



Brown is the new Green:

The Prats, Pitfalls and Benefits of building schools on brownfield sites

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- Site designer of over 325 projects for 42 public school systems
- Specializing in sustainable site design
- Environmental education





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Why build schools on brownfield sites?

It's an investment ...

- **Usually in urban or neglected communities**
- **Higher needs kids live there**





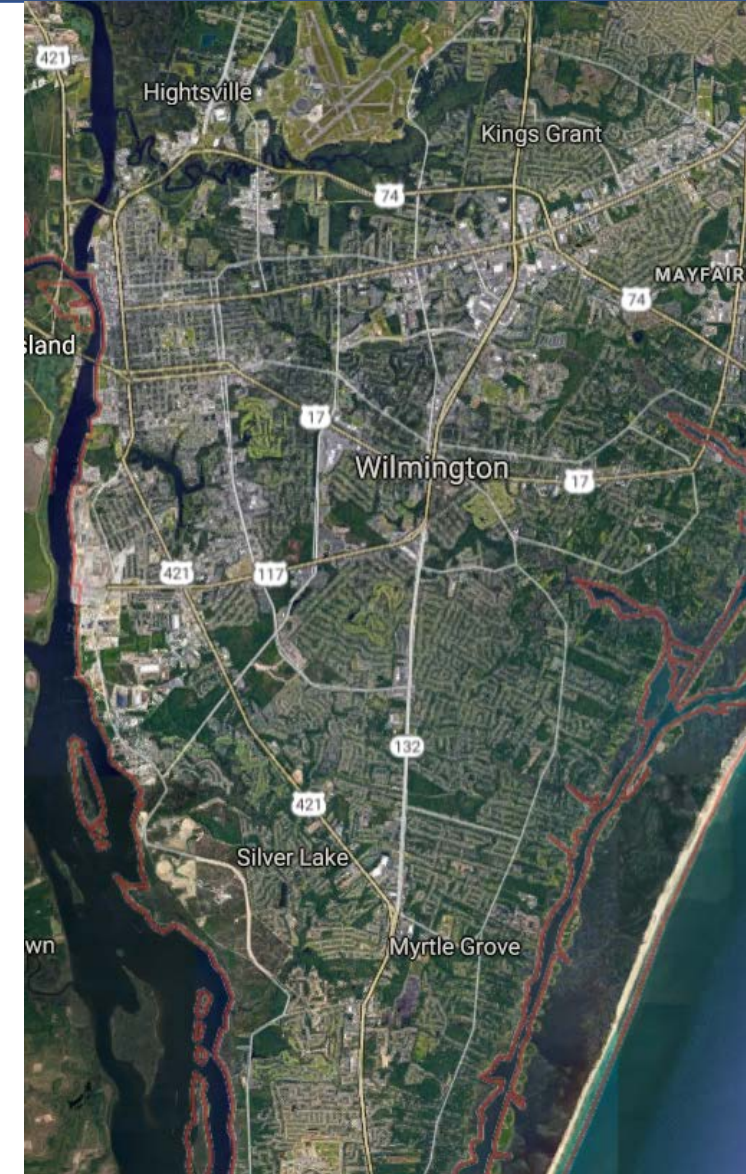
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Why build schools on brownfield sites?

In fast-growing areas ...

- No greenfield sites left
 - Crossing county lines
- Those that are available are overpriced
- Infrastructure may not be available





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Why build schools on brownfield sites?

The “feel good” factor ...

- **Cleaning up a toxic site**
- **Stimulating economic investment in stagnate communities**

“If you build it, they will come.”



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Moore Square Magnet Middle School Site

Downtown Raleigh, NC
Predevelopment Aerial

- High crime area
- Limited home ownership
- Abandoned buildings/blocks





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Moore Square Magnet Middle School Site Current Aerial

- Redevelopment
 - Public spaces
 - High Density Mixed Use
 - Medical Clinic





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Now for the *prats*...

- **Do your homework!**
 - We knew about the contaminated soils
 - We knew about the hypodermic needles
 - What we didn't know

bit us...



**Moore Square Magnet
Middle School Site**



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Now for the *prats*...

This is an excavator.

It weighs 40,000 lbs.

or





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Now for the *prats*...

