

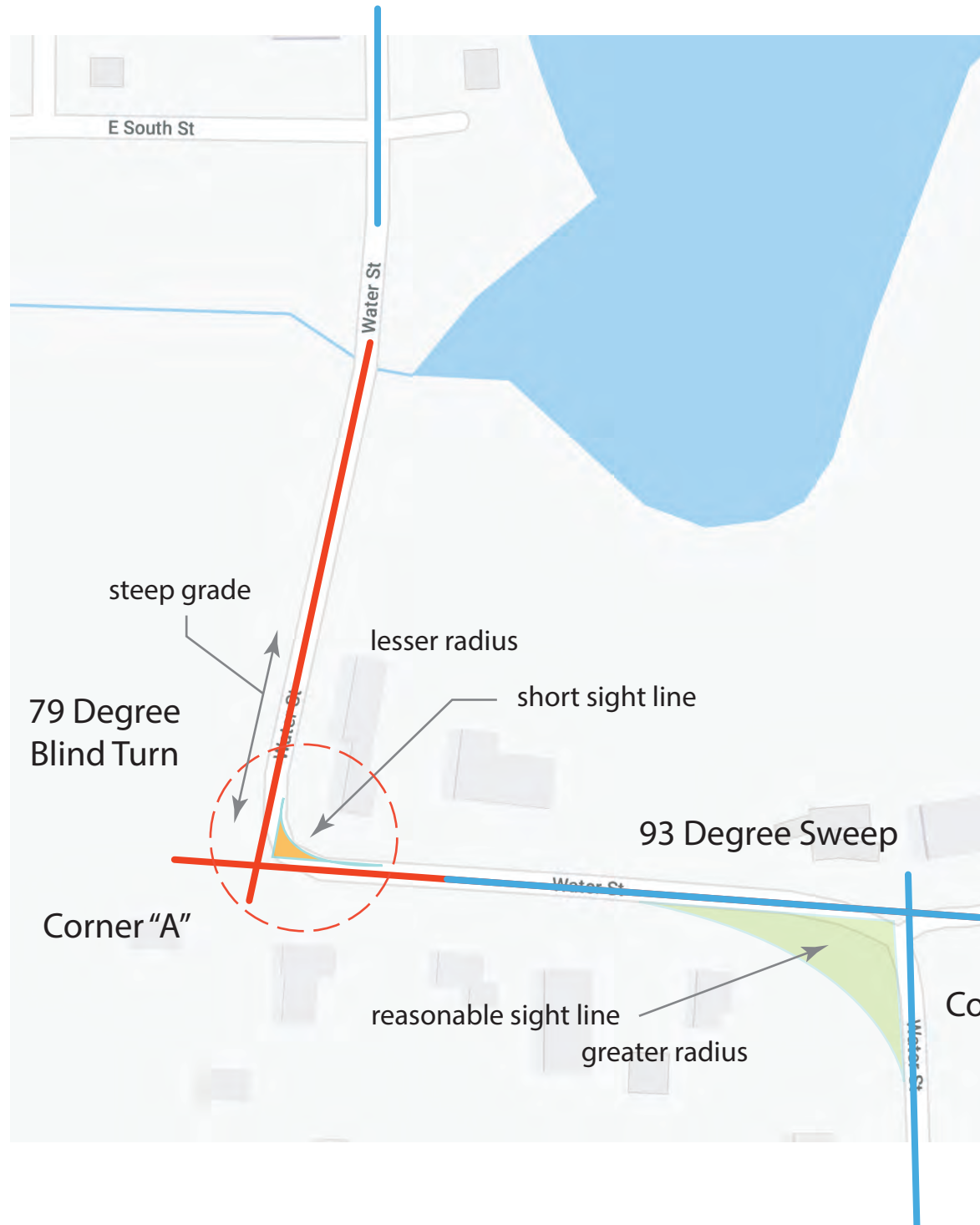
## Intro

The first version of this document was presented in August of 2018 with a revision offered in 2020 making this a rev 3 update to that document.

My name is Brian Alexander and I reside with my family at 265 Water Street. I offer the following information for consideration regarding the general safety and functionality of South Water street in Douglas. My background is in Systems, Industrial Design with an emphasis on Cognitive and Behavioral Ergonomics. I have been a design consultant to area and regional business for the past 34 years. The information offered is intended help inform the process of future land development by all involved. I've included my personal opinion in the summary section but approached the rest much as I would any client project which includes a combination of objectivity, science, and common sense. I hope it is of benefit to the decision making process.

