

# The Route to Developing a Phosphorus Compliance Plan

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# Agenda

1. Background
2. WPDES Permit Requirements
3. Preliminary Alternatives
4. The final plan
5. Next steps

# Background – Village of Grafton

- Established: 1896
- Location: Ozaukee County, 20 miles north of Milwaukee
- Population: 11,459 (2010)
- Early Industries:
  - Furniture
  - Brewery
  - Cheese
  - Lumber
- Geography:
  - Milwaukee River

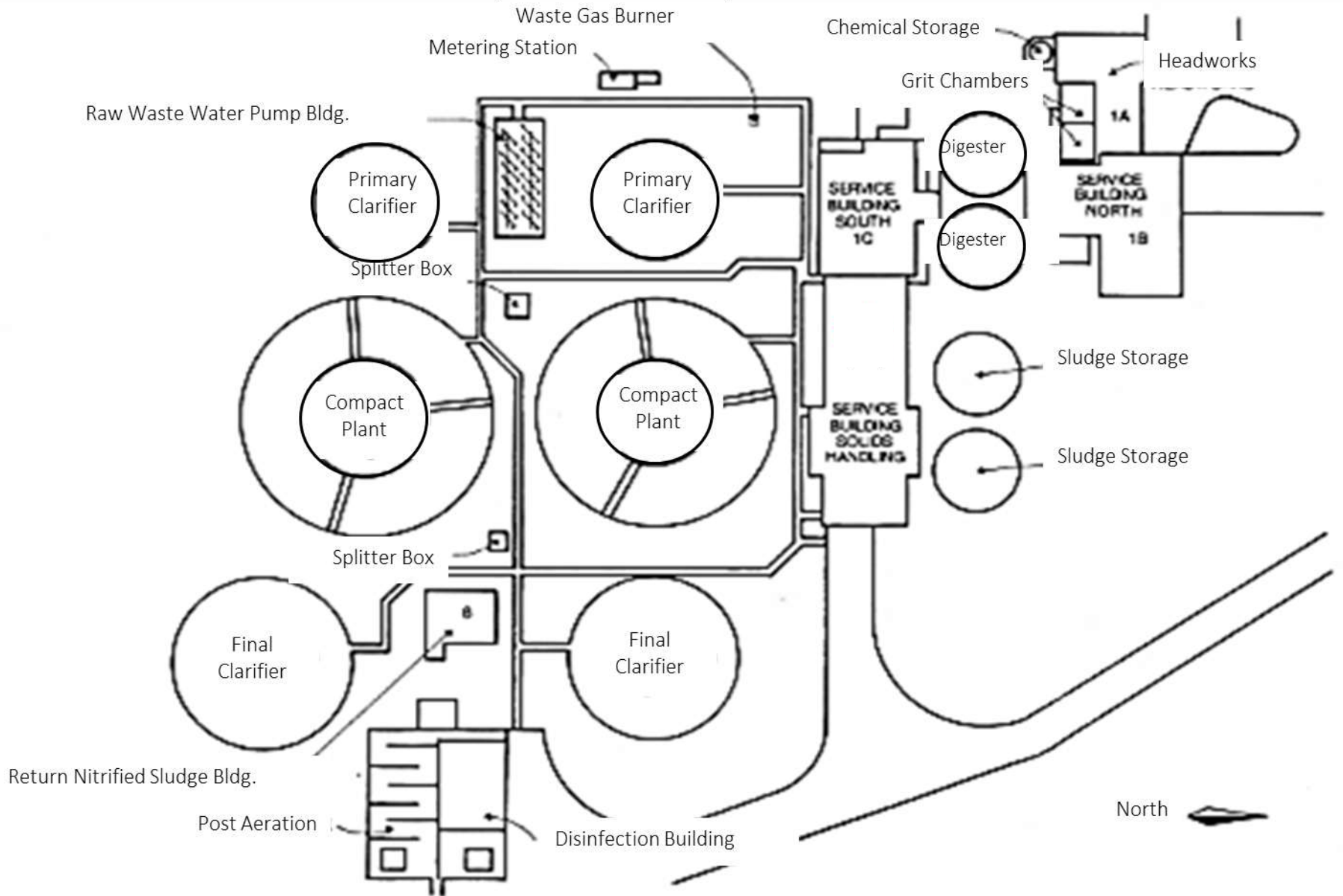


# Background – Grafton WWTP

- Built: 1958
- Last Upgrade: 2005
- Average Flow: 1.50 gpd
- Design Flow: 2.50 gpd
- Type: Activated Sludge
- Twelve (12) sewage lift stations
- 54 miles sanitary sewers



