

UD1 Water Tower Informational Meeting

**Village of Bristol, WI
February 14, 2022**

*Prepared by Ben W. Wood, P.E.
Strand Associates, Inc.®*



Frequent Concerns

- Why do we need a new water tower?
- Why now, why did the Village let the existing tower deteriorate?
- Why the School property instead of the industrial park?
- What is the aesthetic impact?
- What will this do to my property value?
- What is the water rate difference to build it elsewhere?
- What are the benefits of the school site?
- What about children safety and tornados?
- What noise levels can be expected?
- Will this prevent the school from expanding?

Why does the Village Need a New Water Tower

- The existing water tower needs repair
- Insurance Service Office (ISO) identifies sites in Bristol need 3,500 gpm for 3 hours
- The existing 100,000-gal water tower can only support
 - 550 gpm for 3 hours
 - 3,500 gpm for 25 min
 - 3,500 gpm for 40 min with wells running

Public Protection Classification (PPC™)

Summary Report



“3,500 gpm for 3 hrs.”



Bristol FPSA

WISCONSIN

Prepared by

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P.O. Box 5404
Mt. Laurel, New Jersey 08054-5404
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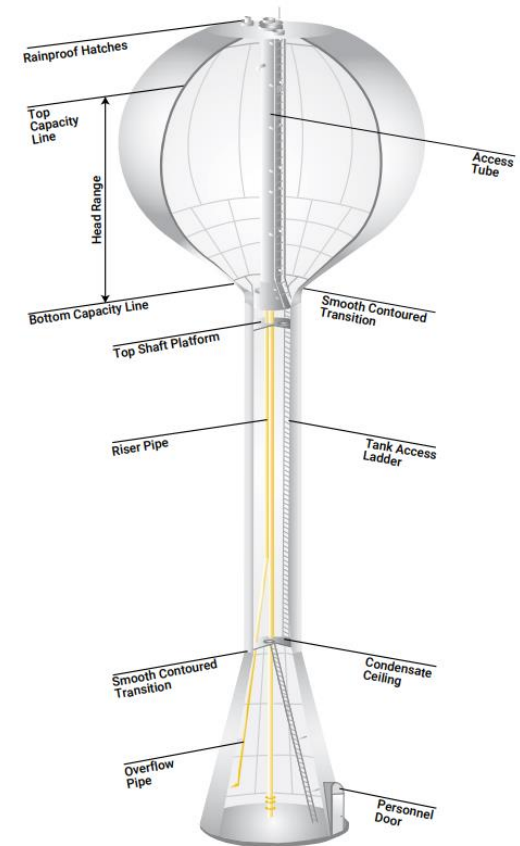
Report Created APRIL 2018

Effective August 1, 2018

PPC is a registered trademark of Insurance Services Office, Inc.

Function and Scope of the Water Tower Project

- Water tower controls well pumps and absorbs pressure shocks
- Pressurizing the system keeps contamination out of the system
- Water tower maintains pressure if wells are off, or power is lost
- Water tower volume absorbs spikes in water use due to hot days, fire fighting, power loss
- Two towers allow for adequate pressure when one needs routine maintenance (5-year inspections, 20-year repaints)
- Village Plan (adequate for full system build out)
 - Build 500,000-gal tower first
 - Rehab 100,000-gal tower



<https://www.mcdermott.com/CBI-Storage-Solutions/Product-Lines/CBI-Water-Storage>

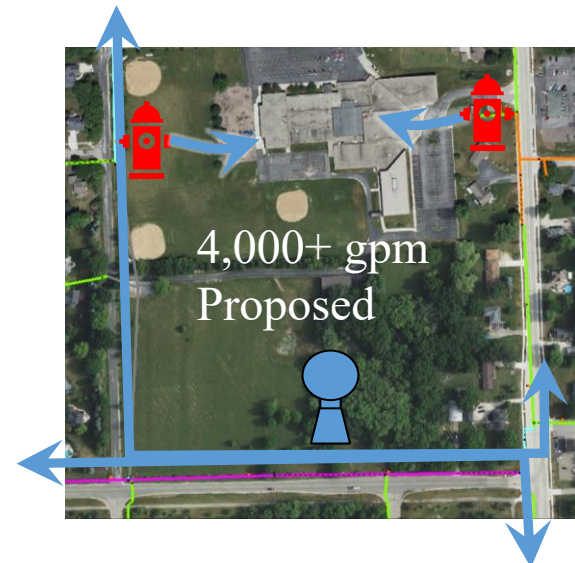
Why Now? Why did the Village Let the Existing Tower Deteriorate?