The site had been a landfill in the 1920's.

- Methane explosion
- Requiring permanent methane ventilation piping
- Significant mediation costs

Contamination concerns keep Exploris school from Raleigh Moore ...

<https://www.newsobserver.com/news/local/community/midtown.../article10295861.html>

Feb 28, 2014 - Downtown's Exploris **Middle School** plans to add an **elementary** school this ... But when city staffers described **soil** contamination at the property this week, ... flowing underground from the **Moore Square** Magnet **Middle School** property. ... from the N.C. **Museum** of Natural Sciences to the Raleigh City Farm.



300 block of South Wilmington Street 1926
State Archives and records

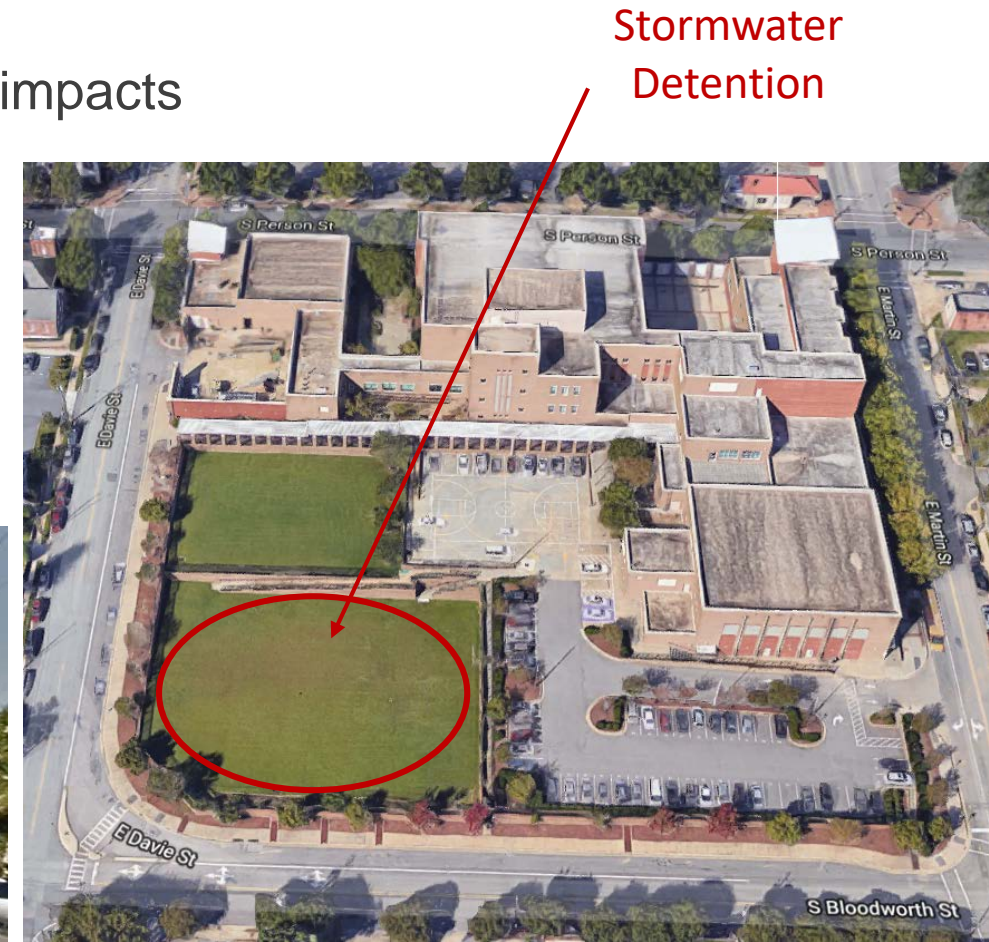


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Now for the *benefits...*

- Ample infrastructure was already in place
 - Utilities
 - Gridded road network to reduce negative impacts
 - Sidewalks
 - Innovative stormwater management





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Now for the *benefits*...

A thriving school.

A thriving neighborhood.

(Recognized as the 1st school to win an EPA Smart Growth Award in the Country)





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Why Zoning and Land Use Still Matter

- Light industrial versus heavy industrial
- Schools and manufacturing don't mix well – ask any zoning officer
- What the neighbors do on their property DOES matter.

