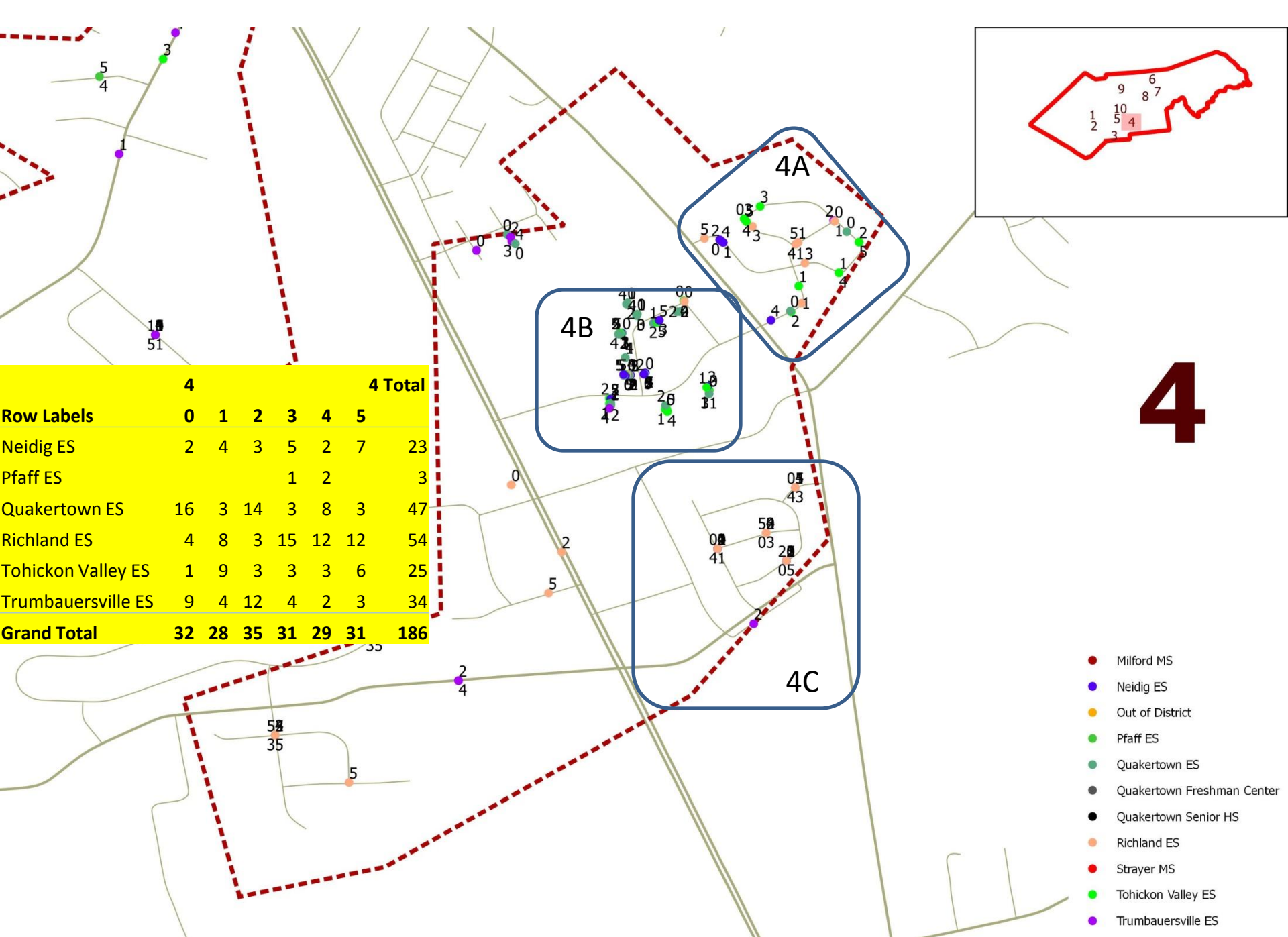
Row Labels	2					2 Total
	0	1	2	3	4	
Neidig ES						
Pfaff ES		2	5	2	5	19
Quakertown ES						
Richland ES						
Tohickon Valley ES						
Trumbauersville ES	2	2	10	2	4	20
Grand Total	4	2	15	4	5	9

	3			3 Total		
Row Labels	0	1	2	3	4	5
Neidig ES						
Pfaff ES		6		1		7
Quakertown ES	1					1
Richland ES	3					3
Tohickon Valley ES		1				1
Trumbauersville ES	2	4	7	1	4	8
Grand Total	6	11	7	1	5	8



3

- Milford MS
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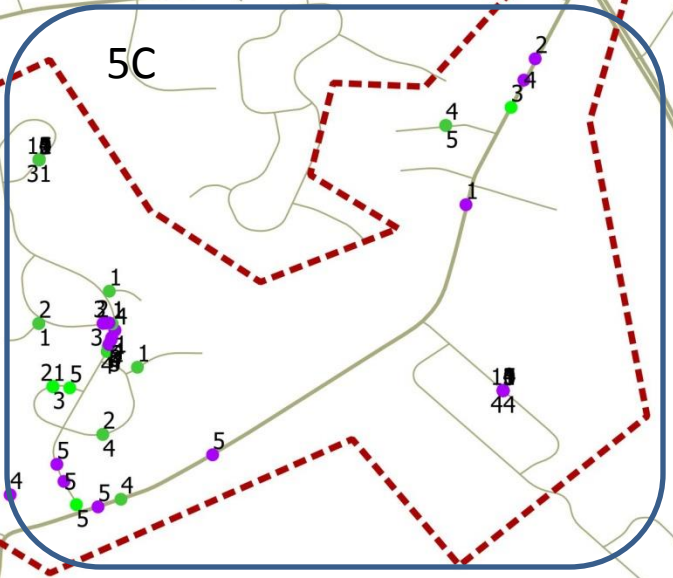
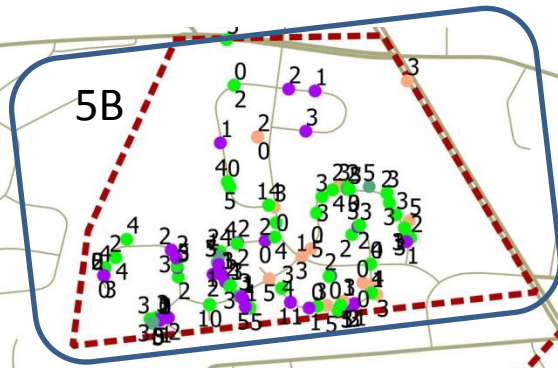
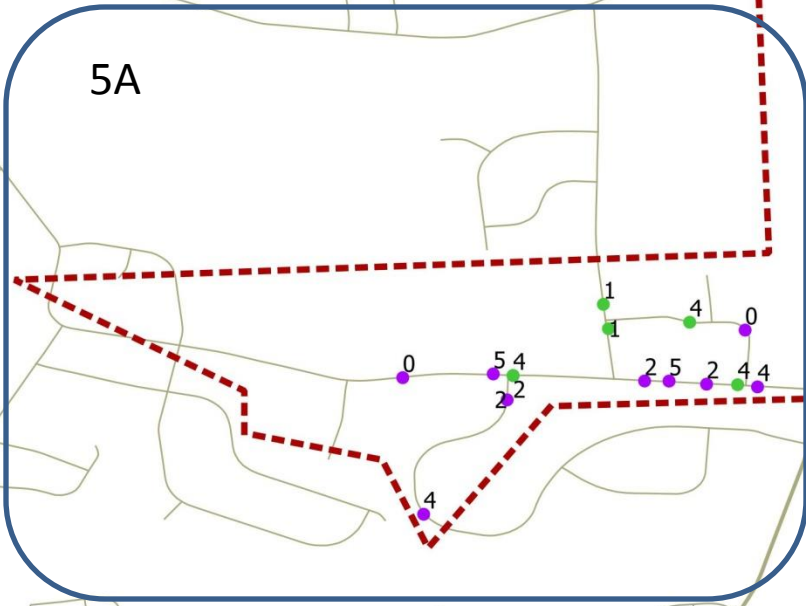
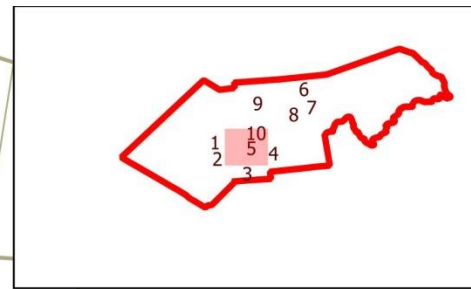


	4					4 Total	
Row Labels	0	1	2	3	4	5	
Neidig ES	2	4	3	5	2	7	23
Pfaff ES				1	2		3
Quakertown ES	16	3	14	3	8	3	47
Richland ES	4	8	3	15	12	12	54
Tohickon Valley ES	1	9	3	3	3	6	25
Trumbauersville ES	9	4	12	4	2	3	34
Grand Total	32	28	35	31	29	31	186

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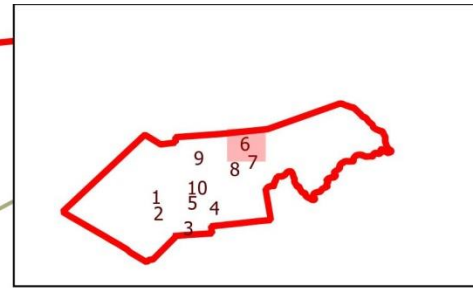
	5					5 Total	
Row Labels	0	1	2	3	4	5	
Neidig ES							
Pfaff ES		11	4		12	1	28
Quakertown ES							
Richland ES							
Tohickon Valley ES		1	1	2		4	8
Trumbauersville ES	6	9	6	10	11	8	50
Grand Total	6	21	11	12	23	13	86



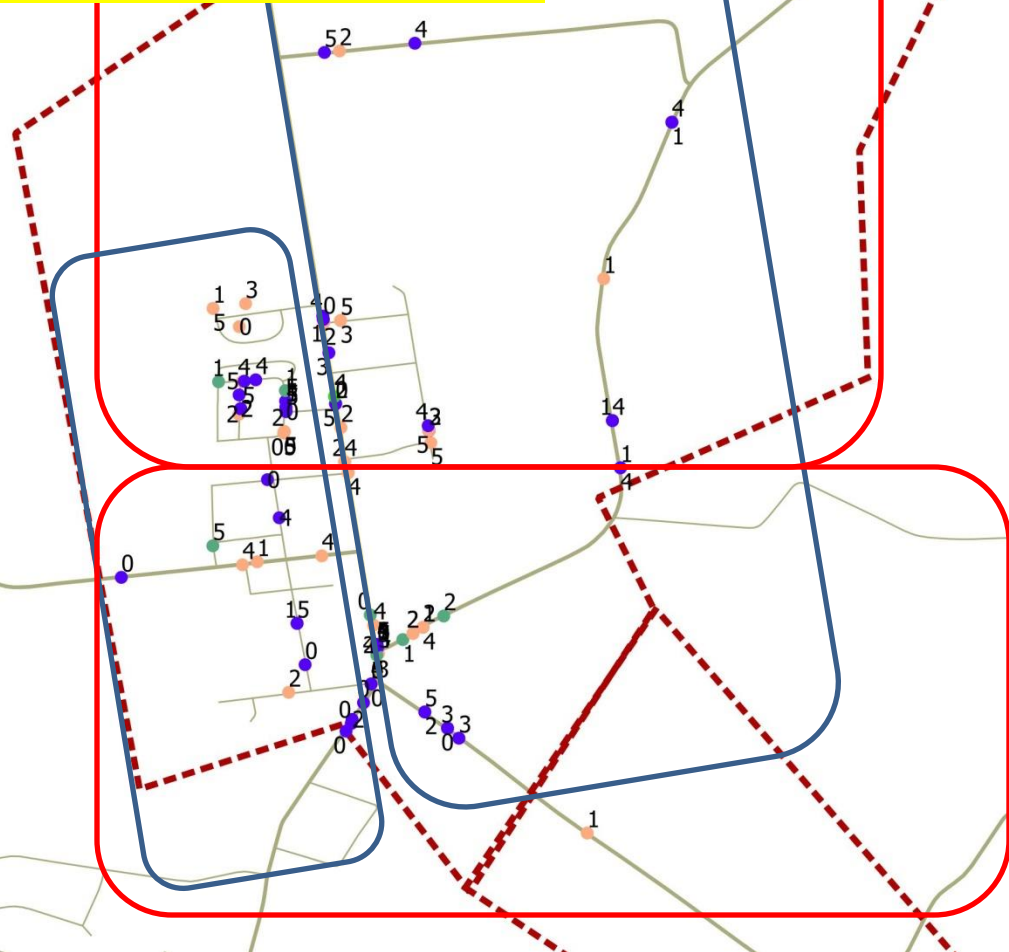
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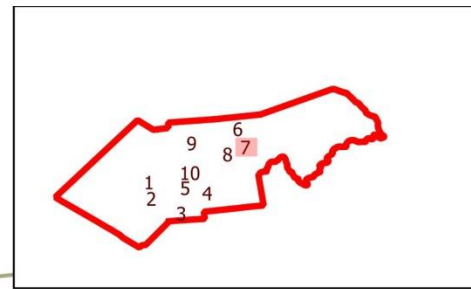
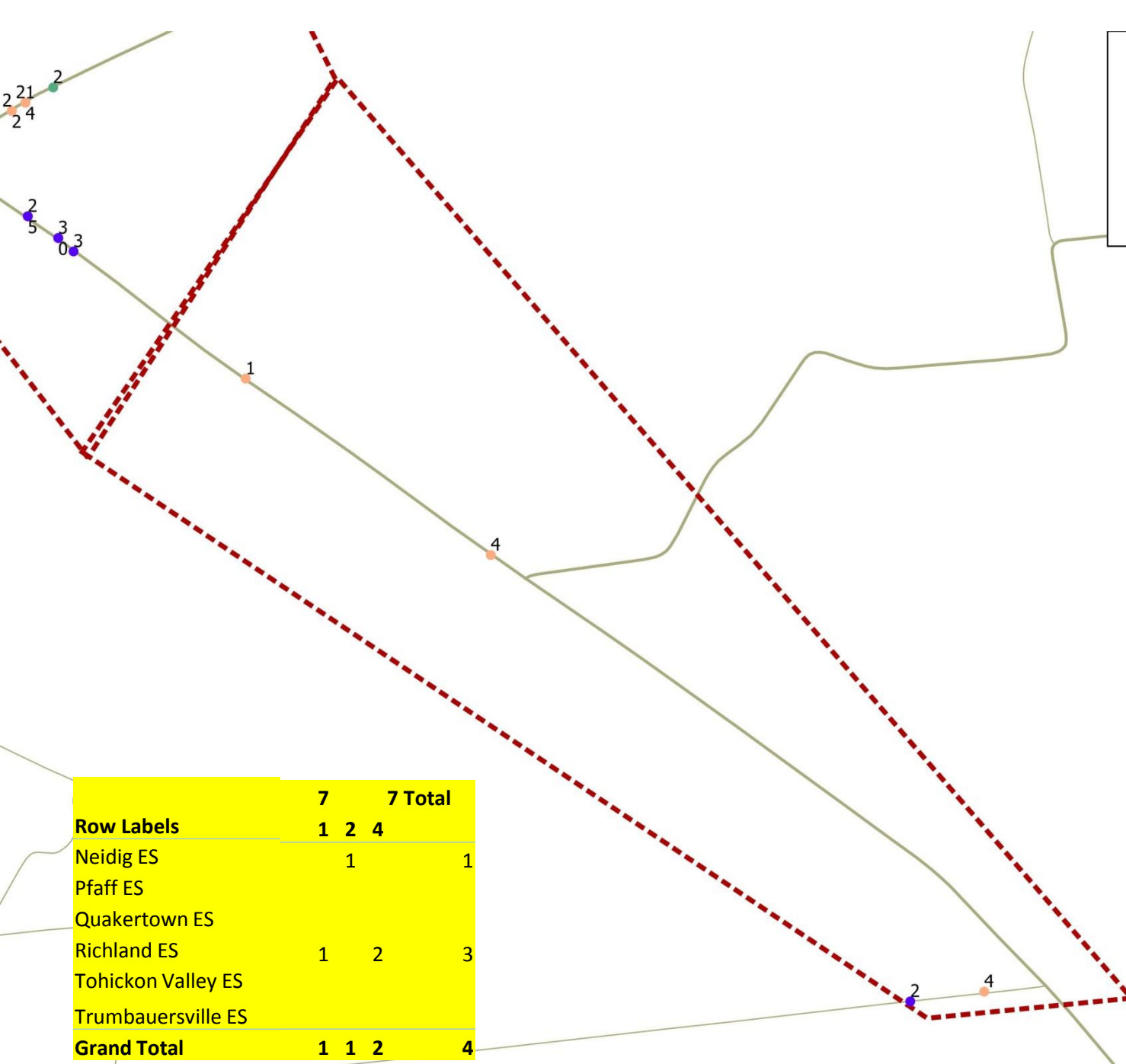
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Row Labels	0	1	2	3	4	5	
Neidig ES	10	6	5	4	11	12	48
Pfaff ES	1				1		2
Quakertown ES	2	5	1	1		1	10
Richland ES	4	4	12	3	8	6	37
Tohickon Valley ES							
Trumbauersville ES							
Grand Total	17	15	18	8	20	19	97