- Village has been deferring maintenance
 - More storage is needed
 - Waiting for new development impact fees to fund a new tower
- DNR regulates water tower maintenance
- DNR recently cited that something needs to be done by December 2022



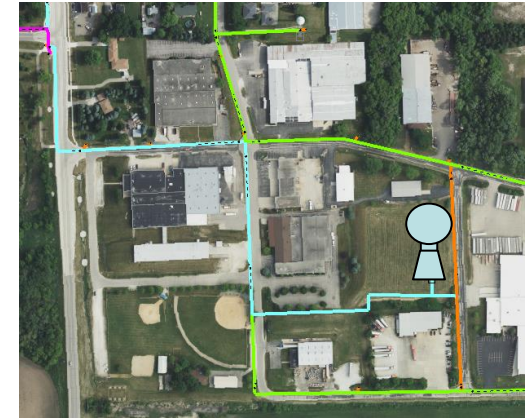
Why the School Property Instead of the Industrial Park?

- Large diameter mains move across the system
- School site has 16-inch mains that were invested in because it was historically planned for a water tower
- The school only has 1,900 gpm available now
- ISO targeted 5,000 gpm for the school (3,500 is “max credit”)
- Placing the tower close to the school improves fire flow

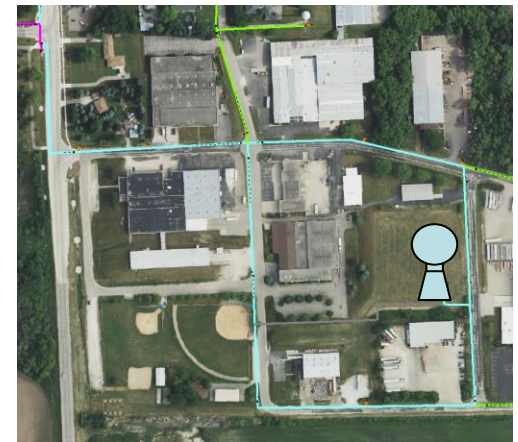


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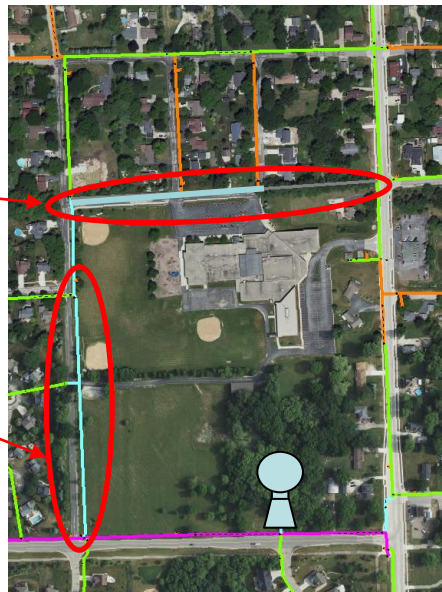
- Industrial park has 8-inch and 6-inch mains
- Industrial park site requires additional \$575,000 to \$1,100,000 compared to School Site
- School site would still need an additional \$250,000 minimum for localized improvements



\$825,000 for minimum water main extension



\$1,400,000 for recommended extensions

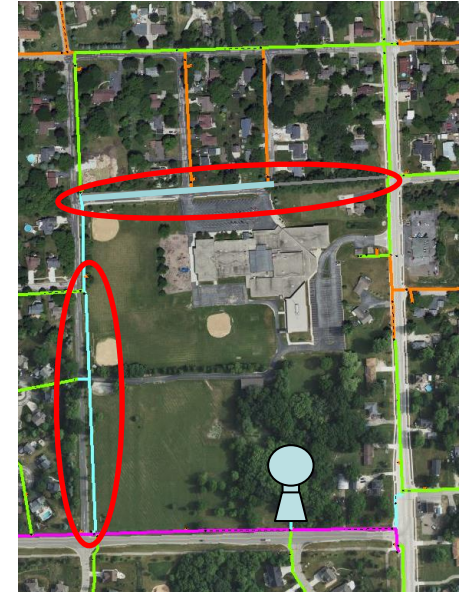


\$250,000

\$250,000

Why Weren't the School Water Mains Installed in the Past?