Thank you for your time,

Brian Alexander



## Water Street

Layout & geometry

Corner B is a sweeping turn on a level grade and has adequate sight lines in both directions.

Corner A is a tighter hairpin or "switchback" turn which is less than 90 degrees with a rapid change in elevation through the turn. It has inadequate sight lines due to its acute angularity and elevation change making it technically a double blind turn.

In general, drivers are conditioned (muscle memory) to orthogonal geometry in road ways. Conditions which appear "on grid" or normal when they actually aren't are where mistakes are most often made.

## Water Street

South St. to the Hairpin

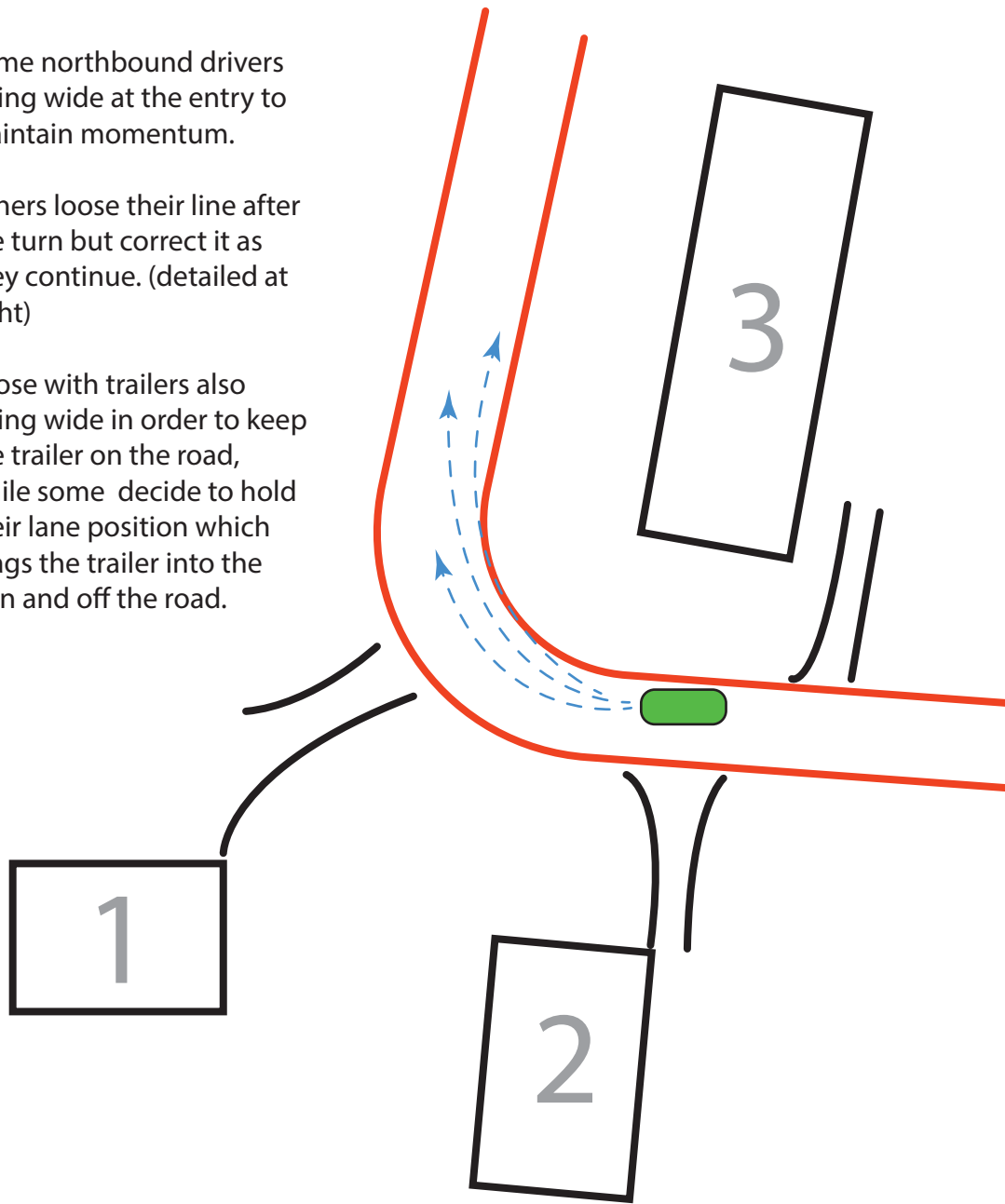


The concern from South St. to the hairpin is that for foot traffic and cyclist there is a compound safety issue in conflict with motor traffic. Setting aside the obvious fact that there are no sidewalks on this section of Water Street, the stretch from South Street to the pump station has no shoulder and a steep drop off on both sides. The guardrail section over Tannery Creek is nearly line to line with the road so you have no choice but to walk in the street to get through. It takes longer to walk through than it does a sighted car to reach your location so inevitably you are jogging to the other end and off the street while they wait. The irony is that the fastest section for motorists is the least usable and most dangerous for pedestrians.