6



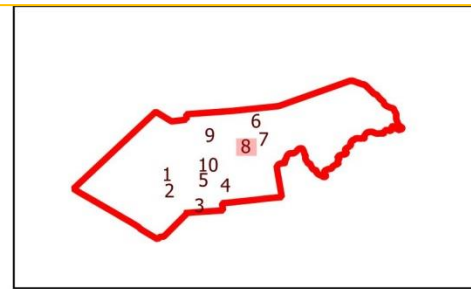
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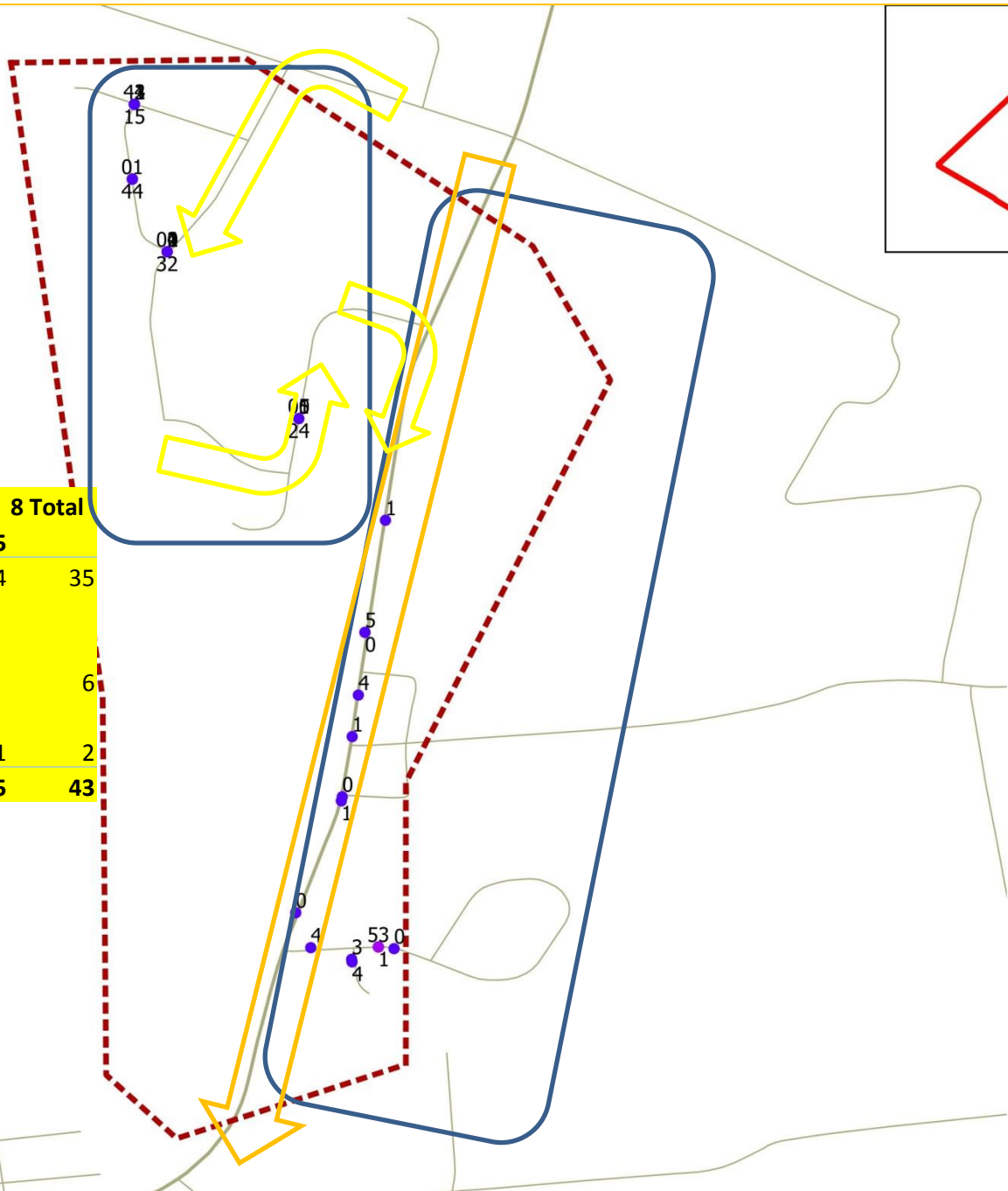
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	7	7 Total
Row Labels	1 2 4	
Neidig ES	1	1
Pfaff ES		
Quakertown ES		
Richland ES	1 2	3
Tohickon Valley ES		
Trumbauersville ES		
Grand Total	1 1 2	4

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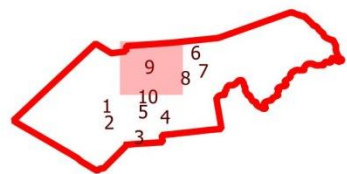
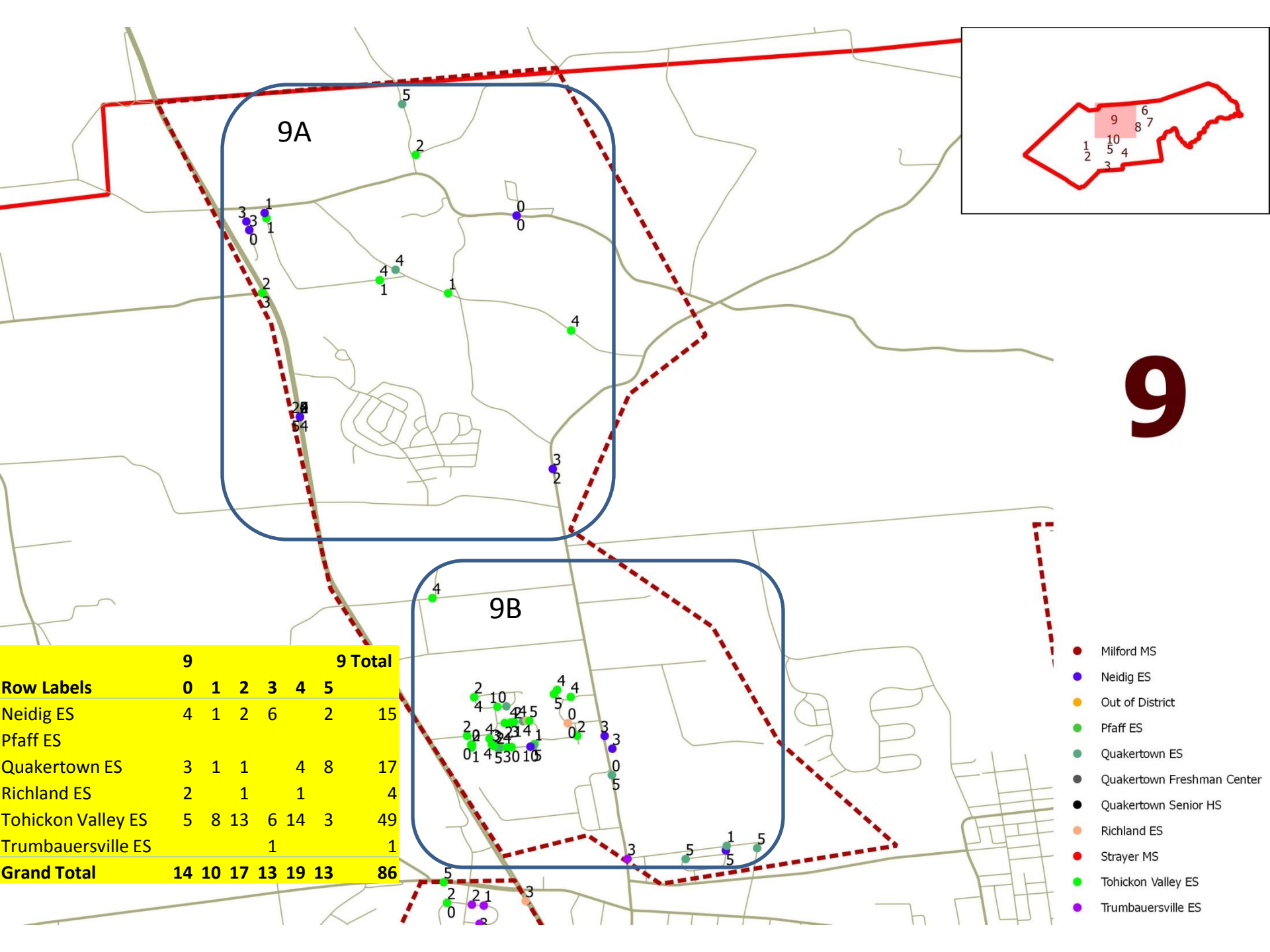


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	8					8 Total	
Row Labels	0	1	2	3	4	5	
Neidig ES	9	6	2	5	9	4	35
Pfaff ES							
Quakertown ES							
Richland ES	1	2	3				6
Tohickon Valley ES							
Trumbauersville ES		1				1	2
Grand Total	10	9	5	5	9	5	43

