

# Pay No Attention to that BMP Behind the Curtain

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Presented at:

**2022 SESWA Regional  
Stormwater Conference**

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Presented by:

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# Introduction

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- ◁ How do you know if you are sick?
- ◁ How do you treat your sickness?
- ◁ Do medicines treat symptoms or the sickness?

# Introduction

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- ◁ How do you know if your storm water or creeks have pollution problems (sick)?
- ◁ How do you currently treat those problems?
- ◁ Does the treatment treat symptoms or the problem?

# Questions

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- ◁ So, what is the problem (source) and is it possible to treat the problem and not only the symptoms?
- ◁ Are we spending more time/resources managing symptoms than the problem? If so, why?

# Genesis of the BUA Pilot Study

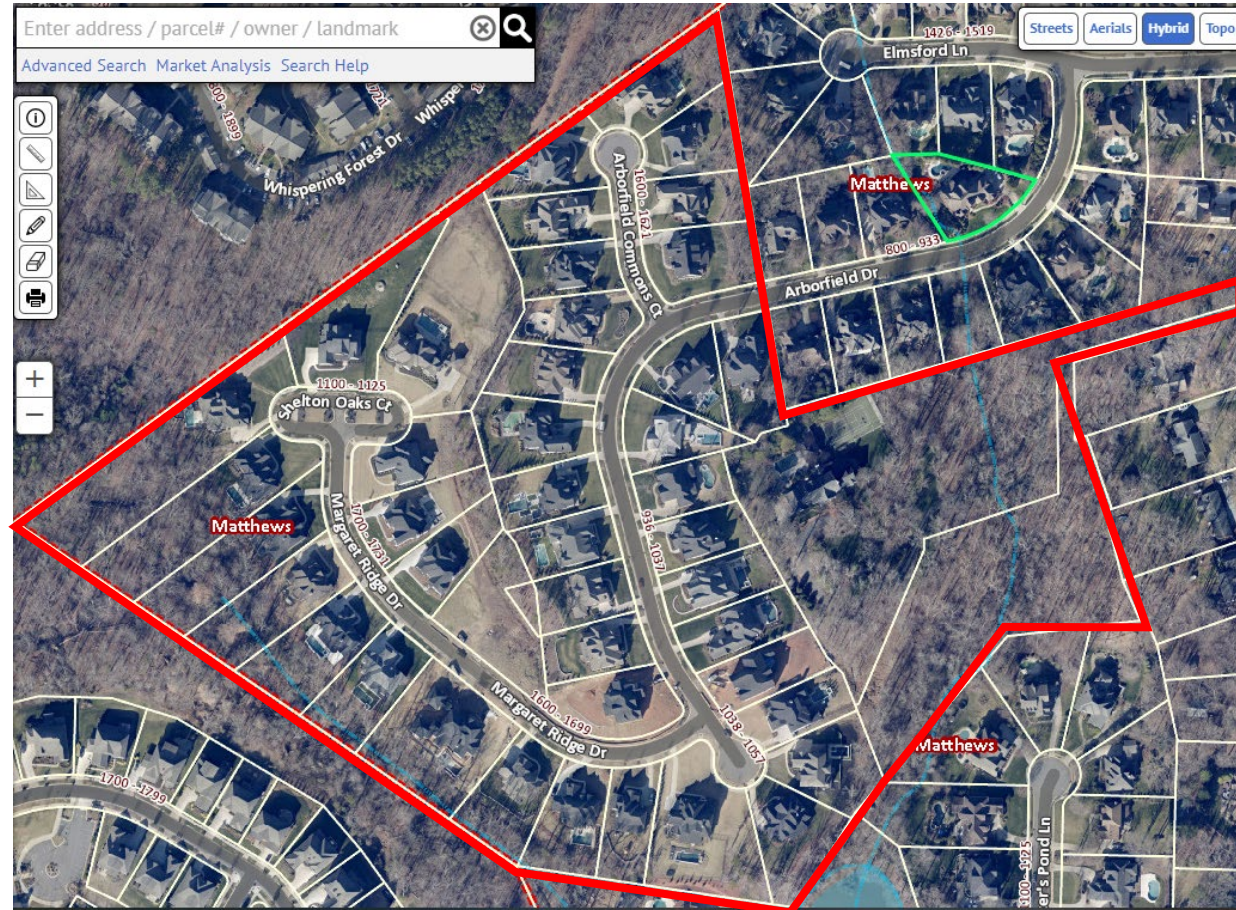
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- ◁ 2021 – State conducted an NPDES Phase II audit, issued a Notice of Compliance, and in passing commented that “... in the future, we are going to start auditing your inspections of low-density Post-Construction sites.”
  - We have not done low density site inspections
  - What does a low-density site inspection look like?
- ◁ Phone call from a resident who was told they could not build a swimming pool because they were at their Post-Construction built-upon area (BUA) limit. They asked “so how did all my neighbors get to build their pools?”