- The current water study revealed the need for the water main extensions to increase fire protection at the school
- The study was conducted now, when siting a water tower with a 60-80-year design life
- The study was not done at the time of past school additions
- Village typically requires water main extensions when development is occurs
- Ordinances require the property owner to pay for water main frontage and hook-up fees
- In hindsight, the Village should have required these water main extensions at the time of past school additions





What is the Aesthetic Impact?

Disclaimer: The following images are renderings

- Most trees and landscaping are not shown
- Tree height and type are approximate
- Buildings are auto-generated based on footprint
- Building heights are estimated

Locations



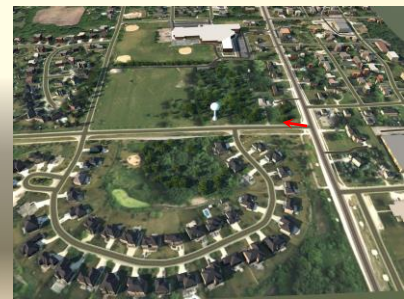
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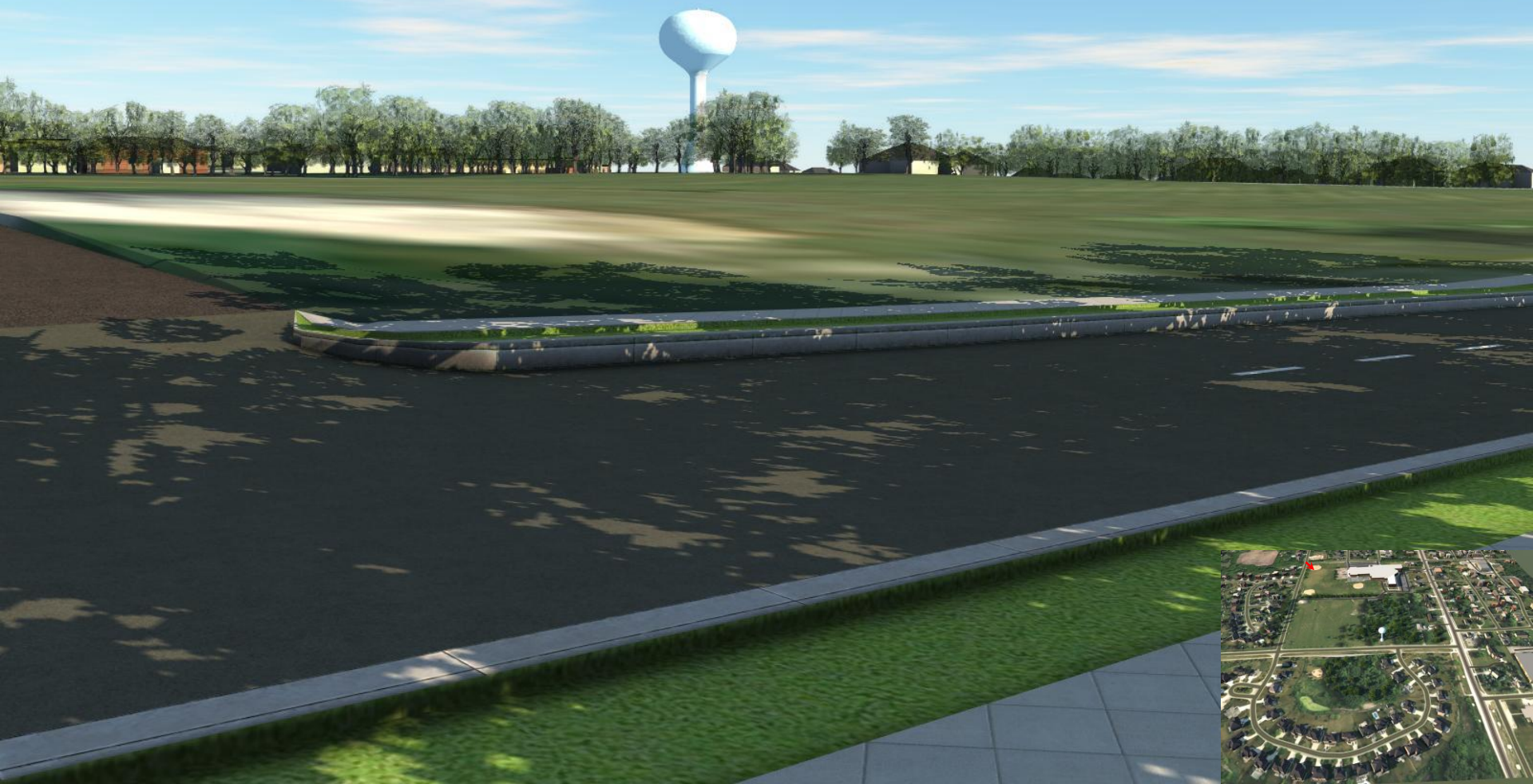
1 - School South Parking Lot