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- Trumbauersville ES

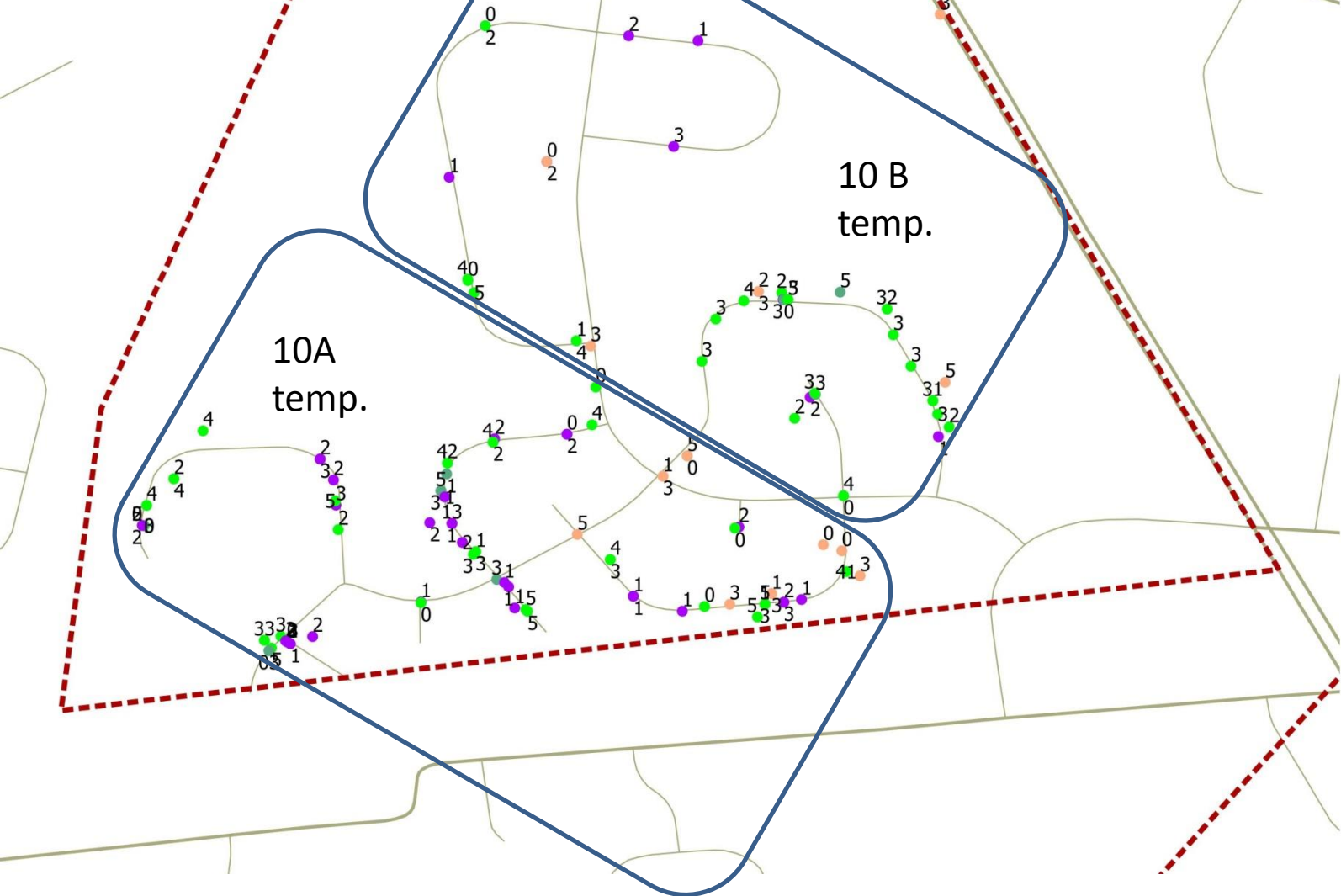
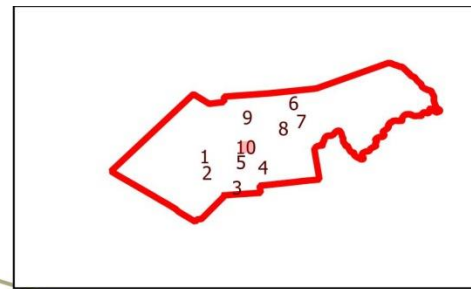


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	9					9 Total
Row Labels	0	1	2	3	4	5
Neidig ES	4	1	2	6	2	15
Pfaff ES						
Quakertown ES	3	1	1		4	8
Richland ES	2		1		1	4
Tohickon Valley ES	5	8	13	6	14	3
Trumbauersville ES				1		1
Grand Total	14	10	17	13	19	13
						86

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- Trumbauersville ES
- Tohickon Valley ES

	10						10 Total
Row Labels	0	1	2	3	4	5	
Neidig ES							
Pfaff ES							
Quakertown ES	2	2		5			11
Richland ES	4	2	1	7			16
Tohickon Valley ES	10	5	8	16	12	11	62
Trumbauersville ES	1	15	17	7			40
Grand Total	17	24	26	35	12	15	129

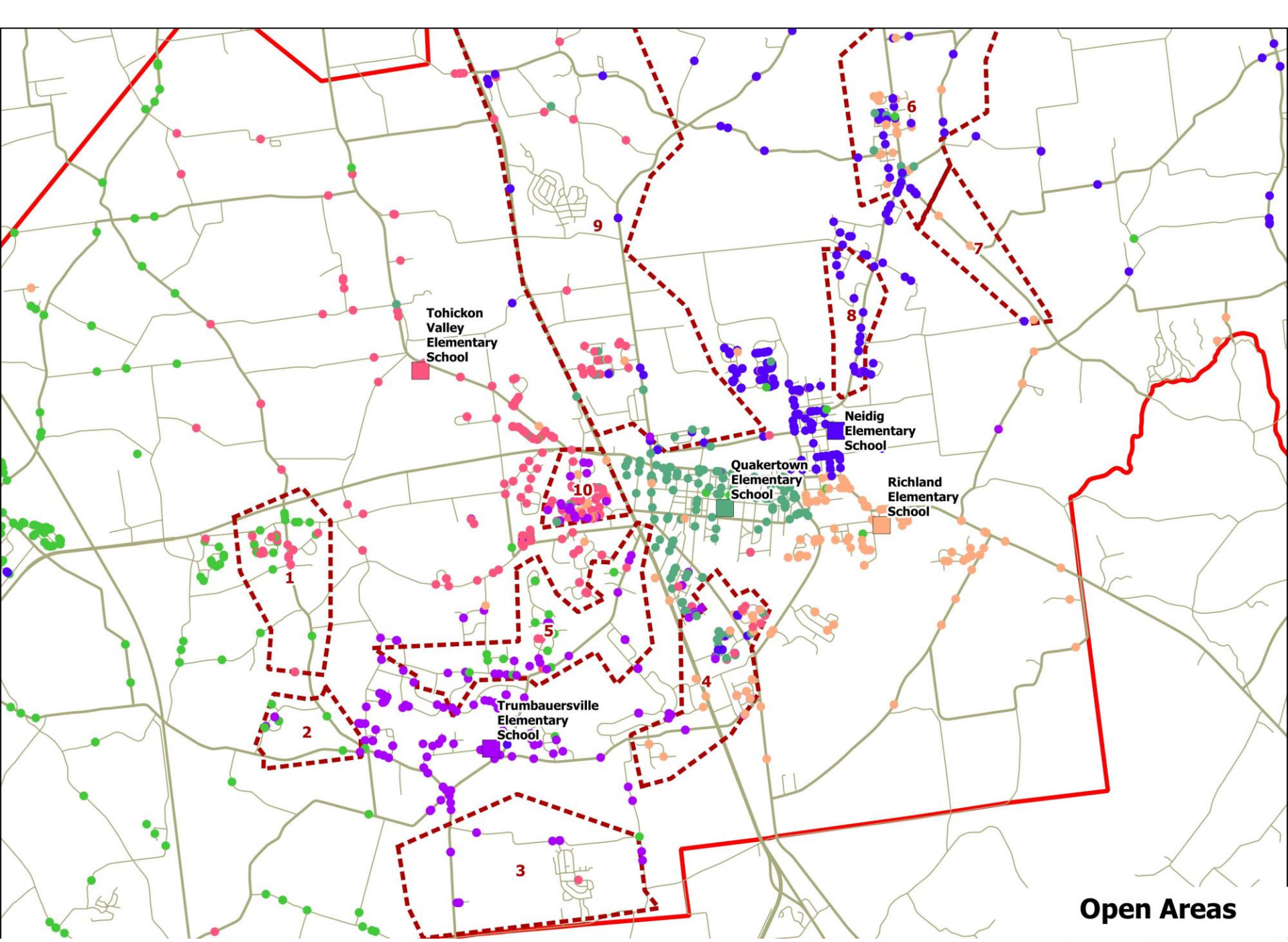


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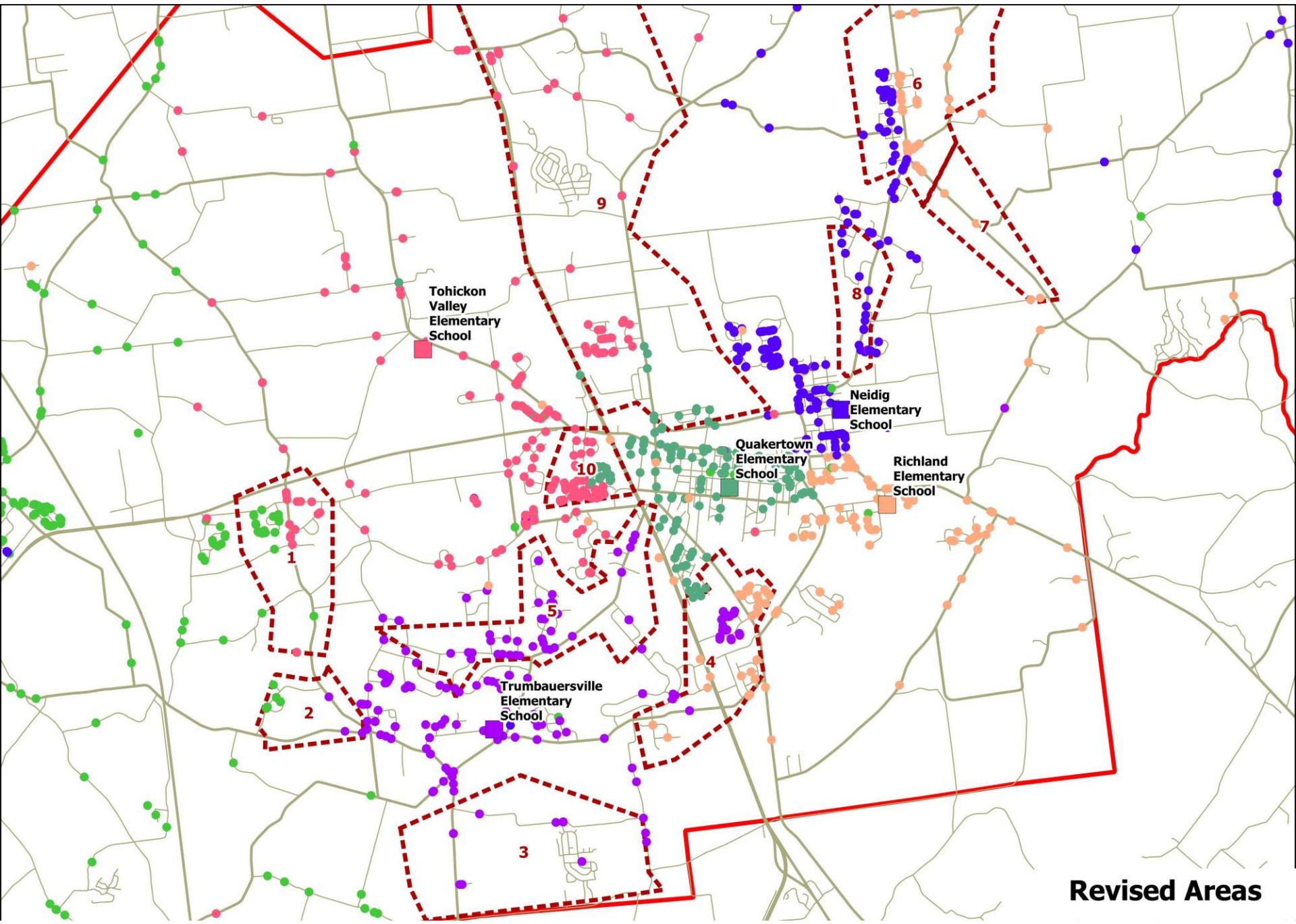
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Review Before (Now) with After (Redistricting Option)

- Focus on single Open Area
- Look at dots-different color for each school
 - Before-mixture of dots throughout Open Area
 - After-geographic separation of dots and assignment to nearby school