# BUA Pilot Study

## Subdivision Details:

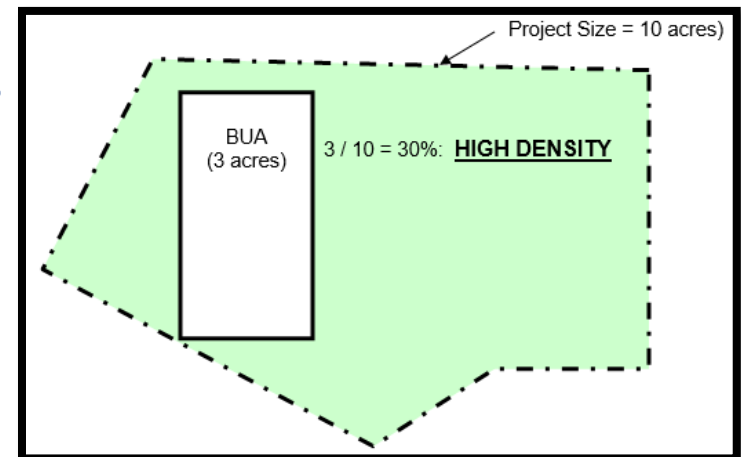
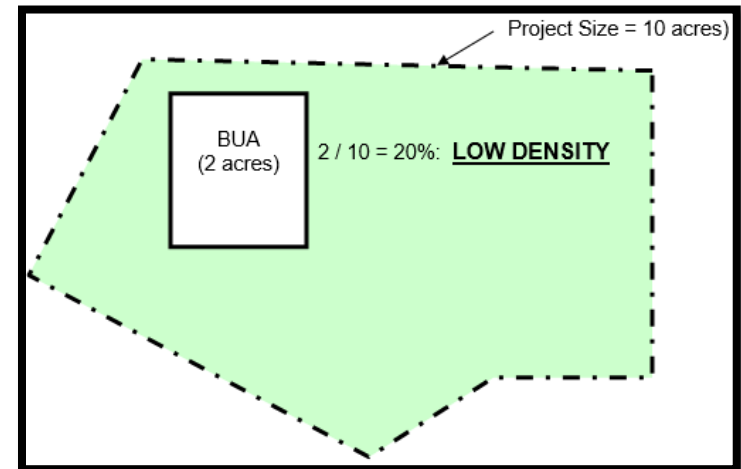
- 44-home subdivision
- Built: 2018–2022
- Cost: \$800K–\$1.6m
- Permitted as low density (<24% BUA) post-constr.





# NC Post-Construction 101

- ◁ Low density development (typ. <24% built-upon area, BUA) requires no treatment of storm water runoff
- ◁ High density development ( $\geq 24\%$  BUA) requires treatment of 1<sup>st</sup> inch of rainfall for all BUA.
- ◁ Question: If development plans show 26% BUA, can the developer treat 2.1% of the BUA and leave the remaining 23.9% BUA untreated and remain compliant? Why or why not?



# Local Post-Construction BUA Controls in Place

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- ▷ Review and approval of development plans prior to commencing construction
- ▷ Recordation of lot BUA limits are required on plats prior to sale of lot
- ▷ BUA limit is placed on Building Permits
- ▷ Prior to releasing a certificate of occupancy (CO) an as-built BUA survey (sealed by a surveyor) is approved and site inspected
- ▷ Prior to issuance of subsequent building permits, an automatic permit hold is placed until the proposed BUA is evaluated for compliance with BUA limits.