Some northbound drivers swing wide at the entry to maintain momentum.

Others loose their line after the turn but correct it as they continue. (detailed at right)

Those with trailers also swing wide in order to keep the trailer on the road, while some decide to hold their lane position which drags the trailer into the turn and off the road.



## Water Street

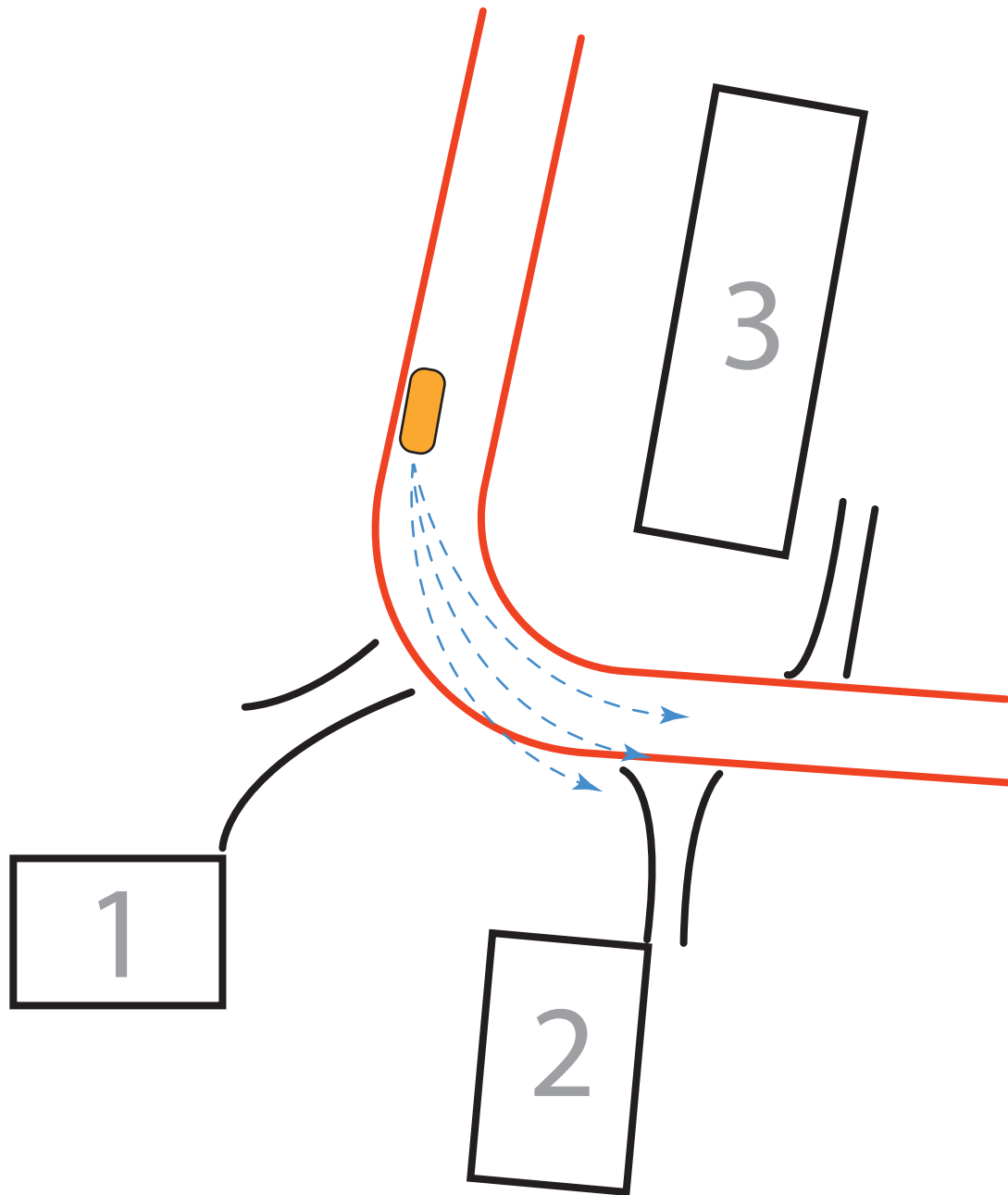
the Hairpin northbound

People coming into town often drift into southbound traffic after the apex of the turn. The root issue is that its a blind turn but it differs from the previous example in that the prior two turns set up an expectation of whats next. Motorist coming into town from 130th experience two 90 degree turns with good sight lines so speed and expectations are optimistic as they travel. It isn't until they're midway through the blind turn that they realize it is tighter than the previous ones and not actually 90 degrees. Again, we are generally hard wired for ordered geometry with reinforcing sight lines. When geometry deviates from the norm on more than one count, your awareness shifts from a semi-conscious state to a reflexive presence which is often where individuals "over-react" to driving conditions.



## Water Street

the Hairpin Southbound



A blind turn means you don't see what's around the corner until you almost finished it. Making a safe turn requires knowing what is ahead so you have time to react. People regularly drift into oncoming traffic or go wide into the gravel on this turn because as you come up the hill we lose our sight line. We tend to steer where we look, so as we look for the trajectory of the road, we then drive into oncoming traffic. The momentum of our action combined with a loss of information triggers a stress based response which in turn kicks off a series of automated reactions all tied to our sympathetic nervous system. As people round the turn in this state, their awareness is compromised and they do not properly process their surroundings. Which is one reason so many poles have been hit on the south side after the turn.