# Background – Grafton WWTP

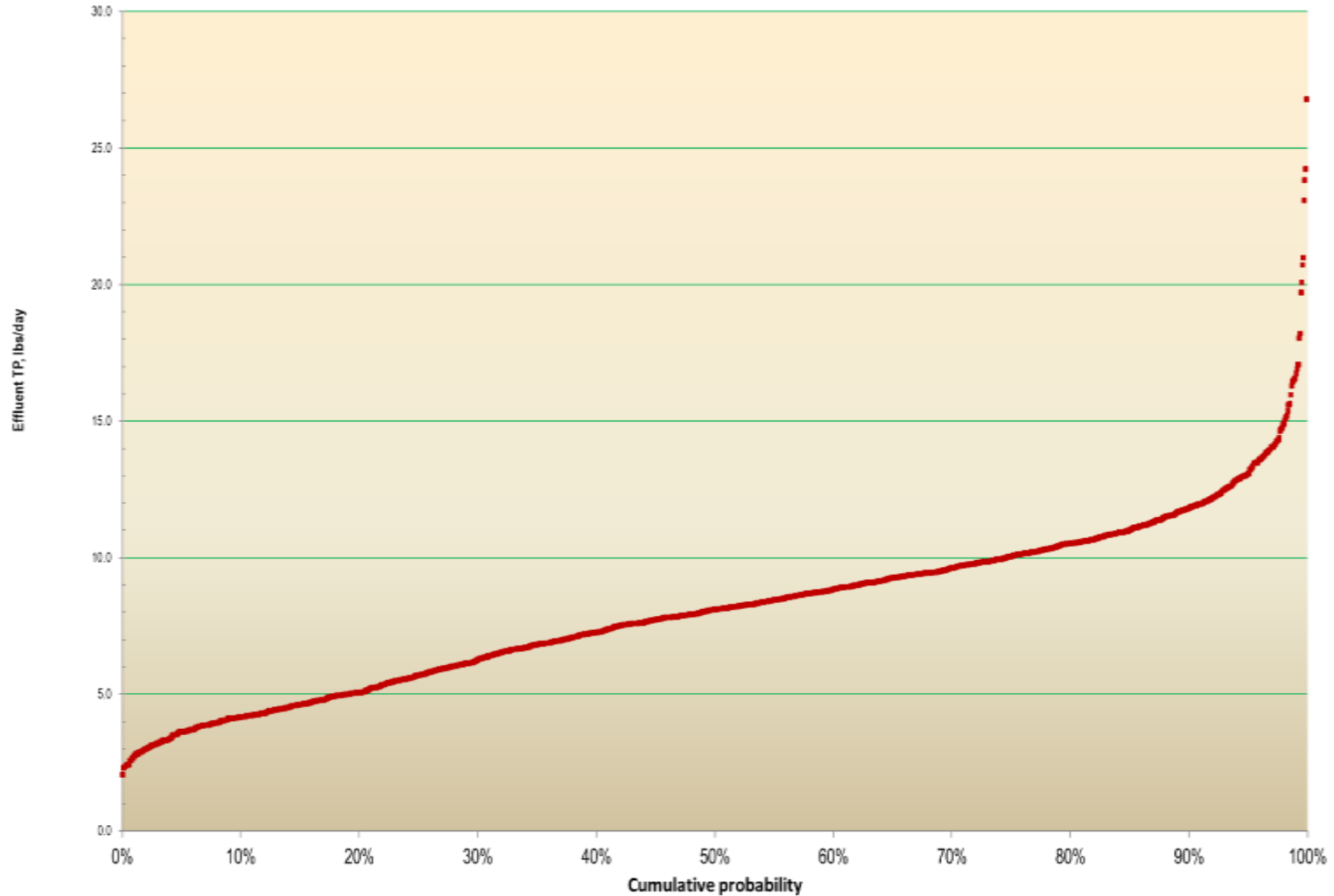


# WPDES Permit Requirements

- Permit issued: Newly issued September 2019
- Milwaukee River TMDL TP Allocations:

Total Phosphorus			
Month	Monthly Mass (lb)	Days per Month	Daily Average (lb/day)
January	91.29	31	2.94
February	95.53	28	3.41
March	87.07	31	2.81
April	88.55	30	2.95
May	96.38	31	3.11
June	96.49	30	3.22
July	86.83	31	2.80
August	84.04	31	2.71
September	86.50	30	2.88
October	72.21	31	2.33
November	88.49	30	2.95
December	82.55	31	2.66
Annual Limit	1,055.94		