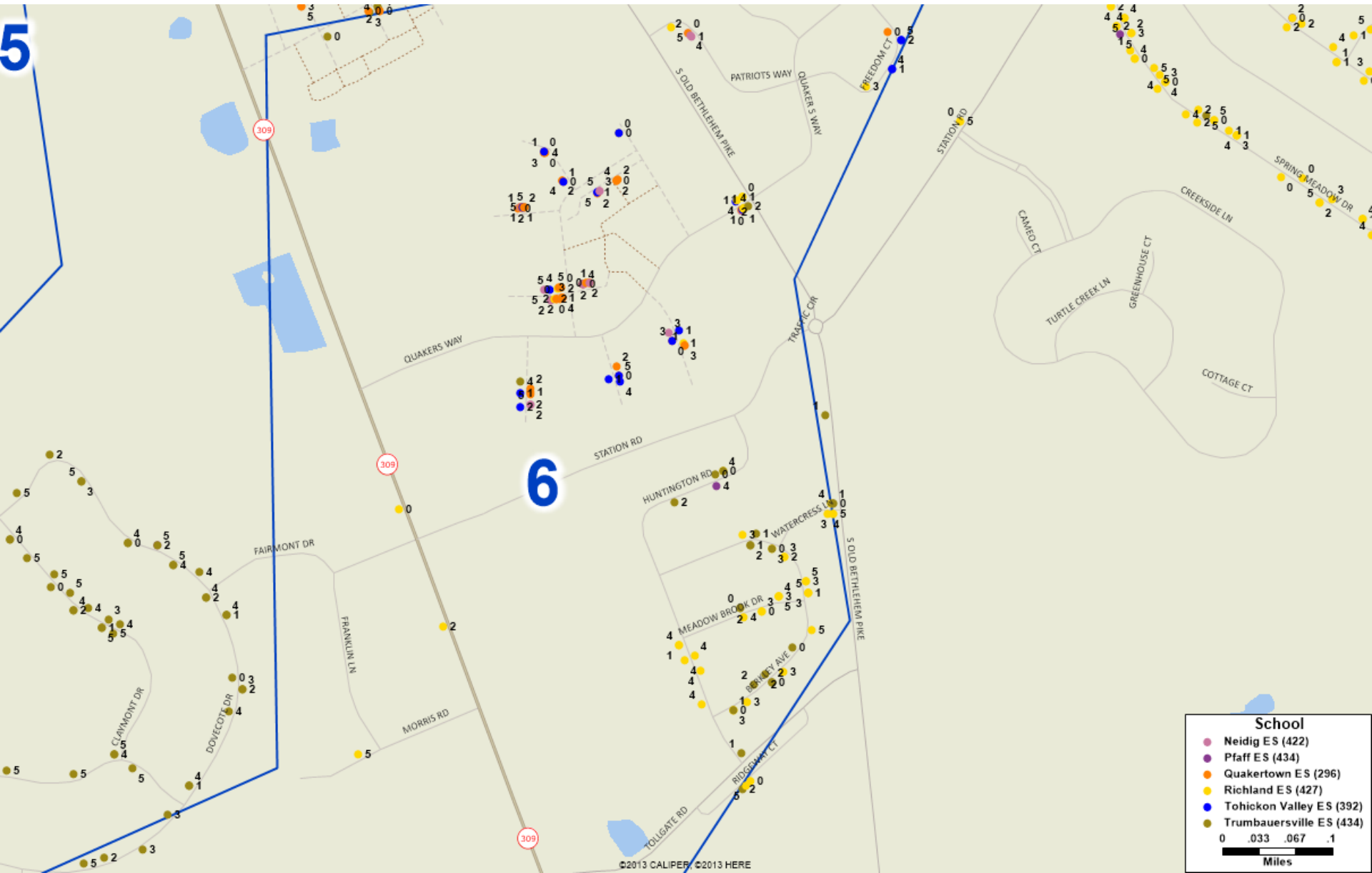


Open Areas



Revised Areas

Elementary Students by School (color) and Grade (number)



Conclusions from this Sample Solution

- It will be possible to achieve the primary objective by moving hundreds of students.
- The objective could be achieved by a transition over 4 years, which could be beneficial because:
 - The number of students at each grade level varies widely by school in each Open Area, which could jeopardize the longevity of any fixed boundary.
 - Transition could be accomplished per guidelines that minimize impact on students and families.
 - K in current year transitions to new school if no older elementary siblings. QCSD does not guarantee that students will go to same school in K and 1st.
 - Older elementary students allowed complete their education at original school
 - Voluntary compliance in years 1 to 4, with mandatory compliance in year 5
 - Annual review could ensure cost effective assignment of students to schools.

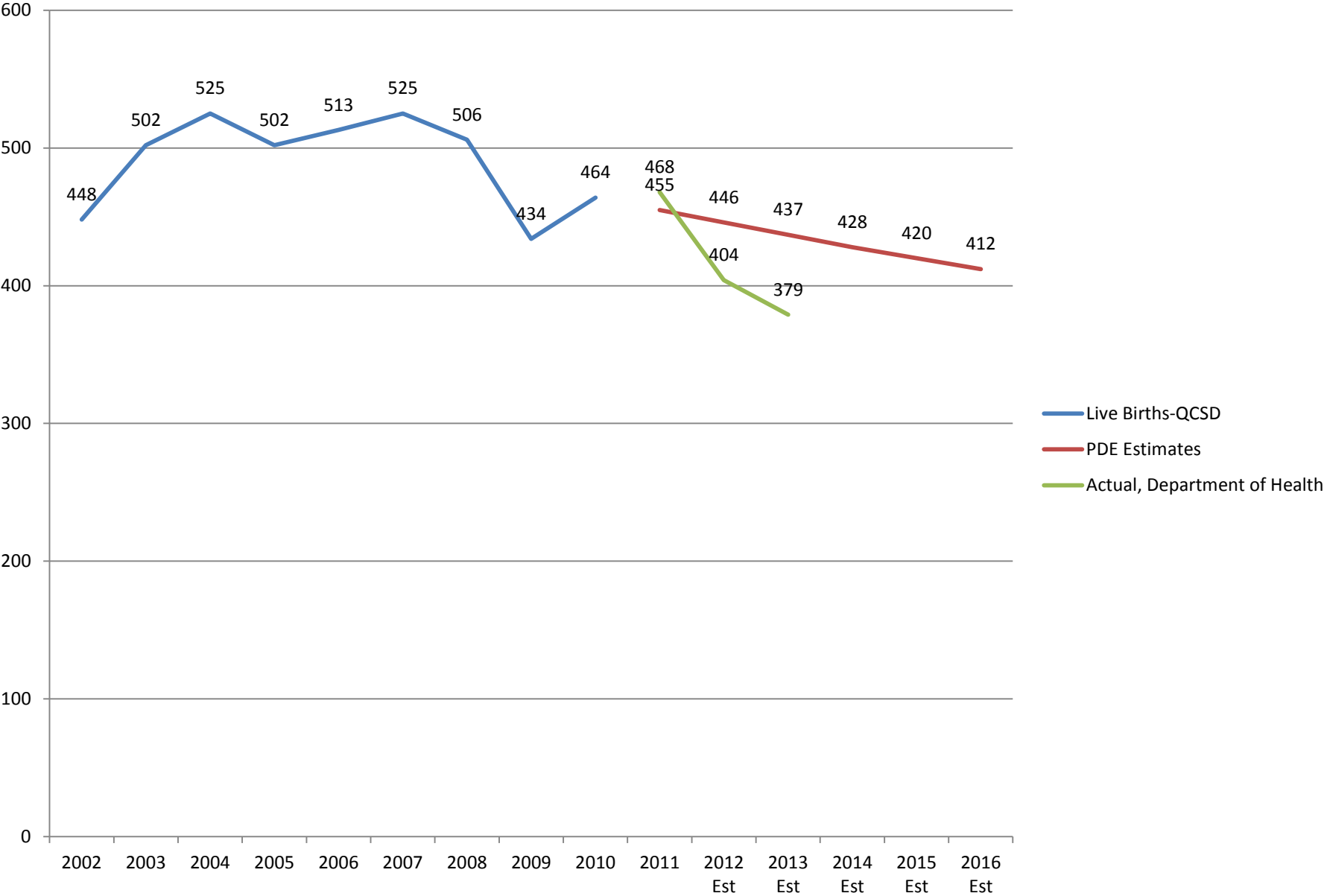
Other Important Considerations

- Some schools are at capacity
- Birth rates are declining, which means relief is available as lower enrollments progress through the grade levels
- Residential growth patterns differ widely in the QCSD
- The process of assigning students to schools controls class size/teacher requirements, both of which are important for student achievement, teacher accountability, and allocation of the most expensive resource-teacher compensation.
- Factors affecting enrollments can change
 - New residential construction allowed due to sewer capacity-lifting of moratorium
 - Birth rates-confidence in economy, boom/bust cycles
 - Impact of widening Northeast Extension will reduce commuting time to QCSD
 - Changing ratios of public, nonpublic/private, and charter school enrollments, affordability of tuition
 - Closing of nonpublic/private schools
 - Opening of charter schools
 - Others?

Plancon School Capacity and Current Enrollment

		Enrollment, October 2014		
	Capacity	Regular	With Special Education	Enrollment Over/Under Capacity
Elementary				
Neidig	425	422	422	-3
Pfaff	525	398	435	-90
Quakertown	325	294	294	-31
Richland	450	393	423	-27
Tohickon Valley	500	385	398	-102
Trumbauerville	<u>500</u>	<u>423</u>	<u>436</u>	-64
Total	2725	2315	2408	-317
Middle School				
Milford MS	604	382	408	-196
Strayer MS	<u>1414</u>	<u>828</u>	<u>852</u>	<u>-562</u>
Total	2018	1210	1260	-758
High School		1615		

Live Birth Rates for Quakertown Community School District



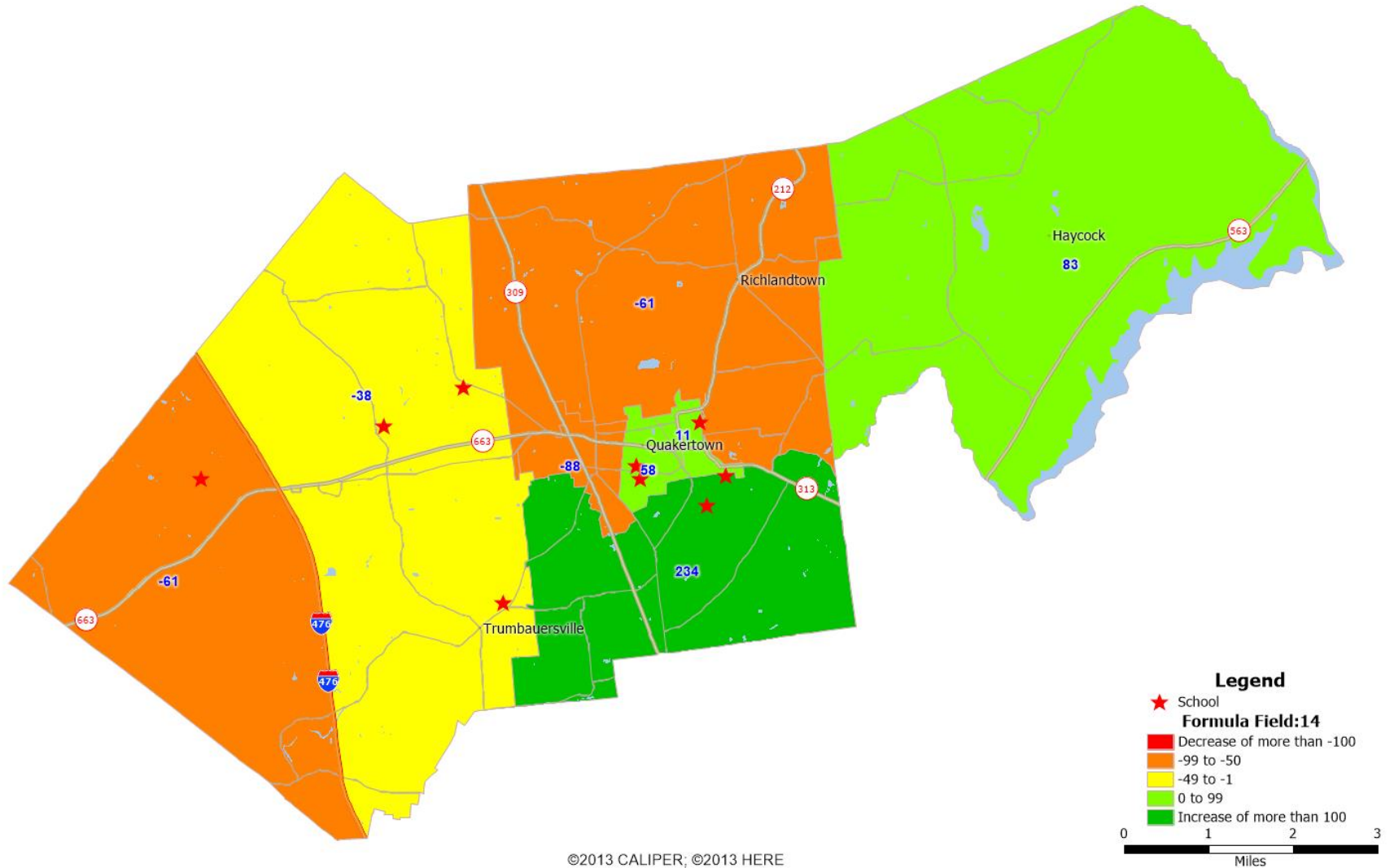
Implications of Declining Birth Rates

- Decrease from 525 births in 2007 to 389 in 2013 results in 136 fewer school aged students when these students reach school.
- Approximately 85% will attend public schools ($136 \times .85 = 116$ fewer public school students)
- 116 fewer students require 4 to 5 fewer rooms and teachers at each grade level as these students progress through the school system
- This will relieve schools at capacity that lack space for special education, art, music, and other rooms required for a modern educational program
- But, birth rates could rebound to prior level
 - U.S. Census Bureau projections for 2015 and 2020 did not predict decrease in population, but they were done before 5 years of declining birth rates
- Birth rates vary by area and are highest where schools are most crowded