Lufkin Road Middle School

- Adaptive reuse of a former light manufacturing facility
- Soil contamination/remediation required but low costs compared to building on a greenfield





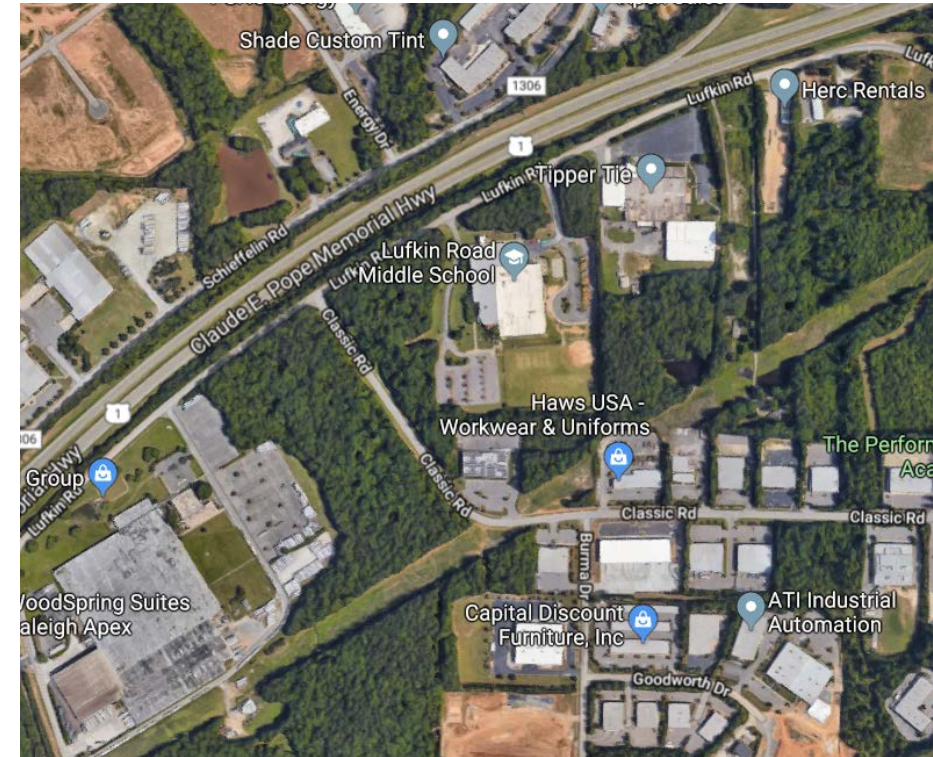
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Why Zoning and Land Use Still Matter

- Special use permit required (Public Hearing)
- Major opposition from adjacent businesses
 - **Safety concerns**
 - Trucks conflicting with cars
 - Risk assessments and insurance increases
 - School evacuation plans in the event of a manufacturing emergency
 - Concern about being labeled the “bad guy”

Lufkin Road
Middle School





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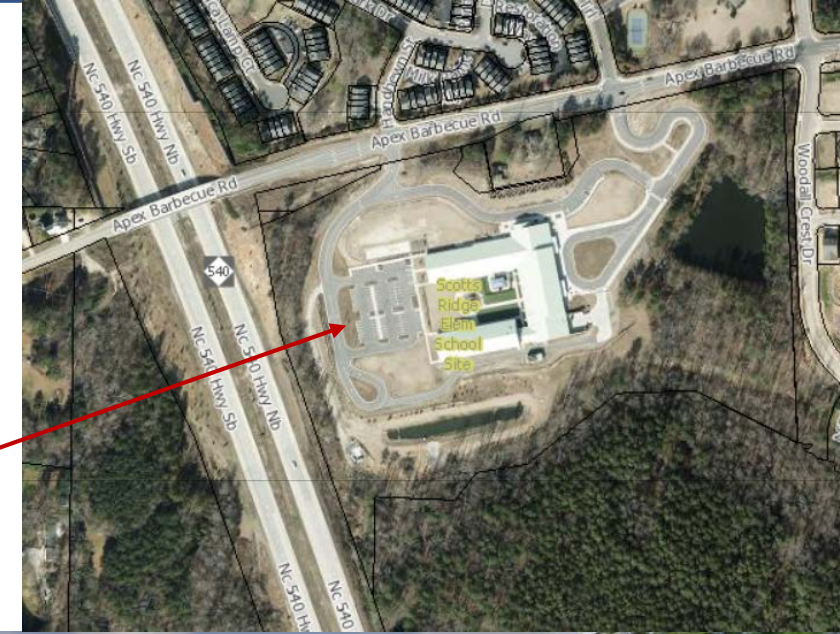
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Why Zoning and Land Use Still Matter