# BUA Pilot Study Initial Thoughts

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- ◁ **A small 44-lot subdivision would be an easy start**
- ◁ **This subdivision is only 3 years old, so....**
  1. Developers, Builders, and Surveyors should have good working knowledge of Post-Construction requirements since they have been in place since 2007 (11 years)
  2. There should be minimal violations
  3. Records would be easily-available since most recent submittals are digital
  4. If there are records missing from our files, the homeowner likely still has them
- ◁ **This study would help gauge effort and cost for meeting a potential future requirement**

# BUA Pilot Study Data Gathering

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- ▷ Most recent recorded plat BUA limit data (39 revised plats total)
- ▷ Approved plans for building permit (and date)
- ▷ As-Built BUA surveys (and dates of surveys)
- ▷ Building Permits issued since initial CO
- ▷ Current BUA for each lot – Aerial Photo review
- ▷ Track Data collected
- ▷ Review and QA / QC data



# BUA Pilot Study Data Gathering



Subdivision Name:									
Town:									
BUA Limitation:									
Date:									
BUA Evaluator:									
Lot #	Address	Plat Information				Geoportal BUA (ft2)	Latest Survey Information		2021 Aerial Photo Comp. Addtl. BUA (ft2)*
		Rec. Date	DB	Page	BUA limit (ft2)		Date	Surveyed BUA (ft2)	
1	929 Arborfield Dr	11/30/2018	64/R	172	4946	5568	1/23/2019	4946	406
2	937 Arborfield Dr	11/30/2018	64/R	172	4846	5496	5/2/2019	4715	600
3	1004 Arborfield Dr	11/30/2018	64/R	172	5646	5840	4/11/2017	4827	593
4	942 Arborfield Dr	11/30/2018	64/R	172	5490	5815	1/17/2017	5490	0
5	936 Arborfield Dr	10/9/2020	67	801	6421	5296	7/25/2017	5171	519
6	1605 Arborfield Commons Ct	10/9/2020	67	801	5446	5227	11/15/2016	4646	668
7	1611 Arborfield Commons Ct	10/9/2020	67	801	6346	6448	6/11/2021	6480	409