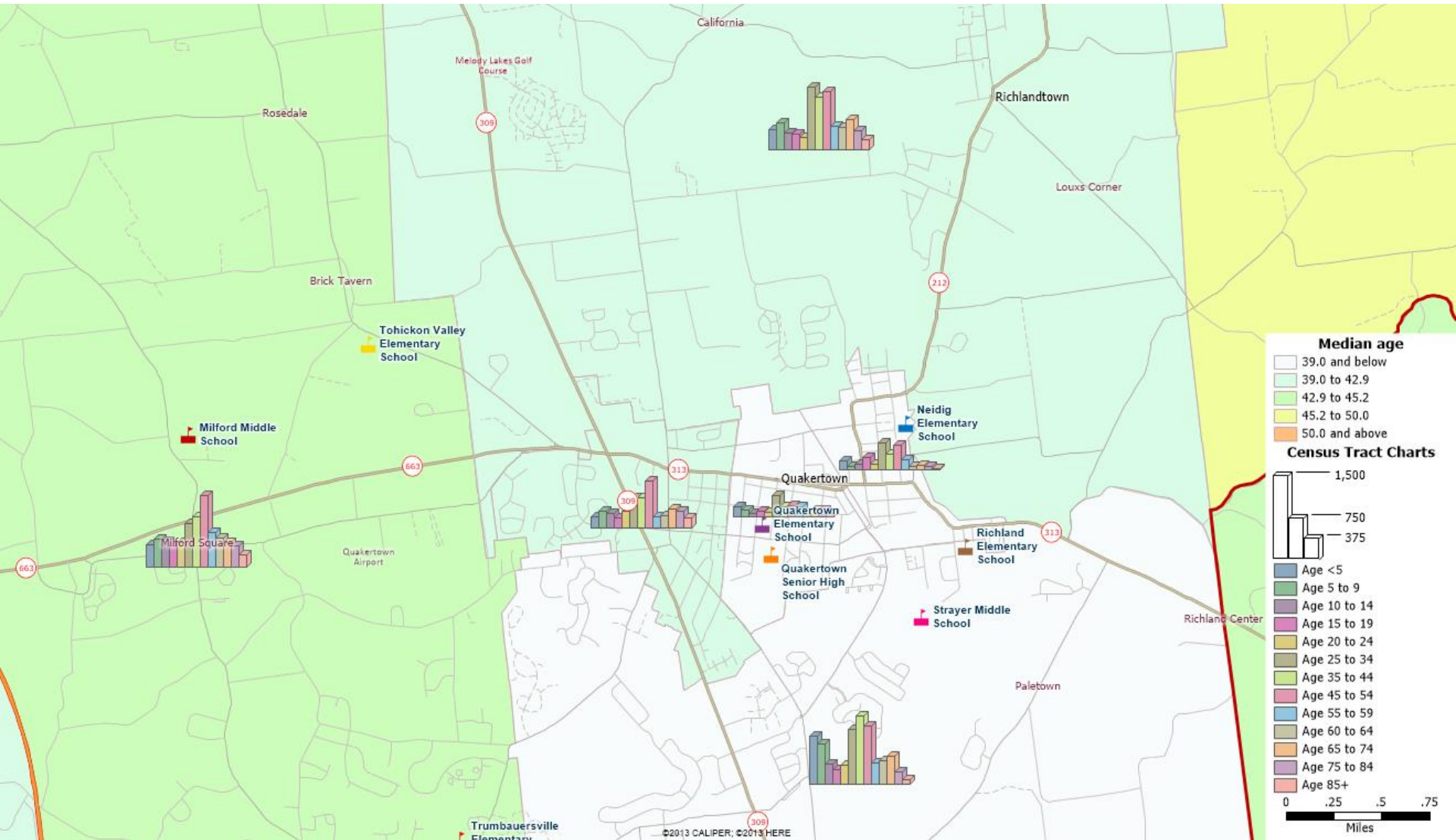
Where is the Population Shift?

- The maps that follow indicate loss of school aged population in the northern and western areas and gain in population in the southern, central and eastern areas
- This rapid population shift in recent years has crowded the central and eastern elementary schools

Gain/Loss in Population <5 Years Old, By Census Tract 2012 ACS vs 2010 Census

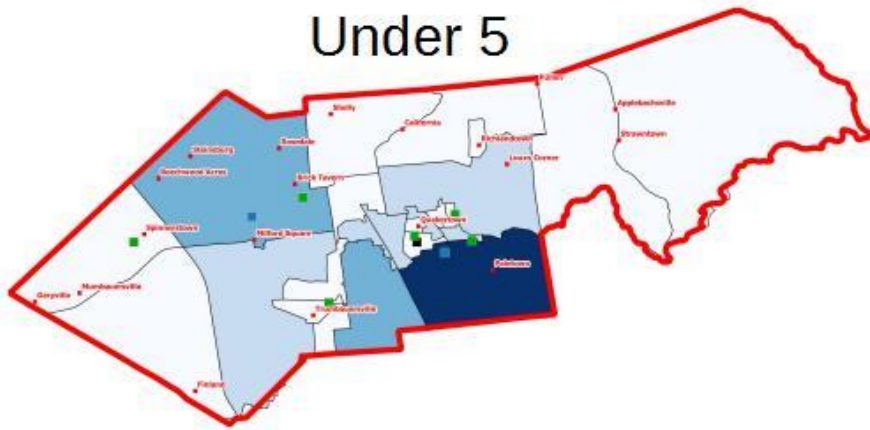


Where do Students and Child Bearing Age Females Live?
 (white in background color, by 5 year age cohorts on bar charts)
 How Much Does It Vary by Location? (see background colors)

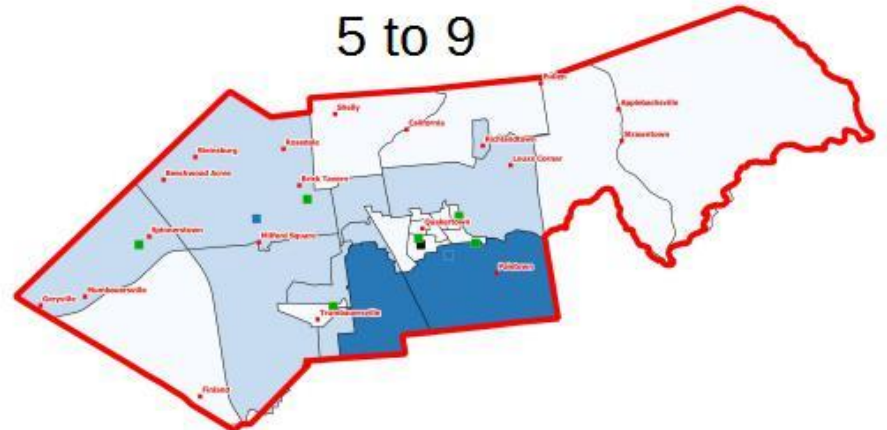


Age Distribution by Block Group – 2011 ACS

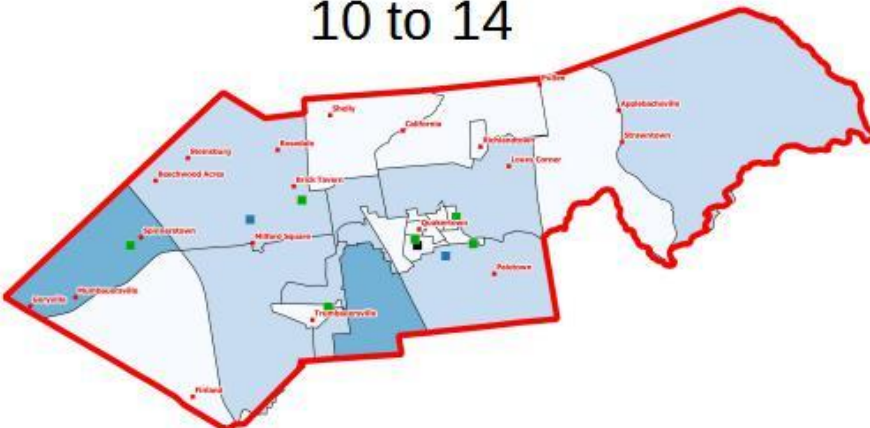
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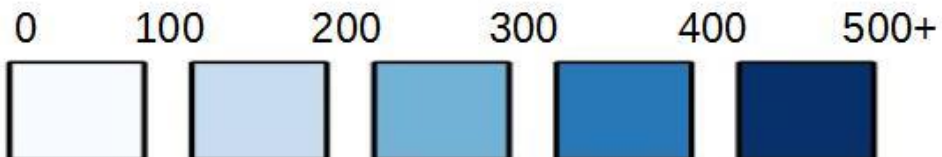
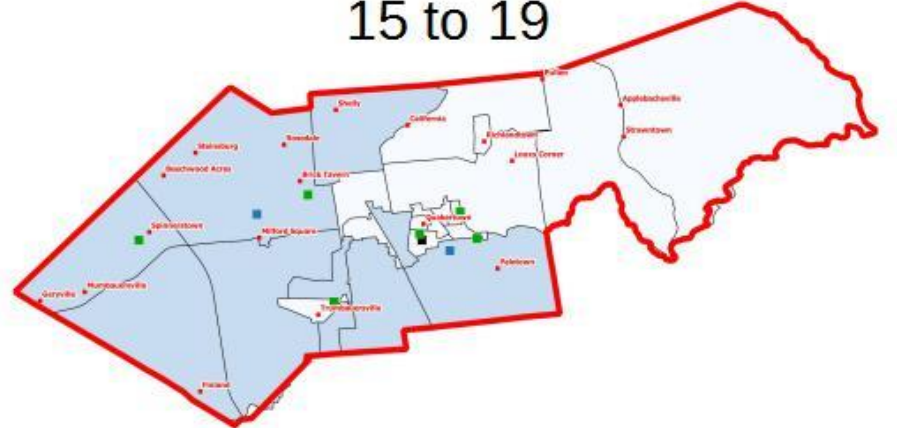
5 to 9



10 to 14



15 to 19



Will Residential Growth Offset Declining Birth Rates?

- If 116 fewer per grade level multiplied by 13 grade levels, 1508 fewer students are possible once these birth rates fully progress through all grade levels. This could change if birth rates rebound or significant amounts of residential growth.
- How much residential growth is expected?
- How many students can be expected from various types of housing?

Residential Development Proposals in 2013

Haycock-2 single family detached, Richland Township-109 single family detached

2013 ANNUAL REPORT OF ACTIVITY

TABLE 5. Proposed Residential Development, 2013

Municipality	Single-Family Detached	Semi-Detached	Attached	Multi-Family	Mobile Homes	Total
Bedminster Township	0	0	0	0	0	0
Bensalem Township	2	0	0	0	0	2
Bridgeton Township	0	0	0	0	0	0
Brigden Borough	5	0	0	0	0	5
Brigden Township	2	0	0	0	0	2
Buckingham Township	0	0	0	0	0	0
Chalfont Borough	0	0	0	0	0	0
Doylestown Borough	1	0	0	0	0	1
Doylestown Township	4	4	2	0	0	11
Dublin Borough	0	0	0	0	0	0
Durham Township	0	0	0	0	0	0
East Rockhill Township	0	0	0	0	0	0
Falls Township	0	0	0	0	0	0
Haycock Township	2	0	0	0	0	2
Hilltown Township	41	0	29	0	0	275
Hulmeville Borough	0	0	0	0	0	0
Hyland Borough	1	0	0	0	0	1
Langhorne Borough	0	0	0	0	0	0
Langhorne Manor Borough	0	0	0	0	0	0
Lower Merikeld Township	24	0	0	0	0	24
Lower Southampton Township	0	0	0	0	0	0
Middletown Township	2	0	0	0	0	2
Milford Township	0	0	0	0	0	0
Minerva Borough	0	0	0	0	0	0
New Britain Borough	0	0	0	0	0	0
New Britain Township	28	0	0	0	0	28
New Hope Borough	0	0	3	0	0	3
Newtown Borough	0	0	0	0	0	0
Newtown Township	0	0	30	0	0	30
Nockamixon Township	1	0	0	0	0	1
Northampton Township	2	0	0	0	0	2
Parsippany Borough	0	0	0	12	0	12
Parkton Borough	0	0	0	0	0	0
Plumstead Township	4	0	0	0	0	4
Quakertown Borough	0	0	0	0	0	0
Richland Township	109	0	0	0	0	109
Richlandtown Borough	0	0	0	0	0	0
Riegelsville Borough	0	0	0	0	0	0
Sellersville Borough	0	13	20	0	0	34
Silverdale Borough	0	0	0	0	0	0
Solisbury Township	0	0	0	0	0	0
Springfield Township	0	0	0	0	0	0
Telford Borough	0	0	0	0	0	0
Tinicum Township	0	0	0	0	0	0
Trumbauersville Borough	0	0	0	0	0	0
Tullytown Borough	0	0	0	0	0	0
Upper Merikeld Township	2	0	0	0	0	2
Upper Southampton Township	0	0	0	0	0	0
Warrington Township	0	0	0	0	0	0
Warminster Township	0	0	0	0	0	0
Wrightstown Township	0	0	0	0	0	0
Upper Makefield Township	0	0	0	0	0	0
Lower Makefield Township	0	0	0	0	0	0
Lower Southampton Township	0	0	0	0	0	0
Langhorne Manor Borough	0	0	0	0	0	0
Benedel Borough	0	0	0	0	0	0
Hulmeville Borough	0	0	0	0	0	0
Philadelphia Township	0	0	0	0	0	0
Bensalem Township	0	0	0	0	0	0
Bristol Township	0	0	0	0	0	0
Falls Township	0	0	0	0	0	0
Trenton Township	0	0	0	0	0	0
Total	393	22	334	12	0	123