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- Major opposition from adjacent businesses

The Public Perception of Health Risks

- Indoor and outdoor air quality matters ... on green fields too!
- Happy feet are hard to find
- Increased conflicts between cars and trucks



Part 2: Outdoor Sources of Asthma Triggers

Rationale for this Strategy (Part 2)

- Strong evidence links outdoor air pollutants (e.g., from vehicle exhaust, factory emissions, or smoke) to increased asthma-related ED visits and hospitalizations.^{186, 187, 188}
- Children with asthma can be especially vulnerable to negative health effects caused by air pollution.^{189, 190}
- Interventions to reduce outdoor air pollution can improve asthma control and be cost-saving for communities.^{191, 192}

Excerpt from CDC Exhale Technical Brief





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Doing your homework!

Roanoke Rapids

High School — Stadium Complex

- Acquisition of the former
Patterson Mill Site





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Roanoke Rapids High School – Stadium Complex

- Knowing the history is important
- What was OK in 1930 is NOT OK in 2019
- **Testing for the right things:**
 - Water Quality (Laterally too)
 - Air Quality
 - Soil Contamination
 - Aging Infrastructure

LOCAL NEWS

Roanoke Rapids Cleanup Effort Not Run Of Mill

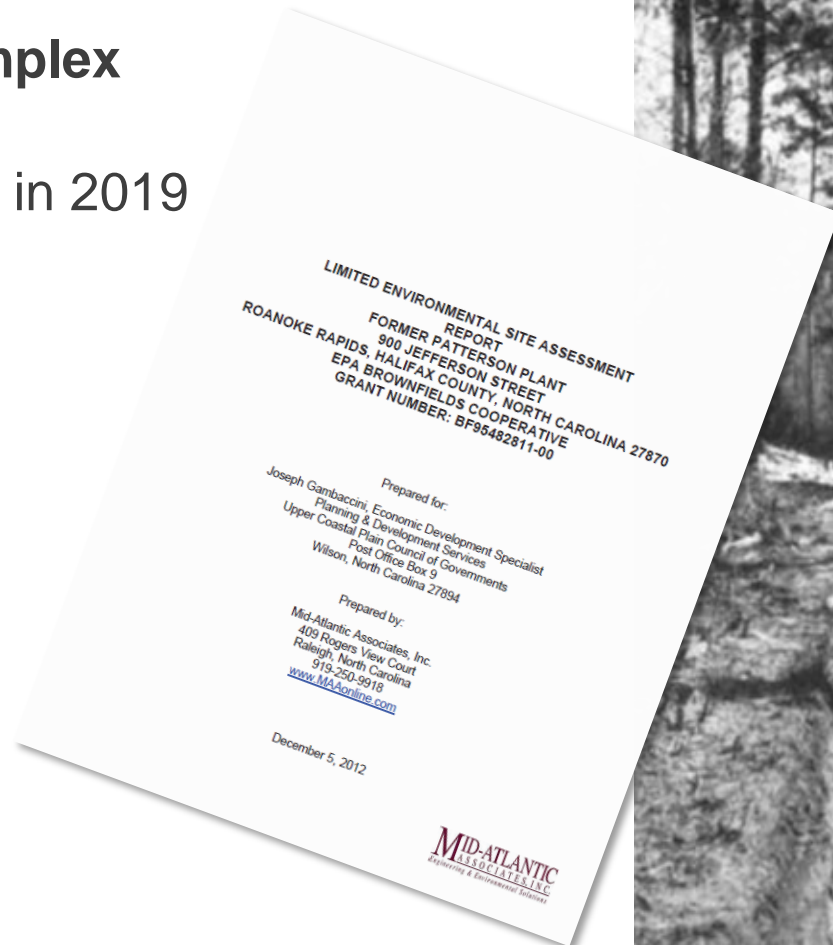
Posted April 27, 2004



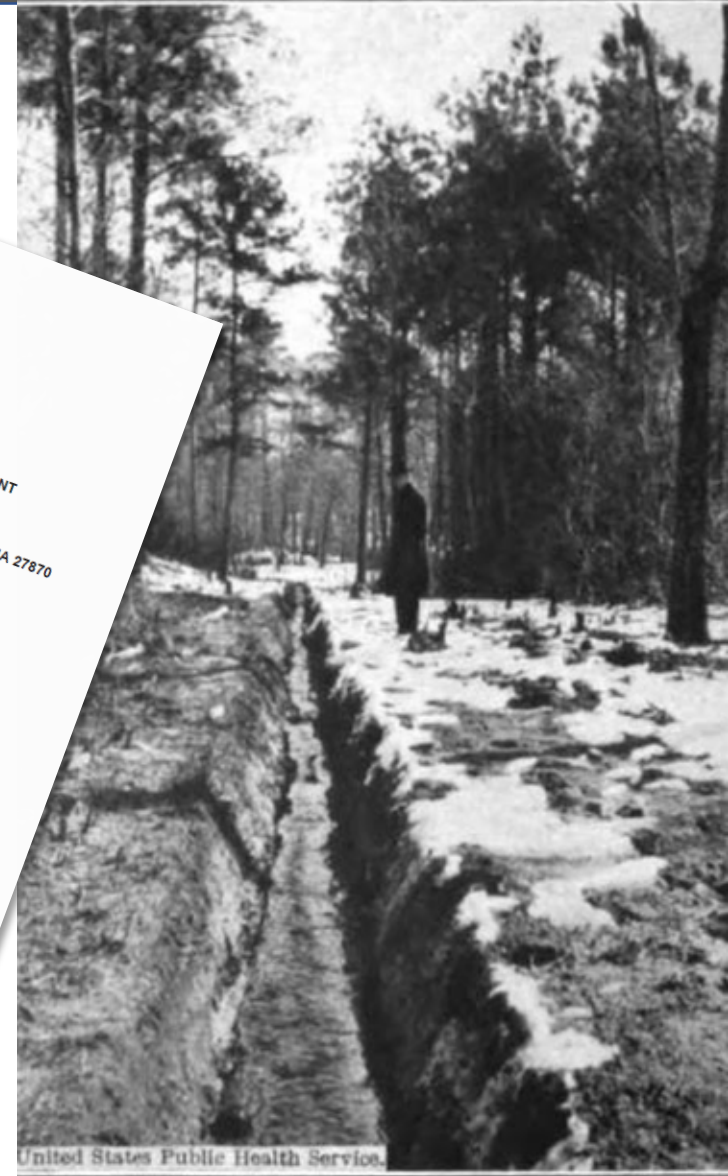
ROANOKE RAPIDS, N.C. — At the turn of the century, the J.P. Stevens textile chain put Roanoke Rapids on the map as a thriving mill town.

Now that the textile jobs are gone, one of the mills that was an icon in its heyday is being torn down. The Patterson Mill is coming down brick by brick, beams and all. The mill, rich in textile history was built by hand in the 1900s.

"There's enough steel in that place in nails to probably pave the road in front of you," salvager Allan Stallings said.



US Public Health Document from 1916
pertaining to the Patterson Mill





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Roanoke Rapids High School – Stadium Complex

- The Challenges
 - Capping the site (Stadium and Light footings)
 - Hauling away dirt too expensive
 - Stormwater management challenging