# BUA Pilot Study Data Evaluation

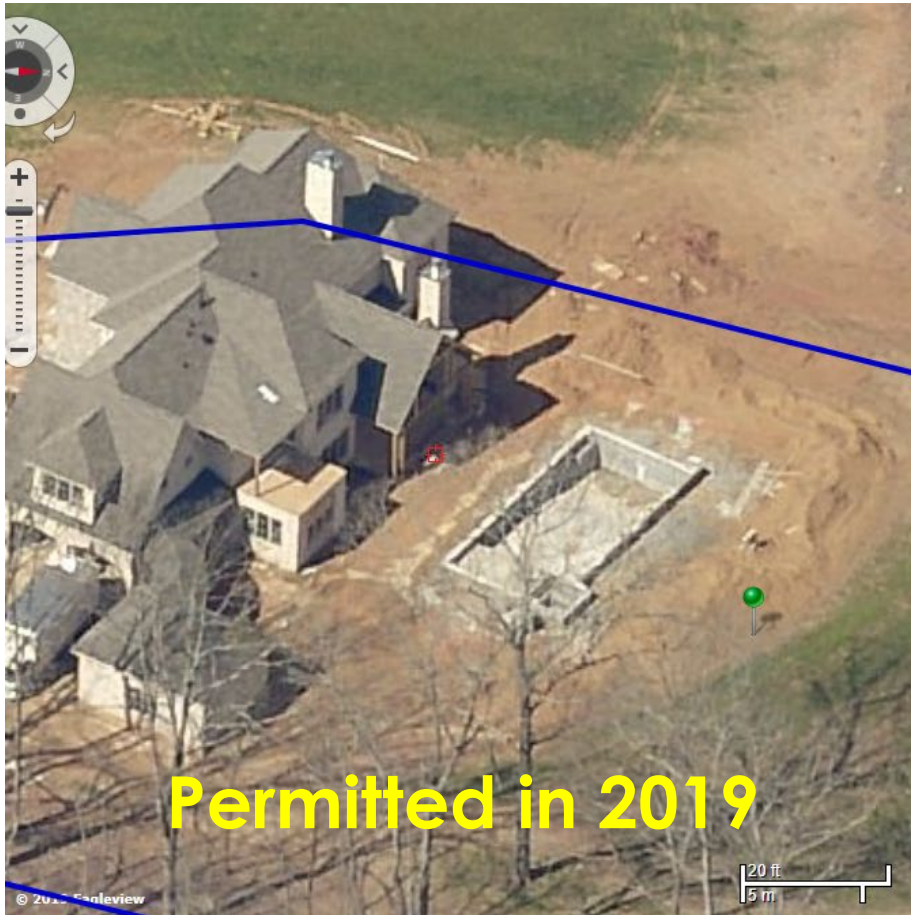


		Plat Information				Latest Survey Information		2021 Aerial Photo Comp. Addtl. BUA (ft2)*	Geoportal BUA Diff (ft2)	Aerial Photo BUA Diff (ft2)	Regulatory Survey BUA Diff (ft2)	Notes	
Lot #	Address	Rec. Date	DB	Page	BUA limit (ft2)	Geoportal BUA (ft2)	Date	Surveyed BUA (ft2)					
1	929 Arborfield Dr	11/30/2018	64/R	172	4946	5568	1/23/2019	4946	406	-622	-406	0	pool added no permits in system 2021
2	937 Arborfield Dr	11/30/2018	64/R	172	4846	5496	5/2/2019	4715	600	-650	-469	131	composite deck added//survey was not provided after pool installation
3	1004 Arborfield Dr	11/30/2018	64/R	172	5646	5840	4/11/2017	4827	593	-194	226	819	zoning approved by others not County employees for pool and cabana. No final BUA survey on file
4	942 Arborfield Dr	11/30/2018	64/R	172	5490	5815	1/17/2017	5490	0	-325	0	0	no changes noted in aerial photography
5	936 Arborfield Dr	10/9/2020	67	801	6421	5296	7/25/2017	5171	519	1125	731	1250	extended driveway between 2018 & 2019
6	1605 Arborfield Commons Ct	10/9/2020	67	801	5446	5227	11/15/2016	4646	668	219	132	800	Extended driveway, added sidewalk and patio between 2020 and 20201
7	1611 Arborfield Commons Ct	10/9/2020	67	801	6346	6448	6/11/2021	6480	409	-102	-543	-134	Based upon aerial photograph review, a brick patio was added between 2018 and 2019 & a rip-rap swale was added between 2020 and 2021. The swale was not considered BUA in the BUA survey and should be revised.