2 - AH & 45



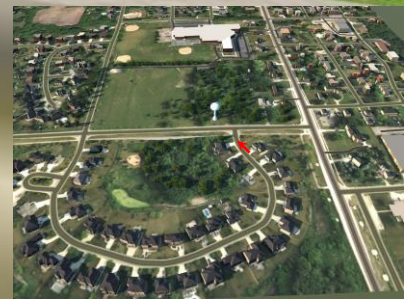
3 - 203rd Ave & 83rd St



4 - 8472 200th Ave



5 - 8519 Chaucer Circle East





6 - 8506 Chaucer Circle East



7 - 8555 Chaucer Circle East



8 - 8559 Chaucer Circle East



9 - 8680 Chaucer Circle East (Back Yard)



10 - 8683 Chaucer Circle East



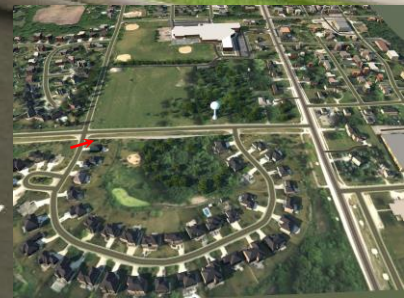
11 - 8571 Chaucer Circle West



12 - 8531 Chaucer Place



13 - 8521 Chaucer Place



14 - AH & 203rd Ave.



15 - 8429 204th Court



16 - 8426 204th Court



17 - 8405 204th Circle



What will this do to my property value?

Mark Brown, President, Associated Appraisal Consultants, Inc.

"I am not aware of any specific situations or studies in Wisconsin regarding residential values being lowered due to a water tower having been placed in mainly residential development areas. Water towers can be found anywhere in a community and there are many municipalities in the state that have them in residential areas based on the need to do so. In many of these communities the water tower serves as a name plate with the Town, Village or City name placed on them to help identify a location or they bear a local mascot from the school or community.

As a member of IAAO [International Association of Assessing Officers] I checked their research library and found only one study from Texas in 2017 regarding the impact of water towers on residential property values. The general conclusion from the report was similar to my observations over the last seventeen years in that properties located near water towers showed no discernable difference in value than those not located near one. In some instances, the values increased because properties now had access to water and or more pressure etc."

What is the Water Rate Difference if the Tower were Built Elsewhere?

- Public Service Commission regulates water rates
- PSC requires rough, preliminary rate calculations
- Tower costs: \$3,150,000
- Site & off-site costs
 - Industrial site: \$1.08M - \$1.65M (plus additional school looping)
 - School site: \$450k
- Let's assume total cost opinion as follows
 - Industrial site: \$4,700,000
 - School site: \$3,600,000
 - \$1,100,000 difference

What is the Water Rate Difference if the Tower were Built Elsewhere?