Patterson Mill
Google View of
remaining foundation



Patterson Mill
1906 Photo

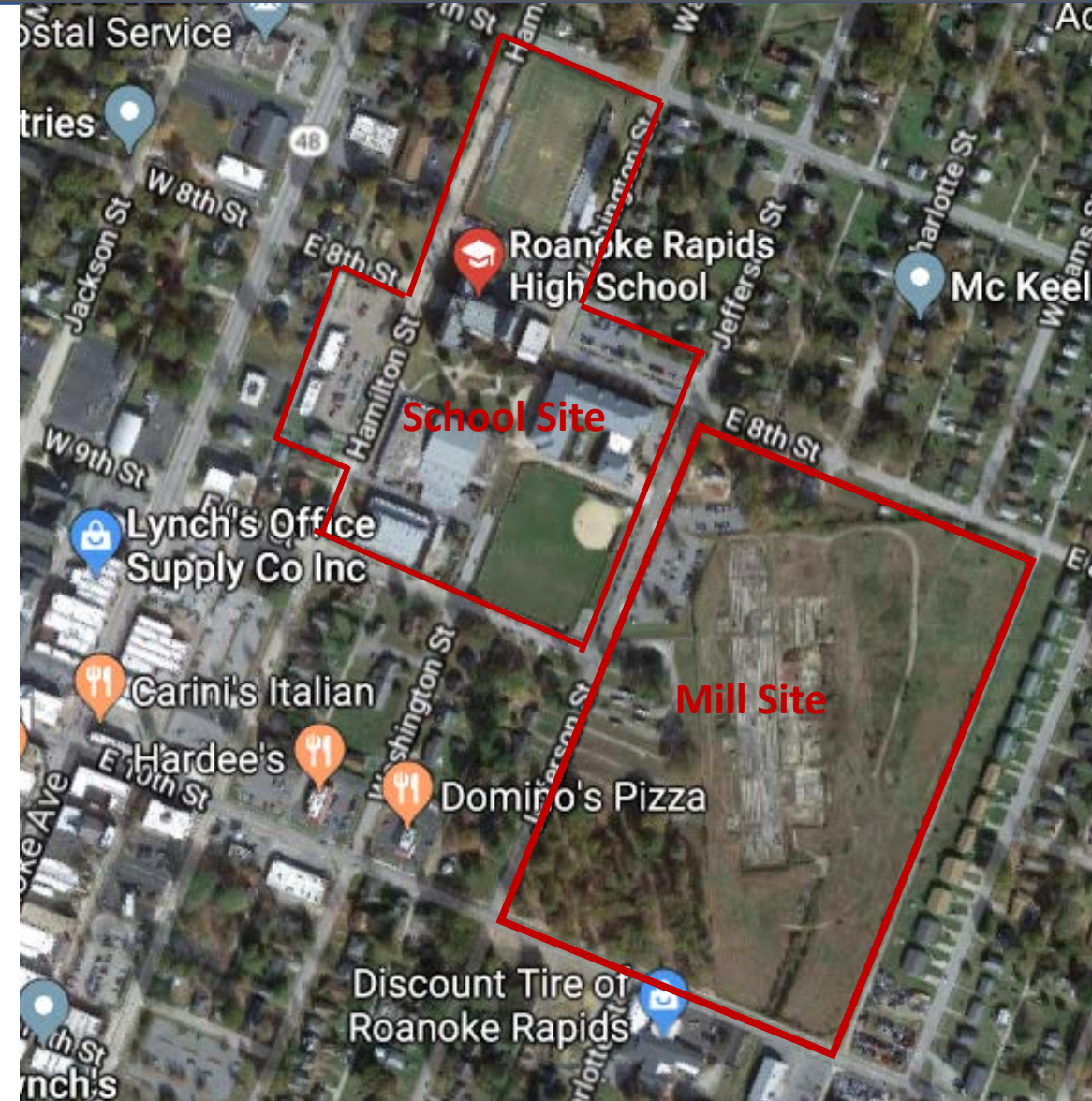


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Roanoke Rapids High School – Stadium Complex

- The Justification
 - Prime real estate adjacent to a land locked high school
 - A community with a textile past and an understanding of the environmental consequences





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Vernon Malone College and Career Academy

- Adaptive Reuse
 - Former Coca Cola Bottling Company
 - Economically Challenged Area
 - Heavy Industrial Area adjacent to Interstate 40 in downtown Raleigh





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Vernon Malone College and Career Academy

- Choosing the right partners and programs
- Operating 24-7



WCPSS.net

LS3P.com



VERNON MALONE COLLEGE & CAREER ACADEMY



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Vernon Malone College and Career Academy