2013 ANNUAL REPORT OF ACTIVITY

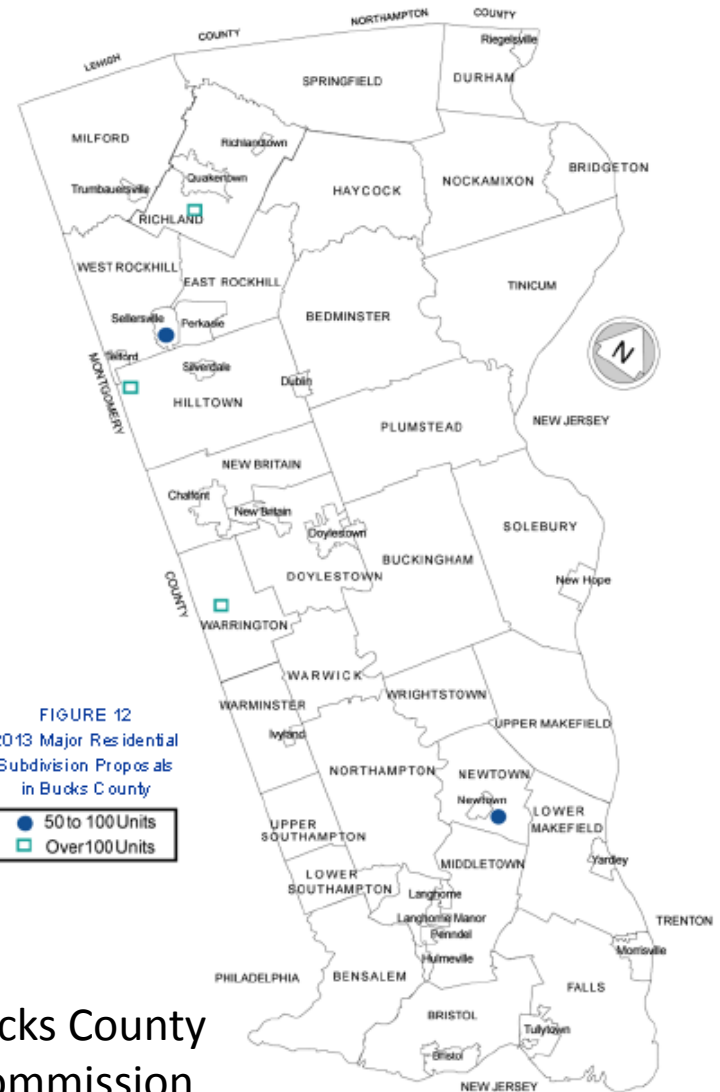


FIGURE 12
2013 Major Residential Subdivision Proposals in Bucks County

Source: Bucks County Planning Commission

Public School-Age Students (PSAC) Expected from Residential Growth

- Pennsylvania data (demographic multipliers)
 - From Rutgers University, Center for Urban Policy Research, 2006
 - Depends on type of structure, number of bedrooms, cost
 - Varies by school age level
- QCSD specific data from U.S. Census for 2010 calculated and mapped

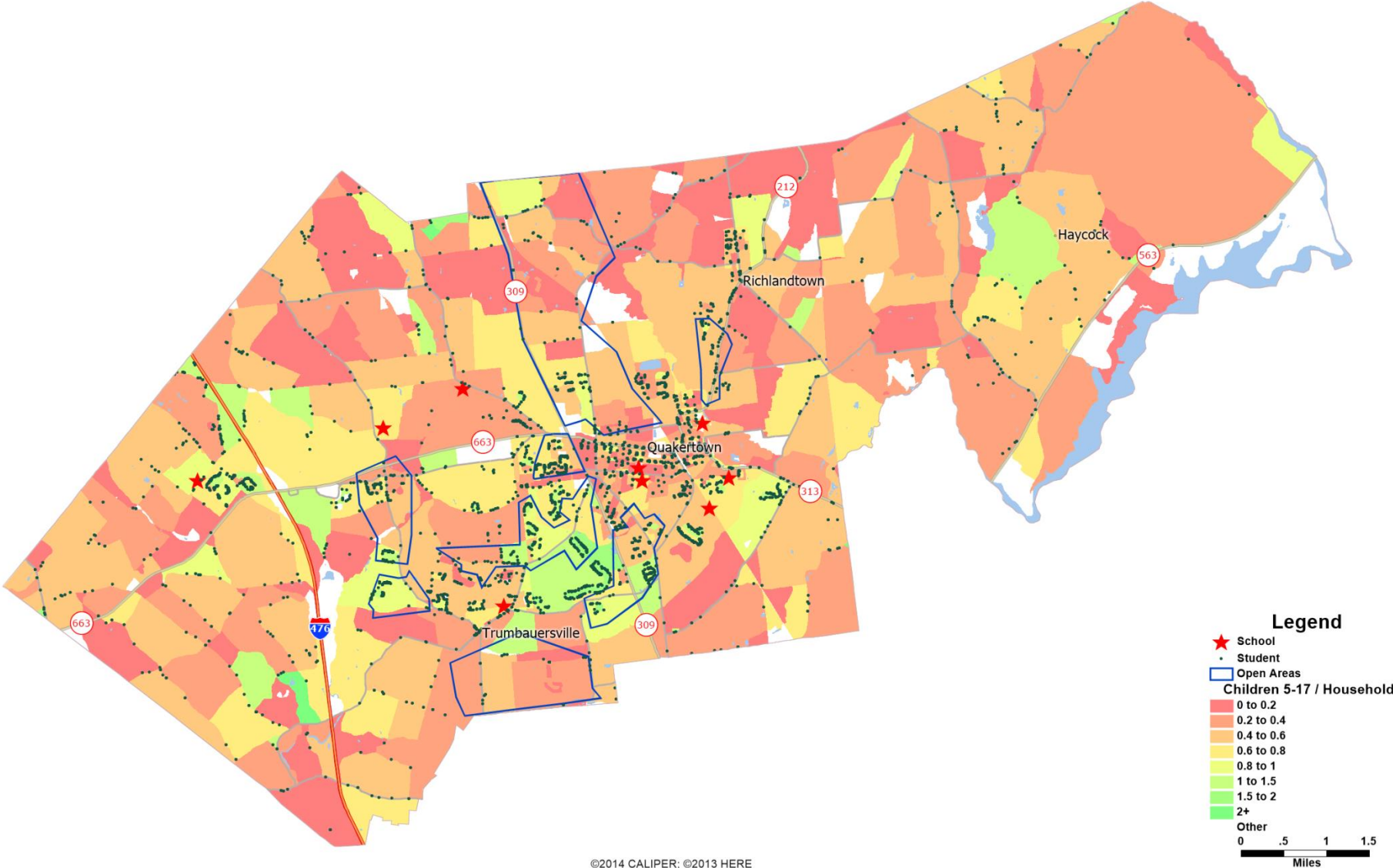
Public School Aged Children (PSAC) from Various Housing Types and Numbers of Bedrooms (BR)

Structure Type	1 BR	2 BR	3 BR	4 BR
Single-Family Detached		0.20	0.56	0.84
Single-Family Attached		0.15	0.36	0.97
5+ Units-Own, 1 BR	0.11	0.03	0.15	
5+ Units-Rent, 1 BR	0.04	0.19	0.70	
2-4 Units	0.15	0.24	0.59	
Mobile Home		0.20	0.63	1.38

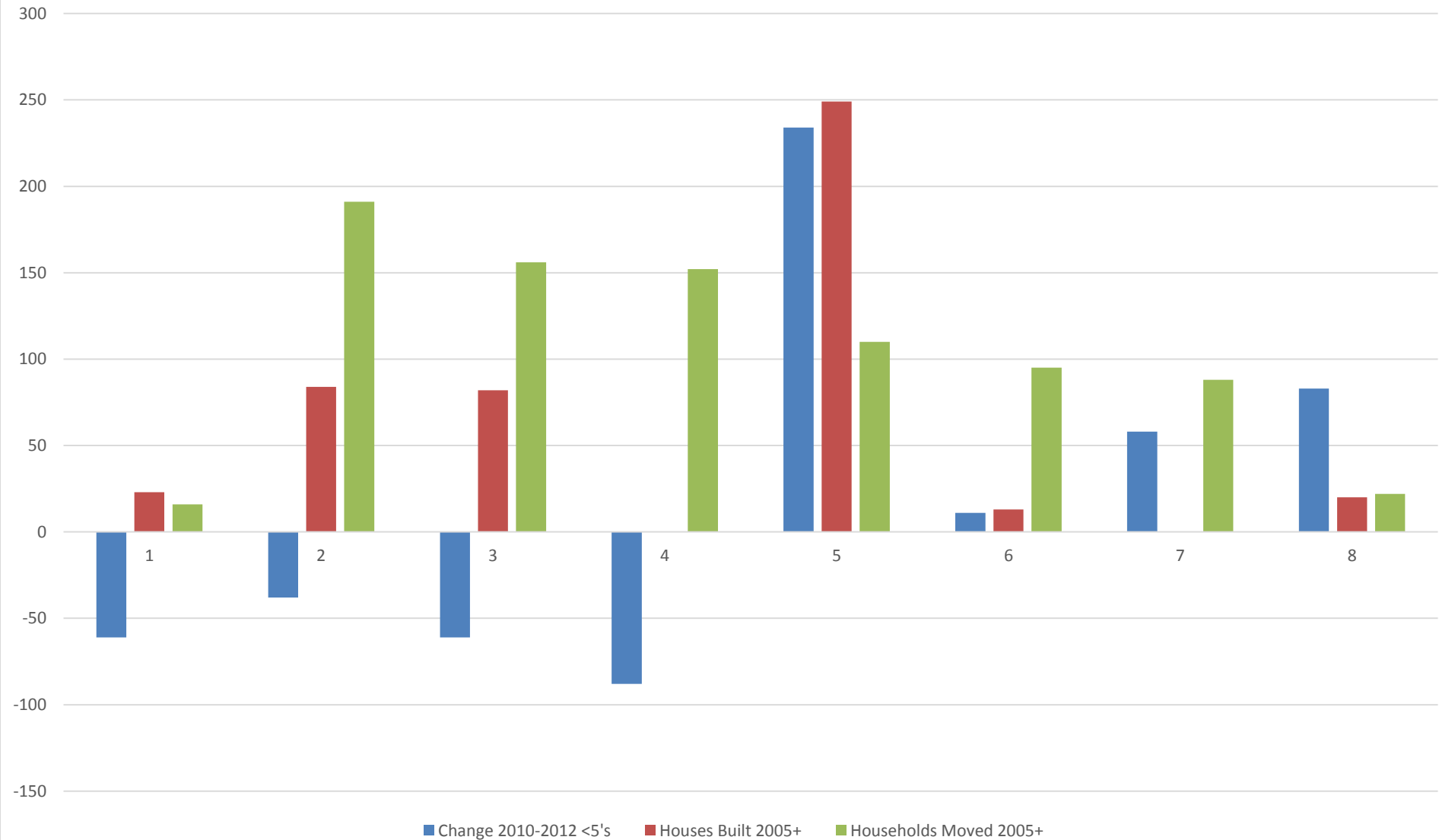
In Pennsylvania, 100 four bedroom single family detached homes should result in 84 students spread across 13 grade levels or six students per grade level, possibly spread across six elementary schools resulting in one student per grade level per elementary school. Local situations will vary.

Source: Rutgers University, Center for Urban Policy Research, 2006, specific to Pennsylvania

School Aged Children (SAC) per Household (85% of SAC attend QCSD schools)



Change from 2010 to 2012 in Number Under 5 Years Old, in Houses Built Since 2005, and in Households Moved Since 2005 by Census Tract

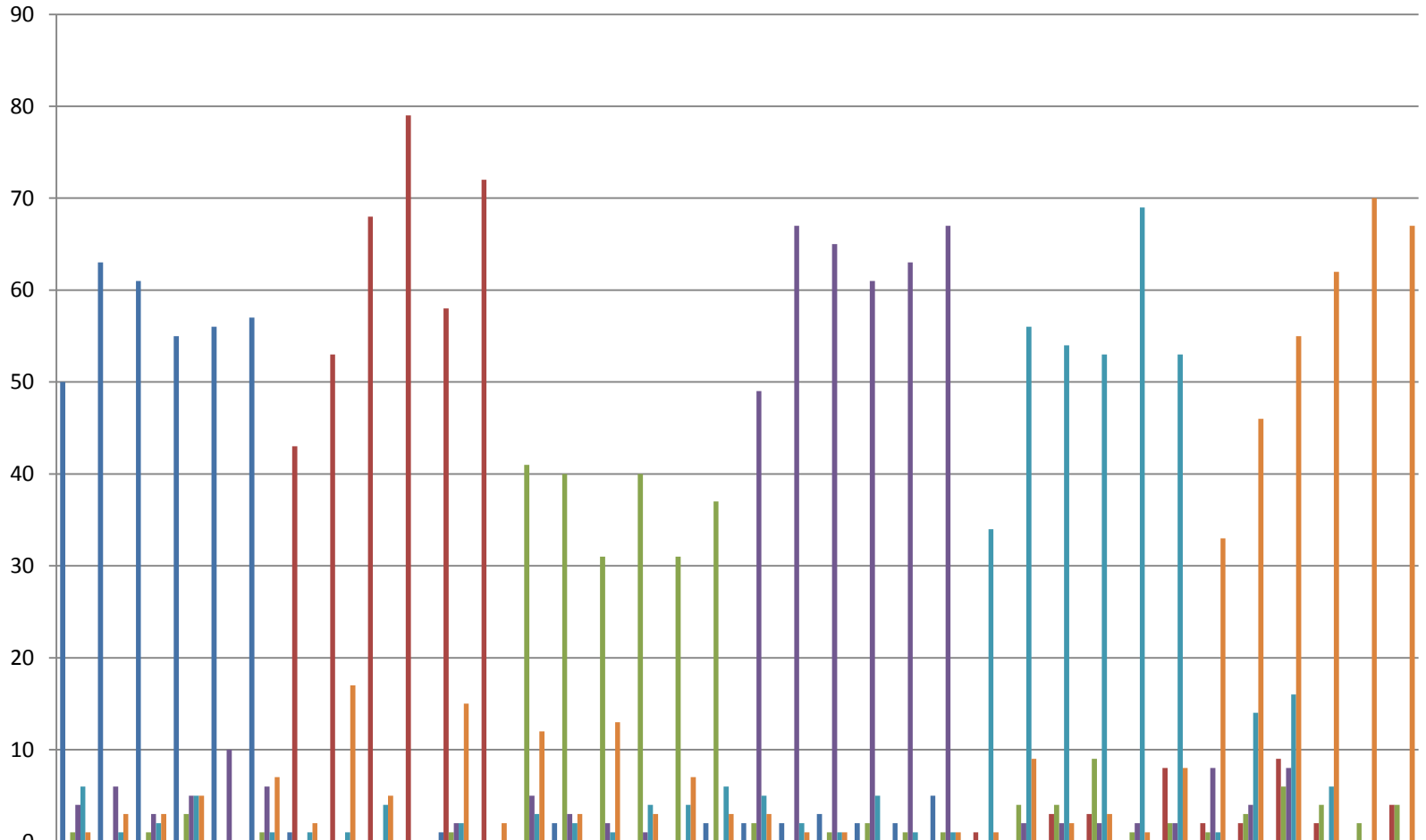


Sample Solution-Number of Students Reassigned by Grade Level (if based on 2014-15 enrollments)

Grade Level	Number	Notes
Kindergarten	62	Kindergarten students in 2015-16 should be reassigned to new school (option to allow voluntary compliance if older sibling in original school)
First	62	In QCSD, K not guaranteed same school in 1 st grade
Second	84	
Third	85	
Fourth	52	
Fifth	64	Current fifth graders will be in middle schools
Total	409 if redistricting occurred at once with no options as below	

But, 409-64 current fifth graders equals 345 affected next year.
 If K assigned immediately to new school, 345-62 equals 283 affected next year.
 If all new move-in students are assigned to new school, another 25-50 not affected.
 If parents allowed voluntary redistricting, perhaps another 25-50 not affected.