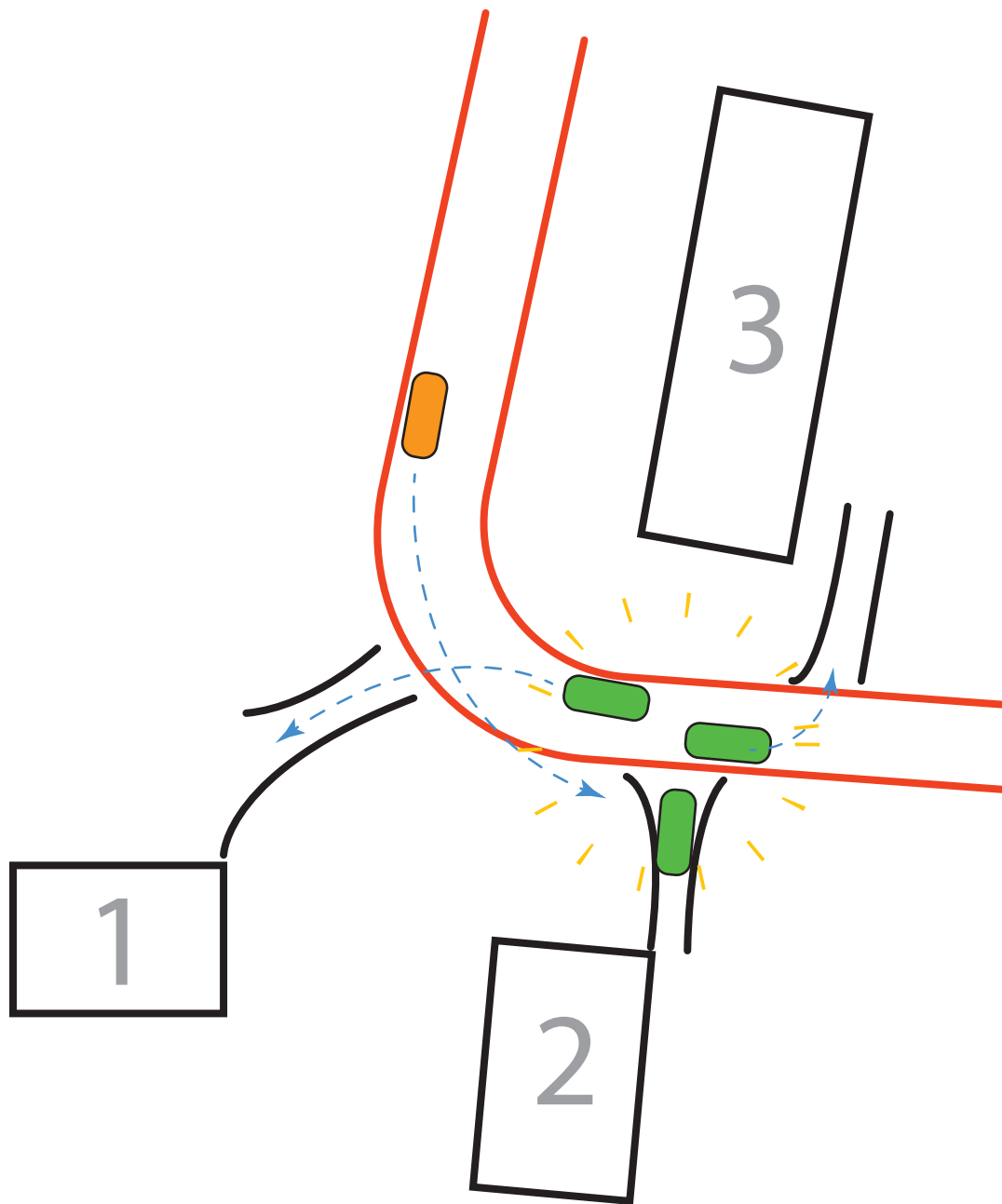


## Water Street

the Hairpin Southbound

The converse of turning into on coming traffic is missing the turn all together. Unless there is serious damage, the majority of these go unreported though the evidence remains. besides the drivers themselves the obvious concern her is for pedestrian safety.





## Water Street

the Hairpin for residences