- Transforming an eyesore



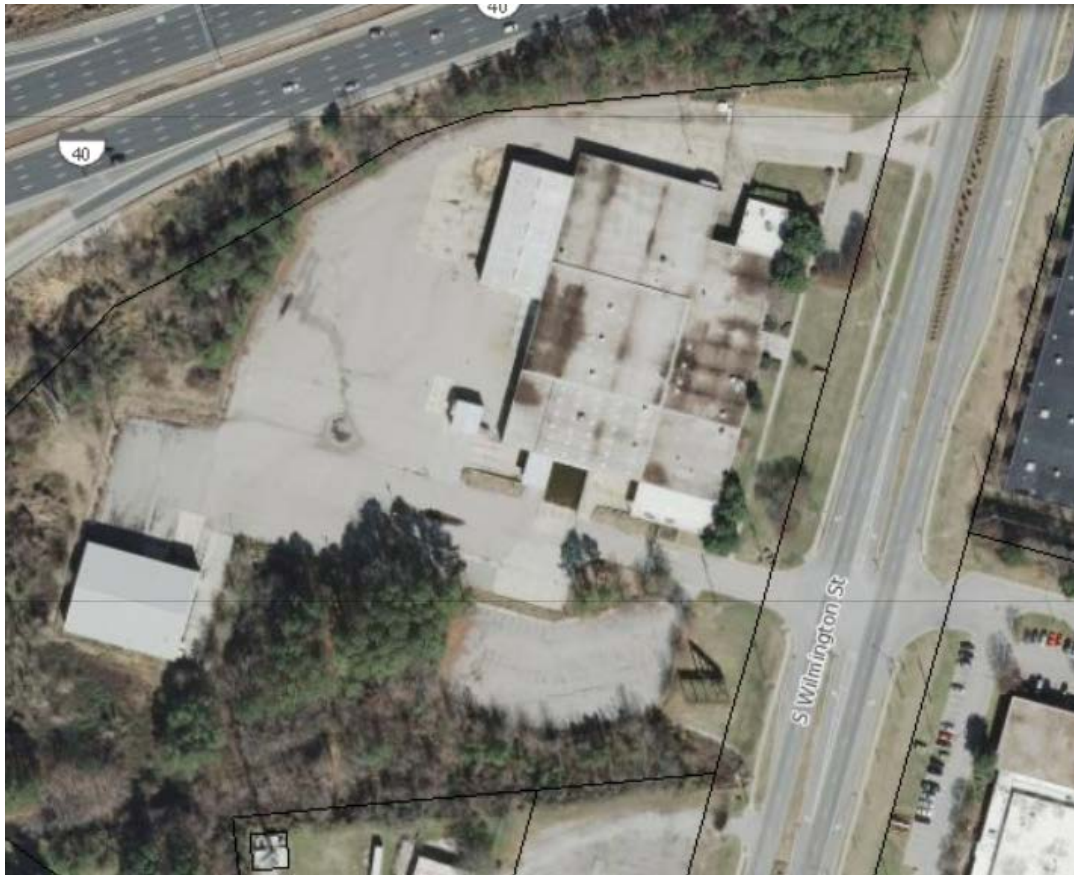


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Vernon Malone College and Career Academy

- Brown IS the new Green



Before After





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Every success story has a cautionary tale

- You only THINK you know what's underground
- Don't move the problem, solve the problem



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Every cautionary tale has a success story

- Know the user, build the facility for them
- If you build it right, they will come
- Find partners to reduce risk and increase success

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Knowing when the price is right

- When existing infrastructure is designed to support school uses
 - Water/Sewer/Gas/Fiber Optic
 - Existing road infrastructure
- When the site and existing buildings can meet or EXCEED school program
- When the land and building renovation costs DO NOT exceed the cost for a new school
- If the costs are higher, the following criteria are considered
 - The location is in a critical target area where no other sites are available
 - Adjacency to other school uses is important
 - The land has sentimental value

The co\$t of clean up

- The Geotech is your friend
 - Do not cut costs on site investigations
 - Borings
 - Soil Tests
 - Water Quality Tests in the building AND on the site
 - Air Quality Tests
 - Noise Tests if adjacent to manufacturing or highways

Lessons to teach and lessons to learn

- Tell the story
- Develop STEM and STEAM programs that compliment the site

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