	= BUA overage
	= Potential BUA overage
	= BUA in compliance



# BUA Pilot Study Data Evaluation



Permitted in 2019



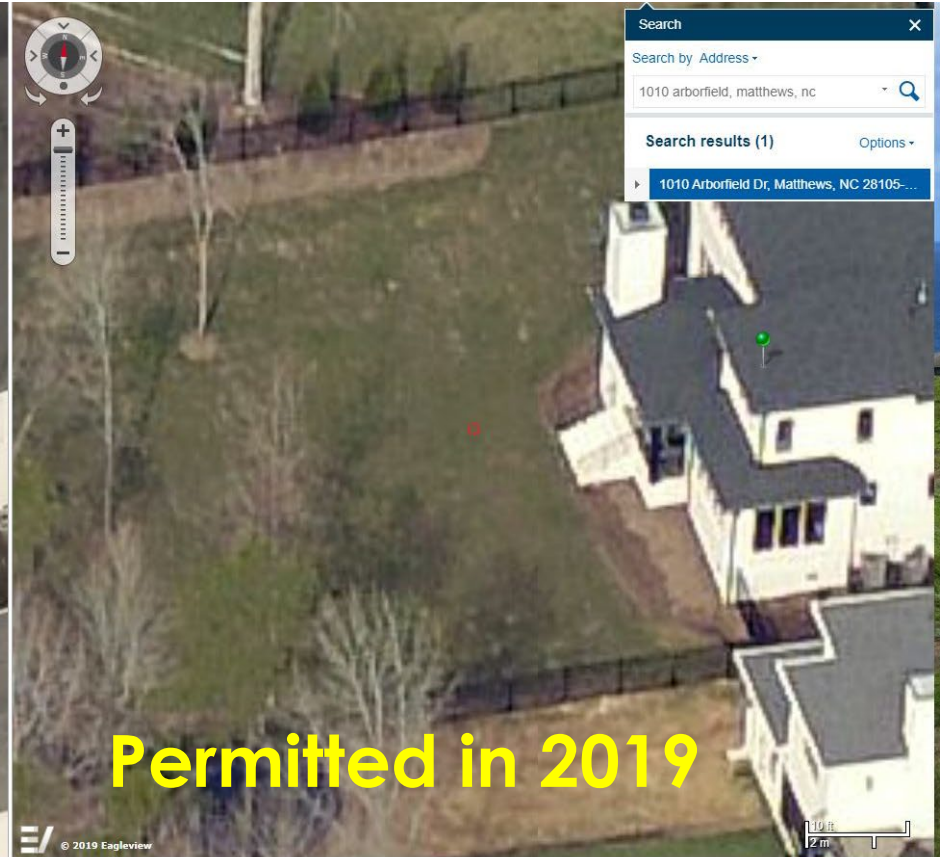
Built in 2021

Auto (Oblique) ▾ Jan 2019 - Mar 2019 ▾ < image 1 of 3 > 03/12/2019

map: Auto (Oblique) ▾ Jan 2021 - Mar 2021 ▾ < image 1 of 15 > 01/30/2021



# BUA Pilot Study Data Evaluation



map: Auto (Oblique) - Jan 2021 - Mar 2021 - < image 1 of 7 > 01/30/2021

map: Auto (Oblique) - Jan 2019 - Mar 2019 - < image 1 of 4 > 01/27/2019



# BUA Pilot Study Preliminary Results

	# of Lots exceeding BUA limit:	15
	% of Lots exceeding BUA limit:	34%
	Total BUA overage for lots exceeding limit(ft2):	-5638
	Net Lot BUA (ft2):	24355

- ◁ Total Permitted Lot BUA is 234,000 ft<sup>2</sup>, so 5,638 ft<sup>2</sup> BUA over, or 2.4%
- ◁ Should this be of concern?
- ◁ What would a developer have to do if they were over the low-density limit by 2.4%?

# BUA Pilot Study Timeline

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- ◁ Sep. 2021: Evaluation Begins
- ◁ Oct. 2021: BUA exceedance letters sent including 4 options for compliance (15)
- ◁ Dec. 2021: HOA / Neighborhood Meeting
- ◁ Apr. 2022: 2<sup>nd</sup> BUA exceedance letter (11)
- ◁ Jun. 2022: Notice of Violation (6)
- ◁ Aug 2022: Notice of Civil Penalty (4)
  
- ◁ Staff Resources: **370 hours !**

# Favorite Quotes

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- ▷ I'll just pull up my paver patio take a photo, send it to you, then put my patio back in. You are not doing follow-up inspections are you?
- ▷ The builder told me I wouldn't have to worry about the additional patio BUA until I moved
- ▷ It is ludicrous for you (me), a corrupt government official, to make me comply with that limit.
- ▷ I can't afford this, I'm not like all the other rich people in this neighborhood. Would you really fine me when you know I can't afford this, would you fine a homeless person?
- ▷ Look, I'm from New York and I know how this works..... who do I pay & how much?

# BUA Pilot Study Compliance Options

- ◁ **Remove BUA overage & re-survey lot**
  - Some did this to tune of \$40,000
- ◁ **Transfer BUA from another lot**
  - Going BUA rate (between neighbors) = \$85 per ft<sup>2</sup> and up
- ◁ **Purchase adjoining land, deed restrict, & transfer BUA from adjoining land**
- ◁ **Demonstrate a hardship, install a BMP that infiltrates storm water from BUA overage**
  - Hardship is not financial hardship, but having received governmental approval, in error.