- Rate increase (indefinitely)
 - Current average residential ~\$36 per quarter
 - Industrial site: 160% = ~\$93.60 per quarter
 - School site: 122% = ~\$79.92 per quarter
- Assumes 100% funded through water rates
- Actual rate increase will be determined once designed, and built
 - Will reflect actual costs
 - Will account for actual funding mechanisms

What are the Benefits of the School Site?

- The school is a customer of the Bristol Water Utility
- The school's fire flow capacity is below ISO target levels
- School site utilizes the benefit of past investment in large diameter mains
- Siting the tower at the school saves the Utility and the school money
 - Uses the existing 16-inch water mains
 - Expands mains further to school as part of site costs, rather than paying for that as a separate assessable project
 - Keeps water rate increase lower
- Building sprinkler systems are usually fed by a 4 or 6-inch pipe taped off the water main. Currently, only 6-inch pipes are available to the school and may not be adequate for both sprinkler and fire department use at the same time.

What about children safety, tornados, & earthquakes?

- Water towers have no moving parts
- Ladders are internal and inside of a locked door with an alarm
- Water towers are designed for wind loads and earthquake loads for the region, with significant safety factors built in
- I am not aware of an instance where a single-pedestal water tower was toppled due to winds
- In fact, when a tornado devastates a community, a water tower is typically left standing



1984 Barneveld, WI (F5)



2008 Parkersburg, IA (F5)

Fire Protection is the Real Safety Issue

- ISO indicates the school should have 5,000 gpm of fire flow protection available for 3 hours (3,500 gpm is “max credit”)
- The existing 6-inch mains on the north side of the school only supply 1,900 gpm, when system pressure is allowed to drop to DNR minimum 20 psi
- The sprinkler system and fire department will be “competing” for the same, limited water supply
- Bristol’s Fire Chief was consulted and concurs with the need for a new 500,000-gallon water tower
- A new water tower on school property, along with new large diameter water main on 203rd Ave., provide 4,000+ gpm of fire protection near the school. Relaying 6-inch mains near the school parking lot on 83rd St. are also recommended.



What noise levels can be expected?

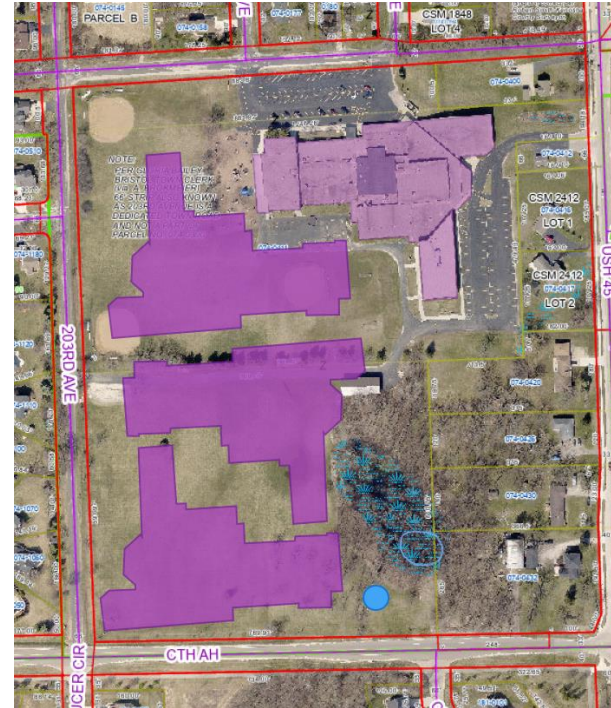
- Water towers contain no pumps or running motors
- The site will be quiet (like any other water tower), except for:
 - Initial construction
 - Repaint every 20-25 years

Will this prevent the school from expanding?

Tower site is bounded by wetlands and not likely useful to the school



Tower site is out of the way and leaves 8 acres of buildable area for school expansion with room for ballfields.



Remaining greenspace could fit 3 more schools (2 if retaining existing ballfields).