Redistrict 1-Students Moved from Another School, By Grade Level

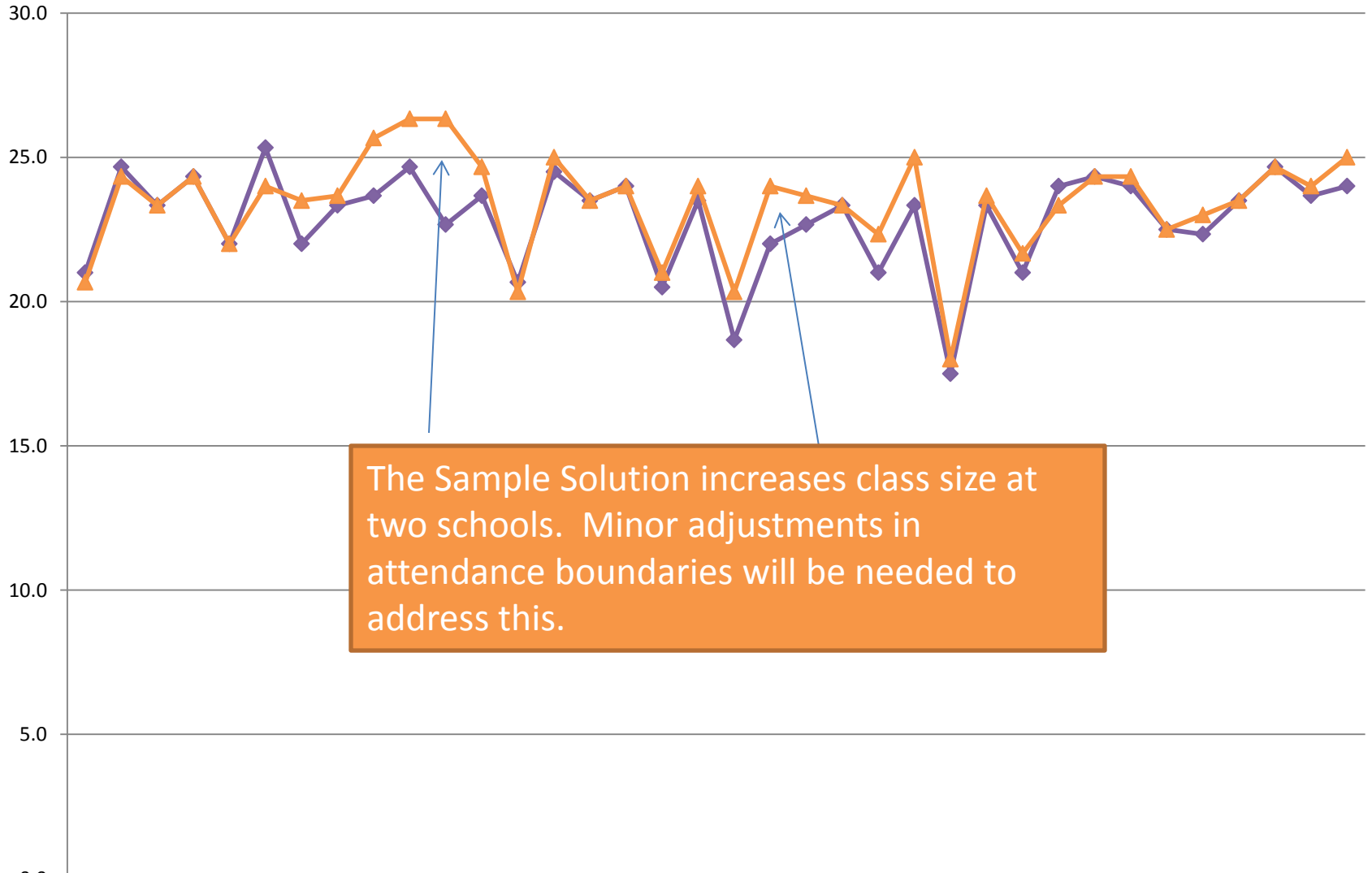


	NES K	NES 1	NES 2	NES 3	NES 4	NES 5	PES K	PES 1	PES 2	PES 3	PES 4	PES 5	QES K	QES 1	QES 2	QES 3	QES 4	QES 5	RES K	RES 1	RES 2	RES 3	RES 4	RES 5	TVE S K	TVE S 1	TVE S 2	TVE S 3	TVE S 4	TVE S 5	TES K	TES 1	TES 2	TES 3	TES 4	TES 5	
From Neidig	50	63	61	55	56	57	1	0	0	0	1	0	0	2	0	0	0	2	2	2	3	2	2	5													
From Pfaff							43	53	68	79	58	72													1	0	3	3	0	8	2	2	9	2	0	4	
From Quakertown	1		1	3		1	0	0	0	0	1	0	41	40	31	40	31	37	2	0	1	2	1	1	0	4	4	9	1	2	1	3	6	4	2	4	
From Richland	4	6	3	5	10	6	0	0	0	0	2	0	5	3	2	1	0	0	49	67	65	61	63	67	0	2	2	2	2	2	8	4	8	0	0	0	
From Tohickon Valley	6	1	2	5		1	1	1	4	0	2	0	3	2	1	4	4	6	5	2	1	5	1	1	34	56	54	53	69	53	1	14	16	6	0	0	
From Trumbauersville	1	3	3	5		7	2	17	5	0	15	2	12	3	13	3	7	3	3	1	1	0	0	1	1	9	2	3	1	8	33	46	55	62	70	67	

Important Financial Decisions

- Staffing
 - For example, if 25 is the desired elementary class size,
 - 50 students at a grade level at a school requires 2 teachers with class sizes of 25
 - 55 students require 3 teachers with class sizes of 18, 18, and 19.
 - Cost of teacher with salary and benefits is approximately \$100,000/year and increasing.
- Transportation-No cost impact if:
 - Total number of students bussed to a school remains the same, OR
 - The number of students added to one school but subtracted from another school does not affect the number of buses needed at either school
 - Note: The buses are contracted on a daily rate regardless of time used or mileage. A bus costs \$42,000/year.
- Construction Options
 - The annual cost of a teacher is equivalent to the annual debt service payment on \$1.6 million of construction paid for by level debt payments that remain constant over 20 year repayment period while staffing costs escalate.
- Overall Conclusion: The process of assigning students to a school to balance class size is extremely important for financial and instructional reasons.

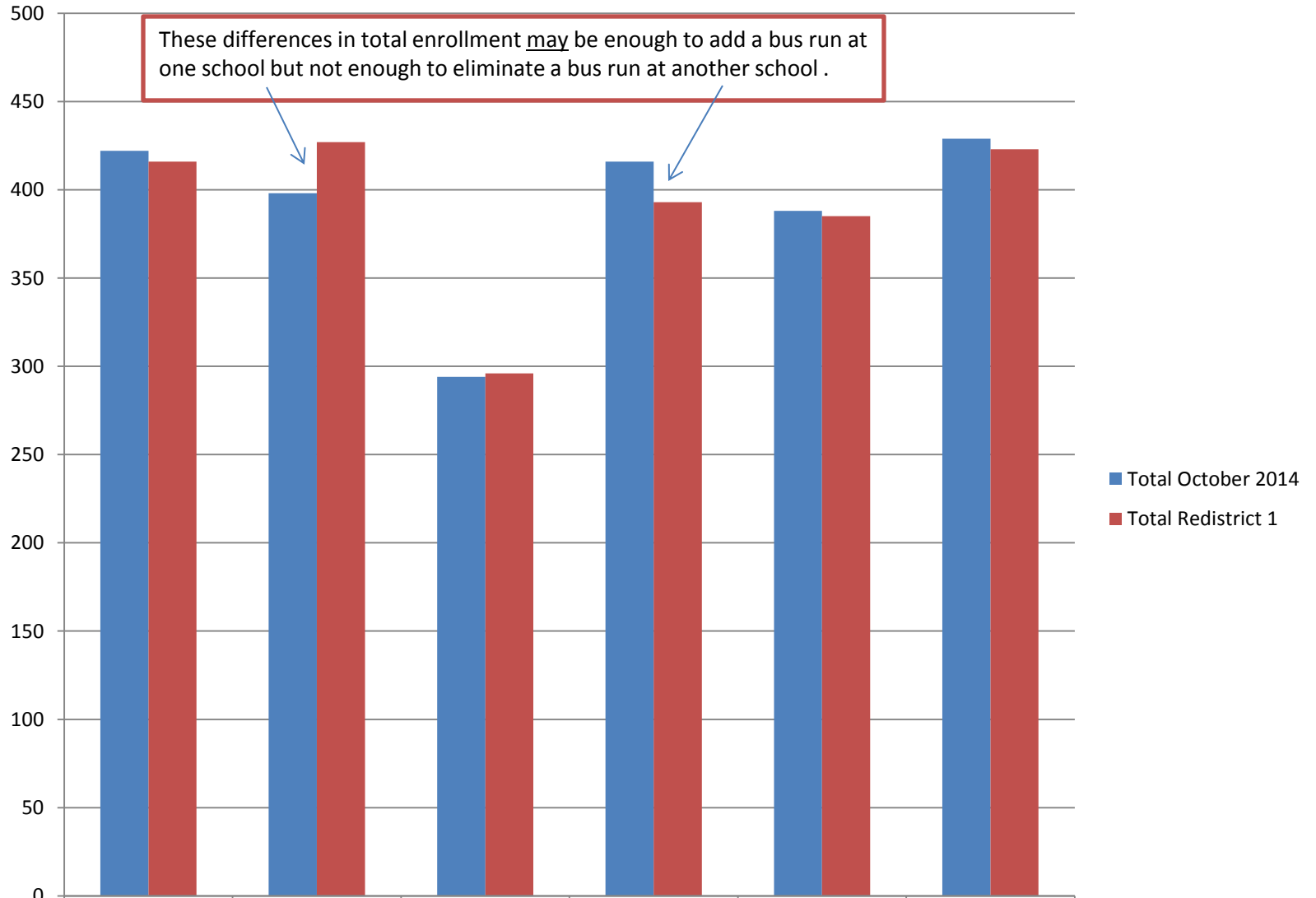
Class Size Comparison-October 2014 to Redistricting Option 1



The Sample Solution increases class size at two schools. Minor adjustments in attendance boundaries will be needed to address this.