Each of us who live on the corner negotiate our own unique set of “blind corner” circumstances daily. The root issue is that there is very little time to react getting in and out of our drive ways and for on coming traffic to respond accordingly. Specifically it is the southbound traffic which suddenly appears from below the hill in the midst of entry and egress to these three residences.

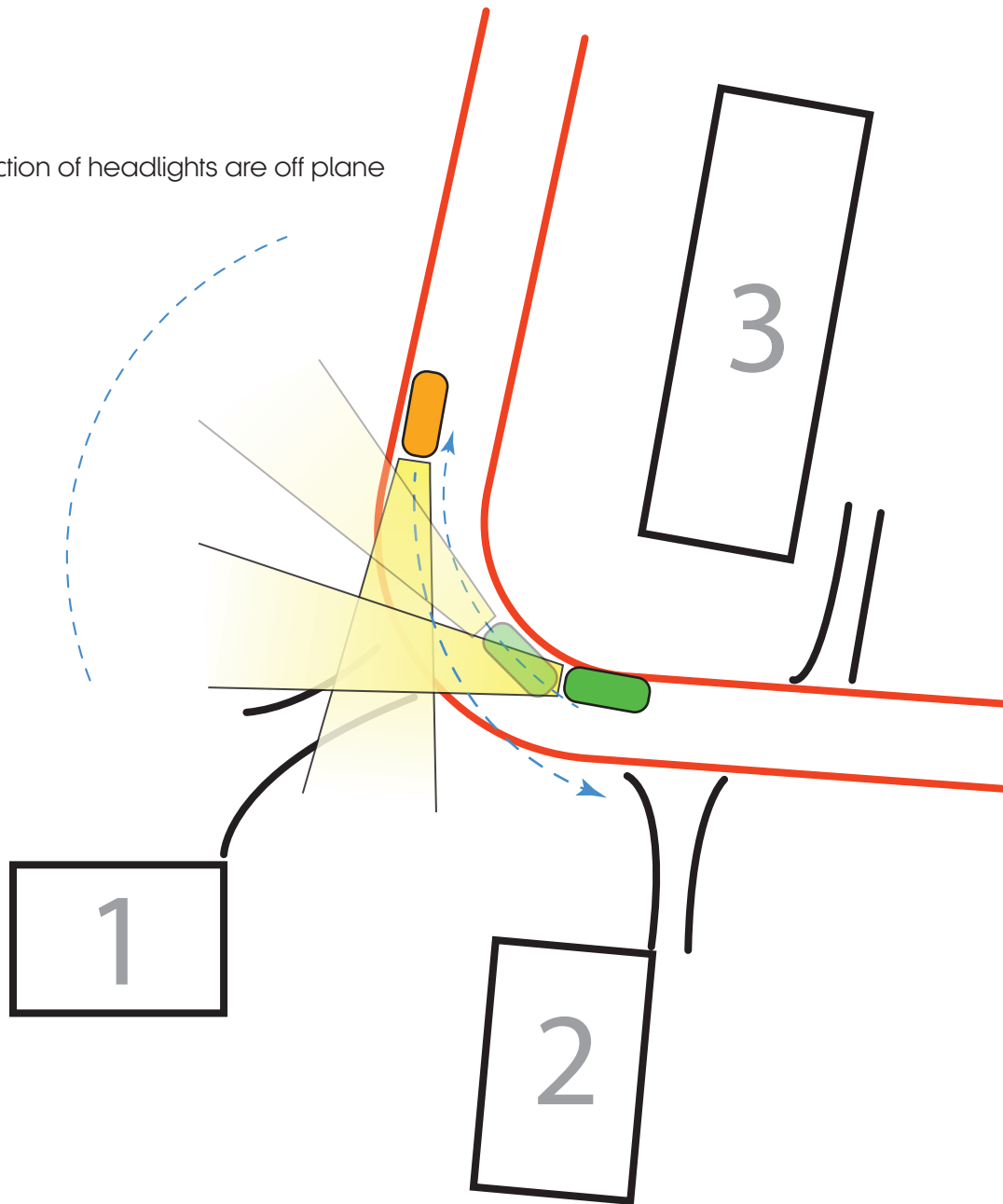
on 1/11/23:

As a FedEx driver stated this morning; *“thanks, you too, it will be a good day if I make it out of your drive, hazards on and hope for the best !”* as he pointed to the sky.

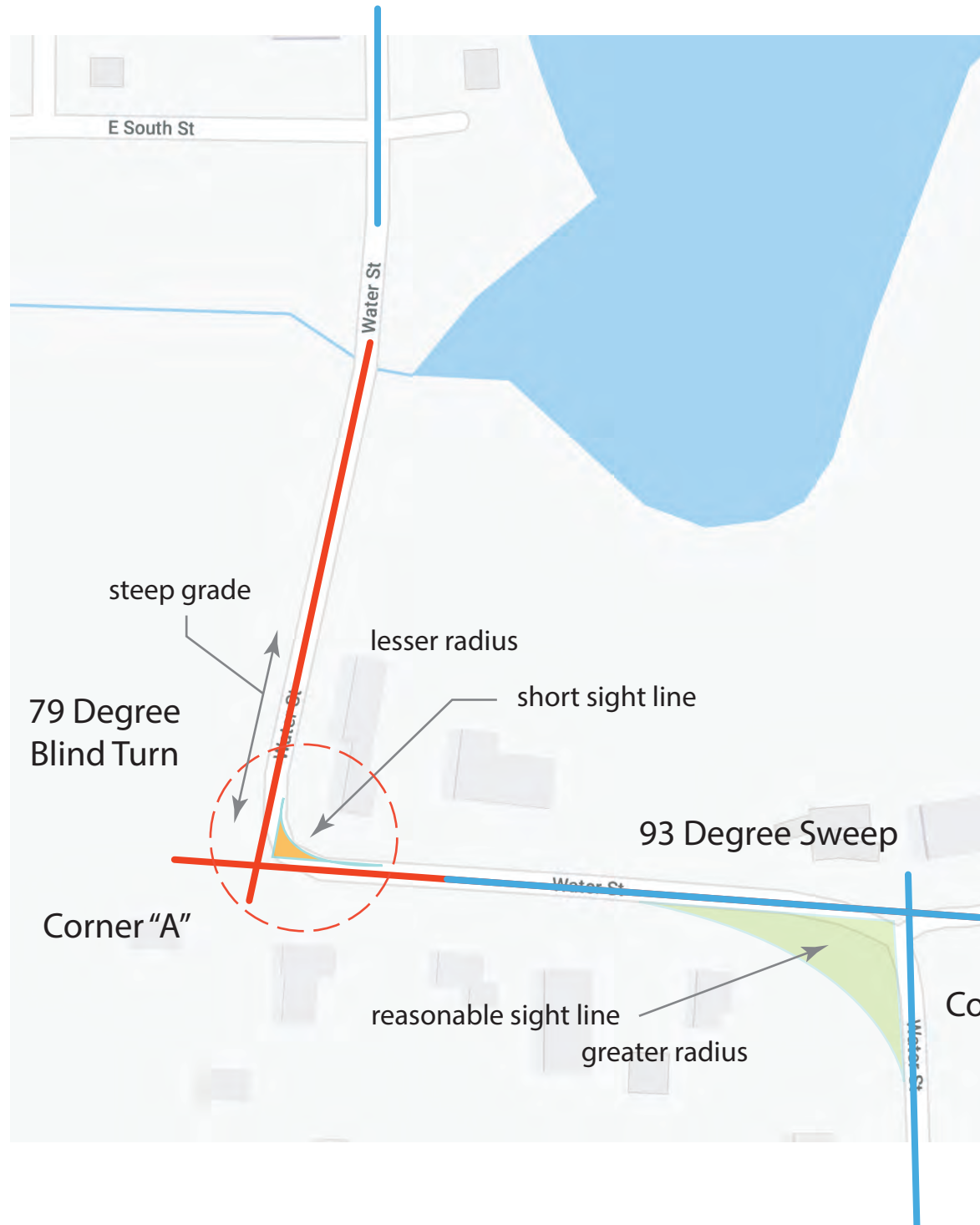
## Water Street

the Hairpin at night

projection of headlights are off plane



In darkness, the offset in elevation through the turn creates a visibility and lighting hazard for southbound vehicles who can incur a head on or “lights in your face” condition as they negotiate the turn. This momentary exposure is known as flash blindness which creates visual distortions and after images lasting a several seconds or even minutes depending on the intensity. Obviously this compromises a driver’s judgment of distance, movement, and direction of other vehicles. In short, you cannot judge another drivers intent let alone navigate your own if you can’t see properly. This is an unusual hazard for our area for which there are few comparisons unless you’ve previously lived in a mountainous region or frequent parking garages.



## Water Street

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# Traffic Flow Factors

## Expansion of Seasonal Rentals

With the popularity of AirBnB, VRBO, HomeAway etc., there are currently three rentals on Water Street between Wiley and South, this may seem insignificant but is in fact a great test case for pedestrian volume. When all three of those groups decide to walk to downtown for coffee it appears (at a street level) as though there's a march in progress but that is only because there is no support for the activity so - they walk in the street with strollers or kids in wagons, etc. Creating hazards for motorist and individuals alike.

## General population east of 196 and south of the river

130th into Douglas is the primary road serving the general population along and south of the river towards 58th (see purple areas shaded on attached map). For those northbound, Water Street is the short cut of choice as opposed to continuing west to Blue Star.

## Schultz Park

Schultz also highlights use of the Water Street short cut by boaters seeking a launch coming from the north as it is one of the only legitimate and properly outfitted public launches in the area. This season has seen an additional spike in traffic from the closure of the Saugatuck Launch. In general Schultz Park and its related improvements offer a "trail head" to the river and outdoor activities. It's an area feature that is not properly connected to the surrounding area by other than means of motor traffic.