# BUA Pilot Study Lessons Learned

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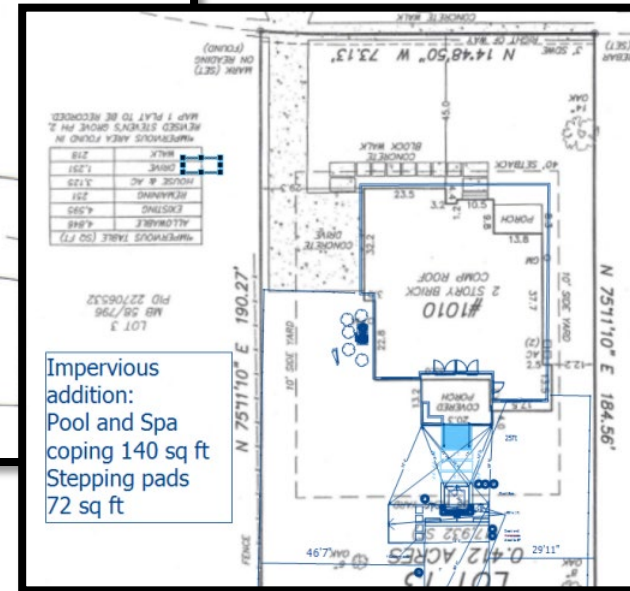
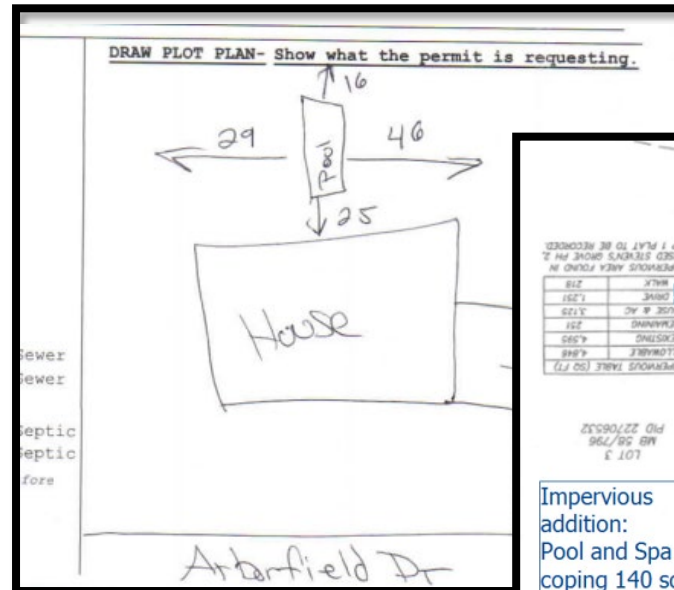
- ◁ If you rely on as-built surveys for BUA compliance, you need to educate Surveyors on what you consider built-upon area. Disputed items were stepping-stone pathways, gravel areas, pool equipment and A/C pads, sidewalks, rip-rap areas
- ◁ Surveyors do not want to make determinations on what is BUA so we provided some guidelines on how they could denote areas/materials on a survey so we could make easier BUA determinations when we review their surveys

# BUA Pilot Study Lessons Learned

- Builders show owners the full project, but only submit required information on building permit applications



Builder's Rendering



Builder's Permit Application



# BUA Pilot Study Lessons Learned



## ◀ HOA involvement is important

- A permitting agency only gets notified of projects that require building permits while HOA architectural boards get notified of additional requests.
- Educating the HOA on these issues allowed the community to build understanding and come together. This HOA paid to have all the roads and sidewalks within the right-of-way (ROW) surveyed and “discovered” the actual ROW BUA was less than what was allotted on the plan, so each homeowner received an additional 108 ft<sup>2</sup> of BUA added to their limit. The HOA also paid for revising and recording the plat.



# BUA Pilot Study Lessons Learned

- ◁ **Aerial photography review has limitations**
  - Area measuring tools were found to be accurate within 5% for most measurements when compared to surveyed measurements
  - QA/QC of summary data was extremely important
- ◁ **Violation letters required careful wording regarding the BUA overage**
  - Since BUA overages were “estimated” using aerial photography, need to be careful not to present those as legal values, but rather values that need to be confirmed via a BUA survey.
- ◁ **Issuing multiple letters prior to a formal NOV allowed owners time to evaluate options, but significantly increased staff time.**

# BUA Pilot Study Lessons Learned



## ◀ Once you know, you cannot un-know

- Once we started, we found more than we anticipated and as the study lingered on, we found ourselves asking the question, “Why did we do this again?”
- One owner was over their BUA limit by 1,200 ft<sup>2</sup> while another was over their limit by only 32 ft<sup>2</sup>. Can they be treated differently?
- This subdivision is only 3 years old. Does it make you wince to think about BUA overages in older subdivisions?



# Questions to Ask Yourself

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- ◁ We put a lot of effort (on the front end) to make engineers and developers submit plans to ensure compliance with BUA requirements and inspect sites before we issue occupancy certificates, are we doing our job if we put little to no effort afterwards to check ongoing compliance?
- ◁ What are the implications if a development goes over their approved BUA? Does it make a difference if the development is low or high density?

# Managing BUA Increases

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◁ What other methods do MS4s use manage BUA increases?