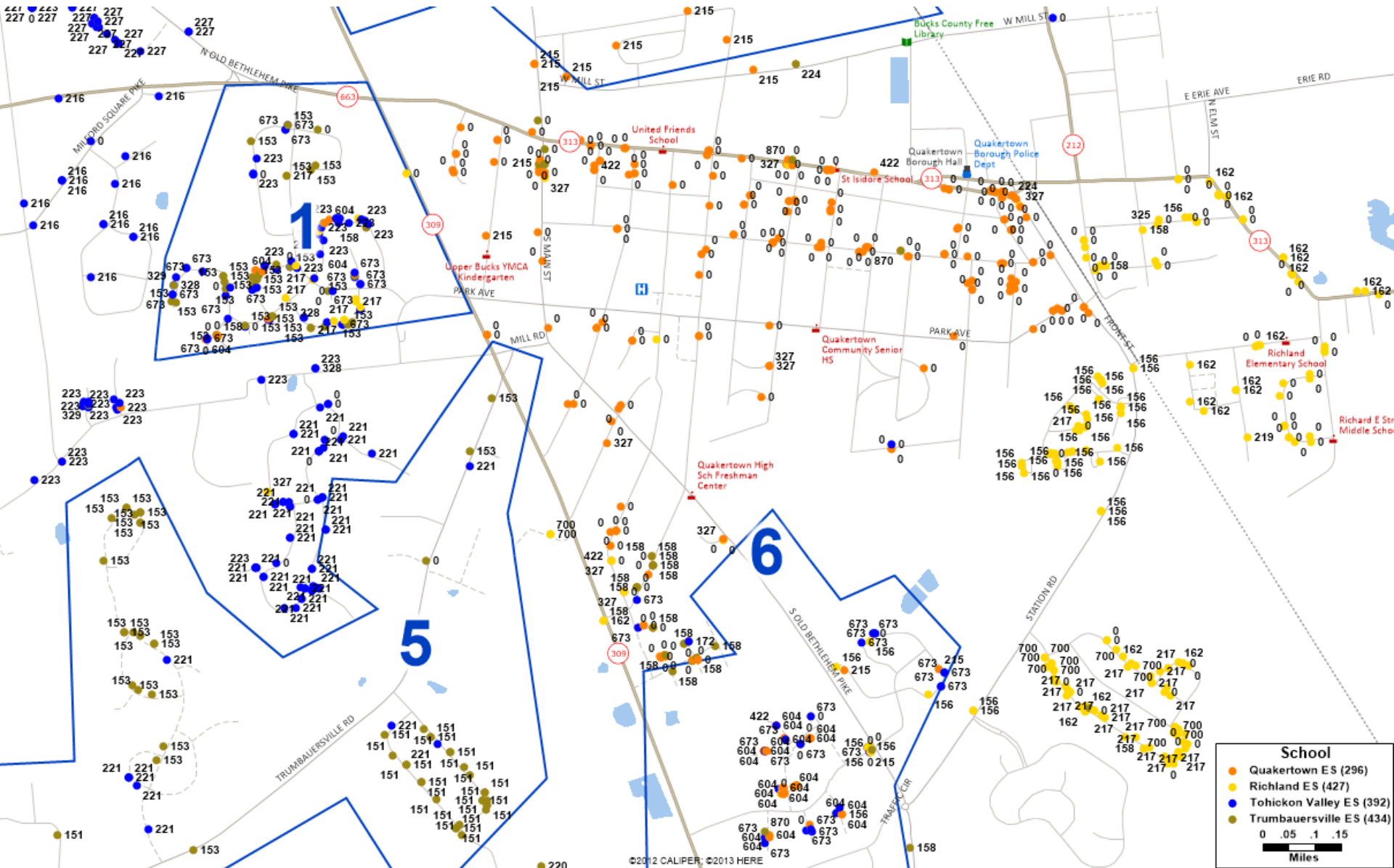
	NES K	NES 1	NES 2	NES 3	NES 4	NES 5	PES K	PES 1	PES 2	PES 3	PES 4	PES 5	QES K	QES 1	QES 2	QES 3	QES 4	QES 5	RES K	RES 1	RES 2	RES 3	RES 4	RES 5	TVE SK	TVE S1	TVE S2	TVE S3	TVE S4	TVE S5	TES K	TES 1	TES 2	TES 3	TES 4	TES 5
Oct-14	21.0	24.7	23.3	24.3	22.0	25.3	22.0	23.3	23.7	24.7	22.7	23.7	20.7	24.5	23.5	24.0	20.5	23.5	18.7	22.0	22.7	23.3	21.0	23.3	17.5	23.3	21.0	24.0	24.3	24.0	22.5	22.3	23.5	24.7	23.7	24.0
Option 1	20.7	24.3	23.3	24.3	22.0	24.0	23.5	23.7	25.7	26.3	26.3	24.7	20.3	25.0	23.5	24.0	21.0	24.0	20.3	24.0	23.7	23.3	22.3	25.0	18.0	23.7	21.7	23.3	24.3	24.3	22.5	23.0	23.5	24.7	24.0	25.0

Transportation Impact of Redistricting Sample Solution

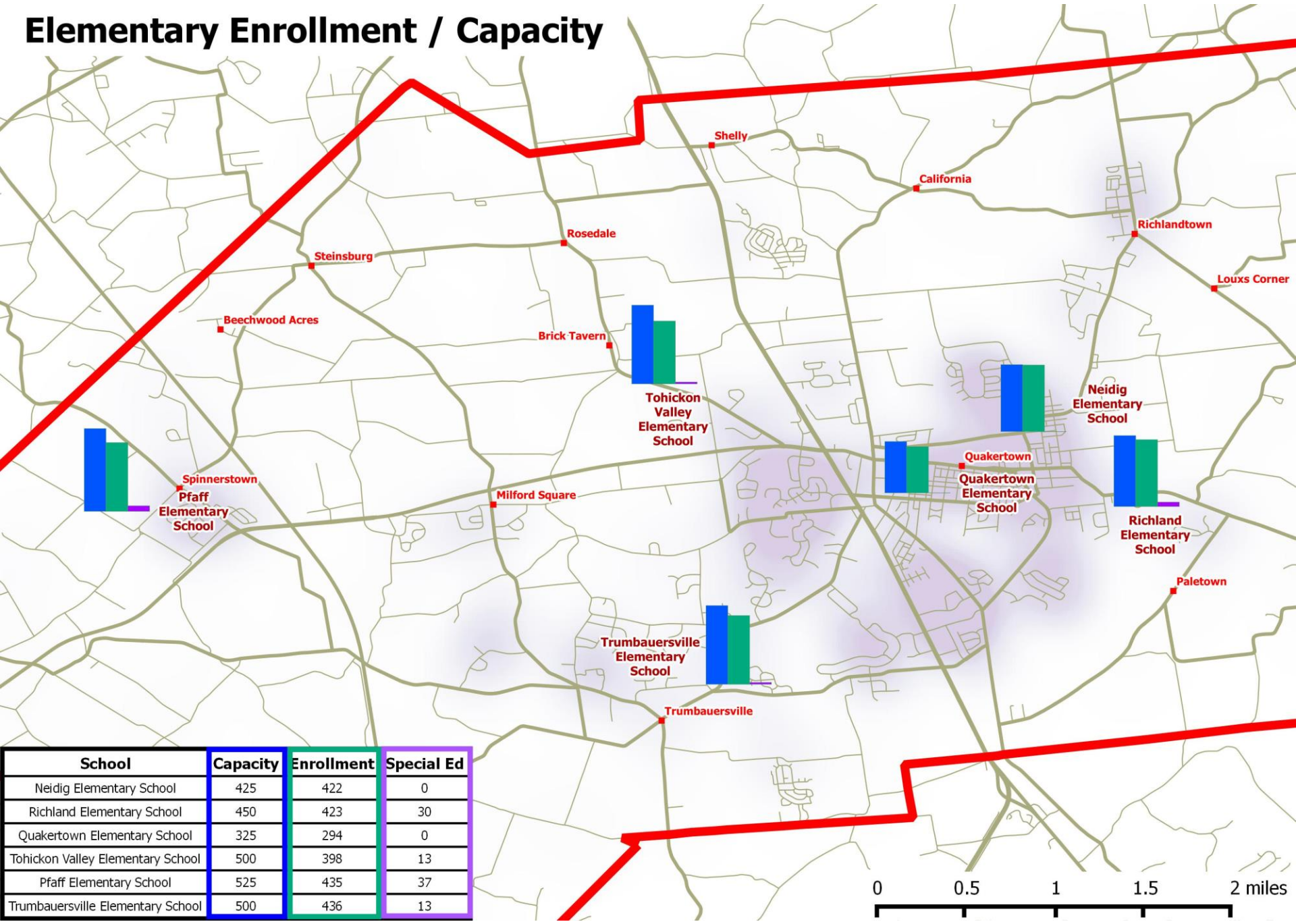


Total October 2014	422	398	294	416	388	429
Total Redistrict 1	416	427	296	393	385	423

Buses by Bus Number-Numerous Buses in One Neighborhood due to Open Areas



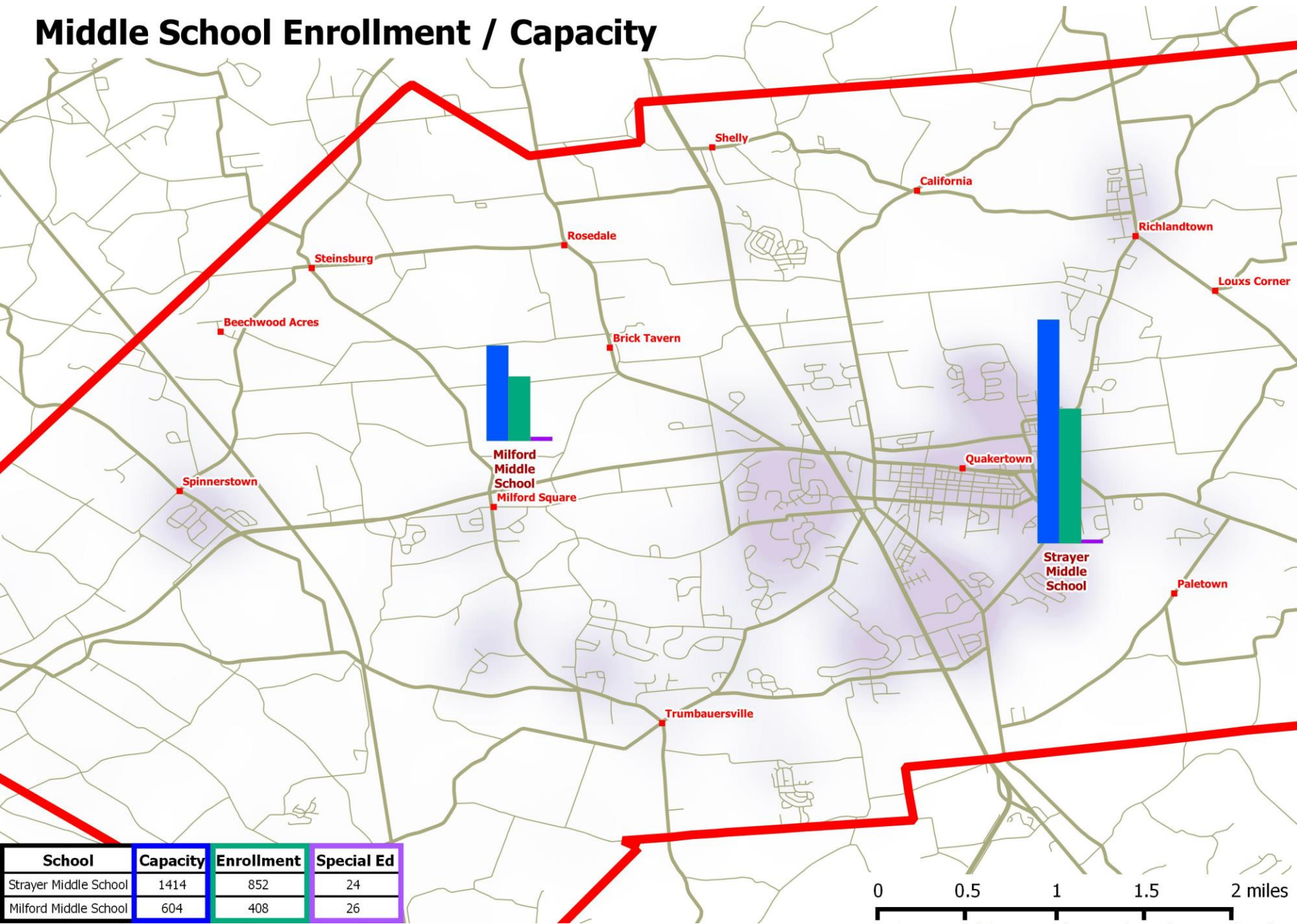
Elementary Enrollment / Capacity



School	Capacity	Enrollment	Special Ed
Neidig Elementary School	425	422	0
Richland Elementary School	450	423	30
Quakertown Elementary School	325	294	0
Tohickon Valley Elementary School	500	398	13
Pfaff Elementary School	525	435	37
Trumbauersville Elementary School	500	436	13



Middle School Enrollment / Capacity



Middle School Class Size Balancing

	Milford MS October 2014	Strayer MS October 2014	Milford MS Proposed	Strayer MS Proposed
Enrollment, 6 th	124	289		
Enrollment, 7 th	125	275		
Enrollment, 8 th	133	264		
Total	382	828		
Class size	20.6	24.3		
Number of teams	2	3		
Desired distribution for ideal team size			1/3 of total	2/3 of total
Students to Reassign to achieve 1/3 to Milford MS and 2/3 to Strayer MS			+17	-17

The Role of the Community Committee

- Review guidelines for redistricting
- Evaluate redistricting options per guidelines
- Review implementation alternatives
 - Implement entirely in 2015-16
 - Transition over several years, with voluntary moves
- Make recommendation to the Superintendent on the overall solution
 - New districts
 - Implementation
 - Revised process for student assignment

Timeline for the Redistricting

- Community Committee Meetings
 - October 28
 - November 4,11,18, and 25
 - December 2
- January 2015-Superintendent makes recommendation to the School Board
- January/February 2015-School Board Reviews Recommendation and Makes Decision/s

Options and Implementation Alternatives

- Range of Options
 - Do Nothing
 - Hope that declining enrollments will help with all issues
 - Reassign all students in Open Areas to nearby school
 - Reassign students in Open Areas to western schools that currently have extra capacity
 - Hybrid-combination of other options (do nothing in some Open Areas, reassign some Open Areas to nearby schools, reassign most Open Areas to western schools where extra capacity now exists)
- Range of Implementation Alternatives
 - All in 2015-16
 - Transition over 4 years (to minimize impact on students and families)
 - Voluntary-when to move, whether to split siblings to two schools
 - Mandatory (create and publicize new school attendance area boundaries)
 - New students assigned immediately to new school
 - K in 2015-16
 - All others after students finish in their current school
- Need a student assignment process that provides flexibility to balance class size/teaching loads and extend the longevity of the redistricting

Questions and Discussion