## Events

Though not sanctioned as such, Water street to Wiley and east along the river is considered by many a scenic water view attraction and many groups and organization integrate this into their events.

# Traffic Flow Factors

## Events continued

From spring through to fall color tours, there are cycling and automotive events which use Water Street as their route of choice. The automotive events are mainly spikes but rarely an issue. Cycling however, is a true safety concern as our route sees regular club training riders 12>, local enthusiast rides 10<, the normal seasonal visitors which have spiked since the Beach to Bayou project was completed and major events like the Holland 100 which takes the entire day and host over 1000 participants. Each year our corner (the hairpin turn) gets marked with caution tape or flags and a general warning that “on coming traffic may go wide or come into your lane though the course of the turn”. A few years back, they spray painted a skull and crossbones on the street which seem to sum it up and struck a chord with most people.

## Fire and Rescue

When responding to priority one or two emergencies in the township or assisting Fennville and Ganges, Water Street is the preferred route due to its directness and time savings. We are required by law to yield and or pull over for emergency vehicles which is not possible except for the east, west section and some spots near Wiley. The situation is compounded with cyclist and pedestrians in the mix. When lives are on the line, it doesn't seem feasible to tell them to take the long way around.



# Traffic Flow Factors

## Covid

In one way or another Covid has changed everyone's lives. It is a wild card to say the least but one aspect which I am directly involved in is WFH. The reality of WFH (work from home) has been both boon and bankruptcy for various businesses. As an exodus from major cities and urban areas continues, people owning vacation homes work to make them their permanent residence while others shop for land or homes on the market. For many, WFH is the new norm as it continues to be adopted by corporations large and small it most likely points to a steeper growth curve in our area.

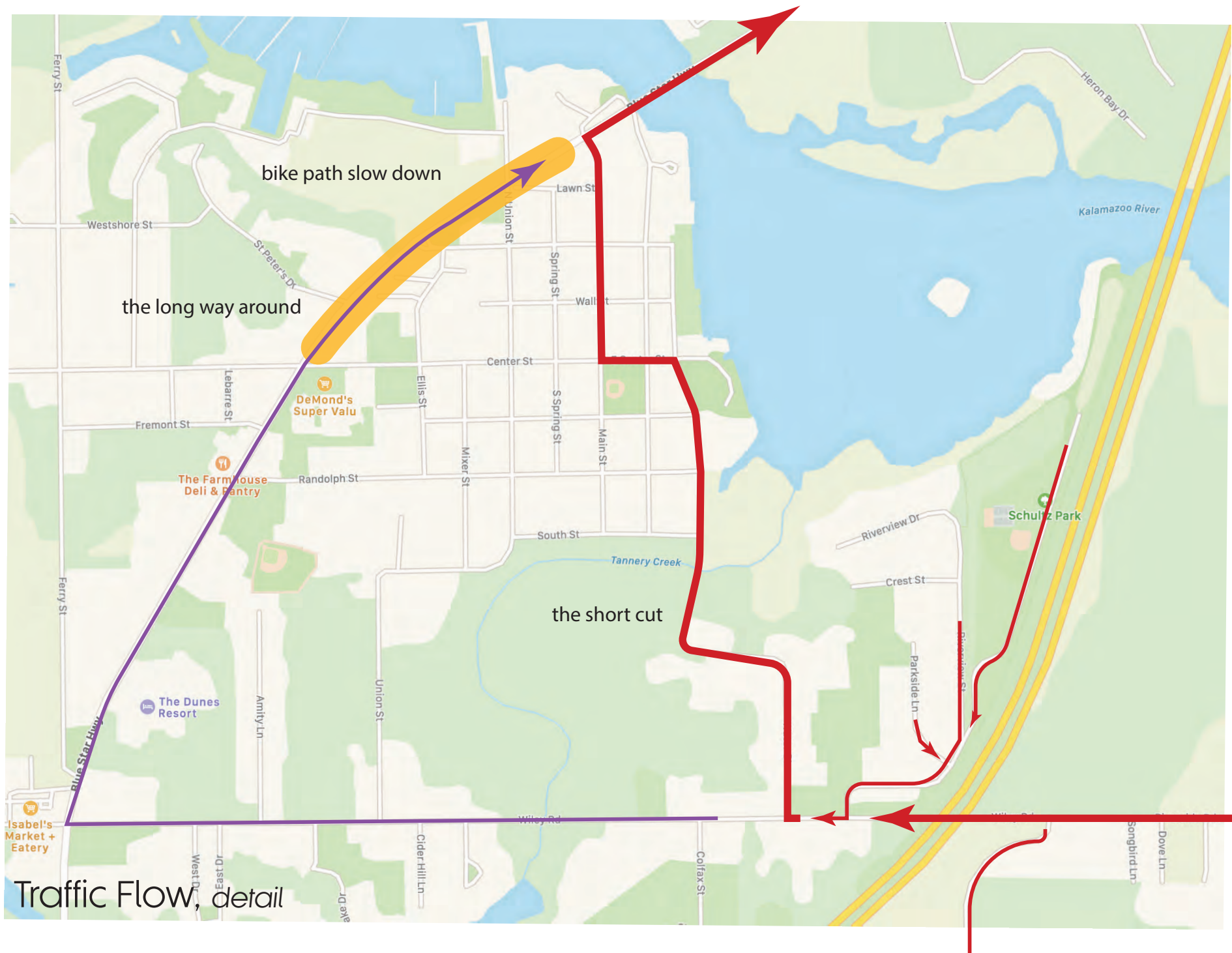
## Climate Refugees

An emerging trend but gaining momentum is statewide and regional growth around migration from climate affected areas. In a sense this is bundled with Covid (or future Covies) as a set of motives which drive residency.

## Blue Star Cycle Path

The bike path/park way on Blue Star though loathed by some, is a positive feature in connecting cyclists from the north and helping to create a safe, walkable atmosphere. One by-product of its completion has been a rise in traffic via the Main to Water to Wiley short cut. If traveling north or south around the river to Wiley, taking this short cut through town conveniently avoids the tighter bike path route on Blue Star. This section of Blue Star is generally thought to be a bit of a hazard unto itself for large vehicles though the short cut isn't any better an option for them and isn't necessarily where they are headed. In general, this section of road is avoided by many which in turn sends traffic elsewhere.





# Summary

- \* Though there have been improved marking and signage efforts the turn itself is fundamentally flawed in a physical sense.
- \* What made sense 100 or even 50 years ago as an infrastructure solution does not mesh with the current environment and its use.
- \* With a growing population, the diversity of users and vehicle/pedestrian types is at polar odds with its function as a bottle neck - short cut to the surrounding area.

# Recommendation

In terms of what is actionable; speed, frequency and user type in combination or separate would be the most impactful and cost effective. If applicable, further detail can be provided.