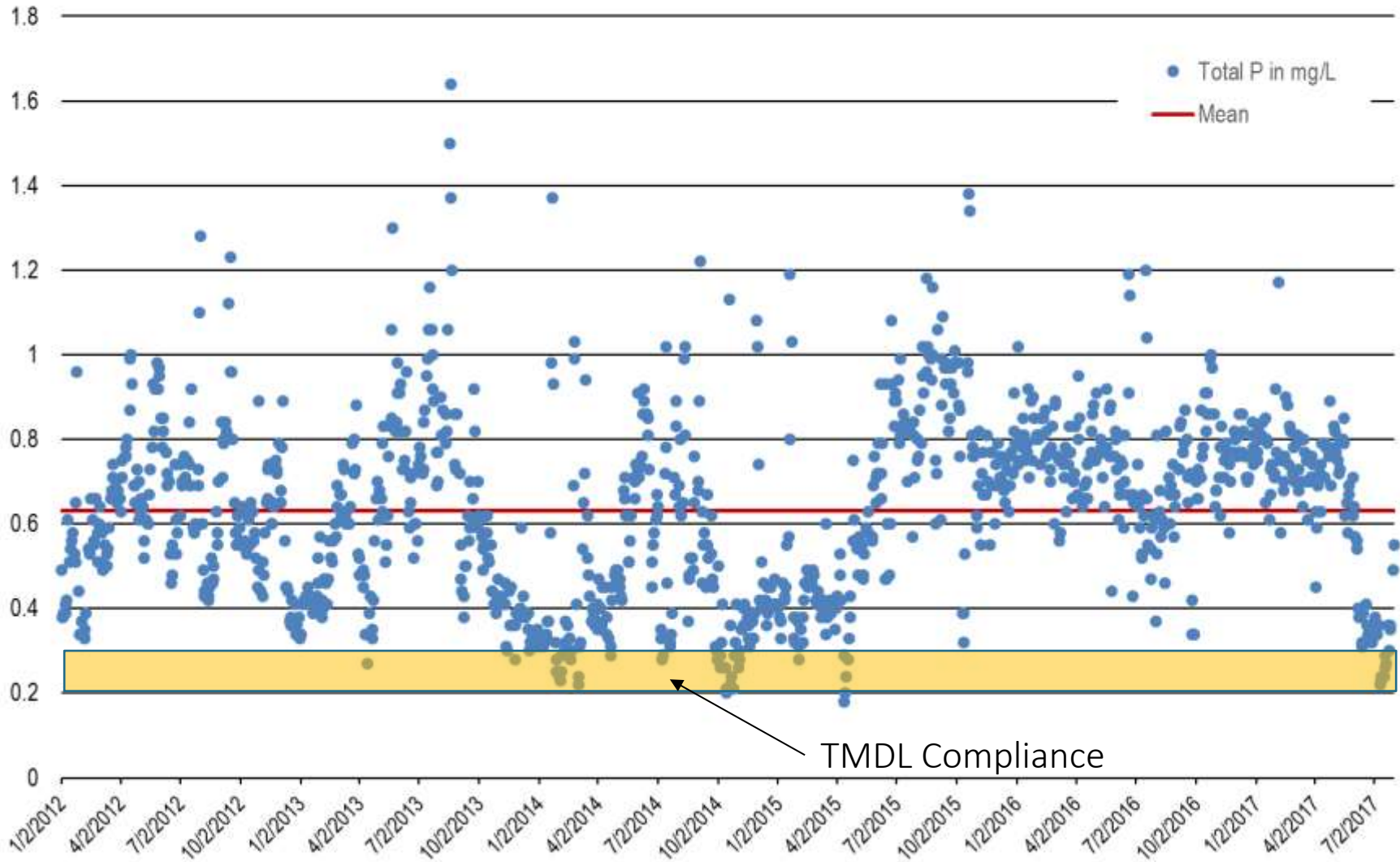
# Existing Conditions





# Background – Wastewater Effluent

Figure 4: Daily Total Phosphorus Effluent Concentration  
Village of Grafton - Jan 2012 through July 2017





# Preliminary Alternatives

1. Treatment Plant Improvements
2. Nutrient Trading
3. Adaptive management
4. Multi-Discharger Variance (MDV)

# Let's start with - MDV

- Is the Village Eligible?
  - *The Village has an existing treatment plant*
  - *The Village must upgrade with tertiary filtration of the equivalent to meet the WQBEL*
  - *The Village is facing significant Capital improvements associated with a 35-year-old treatment plant but future sewer rate increases can not be included in the financial analysis – sewer rates with improvements for TP WQBEL compliance < 1% of the MHI*
- No – The Village is not eligible

# How about Nutrient Trading?

- The Village needs 1,532 lb/yr without any changes to the WWTP
- Or, the Village could reduce the need to 268 lb/yr if a small WWTP project were completed
- Where to supply the need?

# Up-river Agricultural Sources

Type of Ag Operation	% of Land	Acres of Ag type	Baseline P
		(acres)	(lb/yr)
Cash Grain	40%	10,000	70,066.6
Dairy	40%	10,000	30,672.9
CAFO	20%	5,000	20,325.0
Total		25,000	121,064.5

# Looks promising except

Ag non-point sources need to achieve 85% to 90% reductions to meet TMDL obligations

Long term trades possible on the remaining 10 to 15%.

100% Phosphorus reductions only possible if land is removed from production (Baker Cheese trade)

Trading does not appear viable until more clarification is provided on trading within TMDL areas.

# What's left?

- Treatment Plant improvements or Adaptive Management?
  - Treatment Plant improvements
    - *Capital \$3.8 M*
    - *O&M \$270K/yr*
    - *PV > \$7M*
    - *No turning back*
    - *Does not address MS4*
    - *Easy to do*
  - Adaptive Management
    - *Annual spend \$200K to \$400K – depending on the year*
    - *There is annual O&M - \$30K/yr*
    - *Best case PV > \$3.35M*
    - *MS4 can be included*
    - *Lots of Unknown*
    - *Many options – you can change your mind!*

# Winner is – Adaptive Management

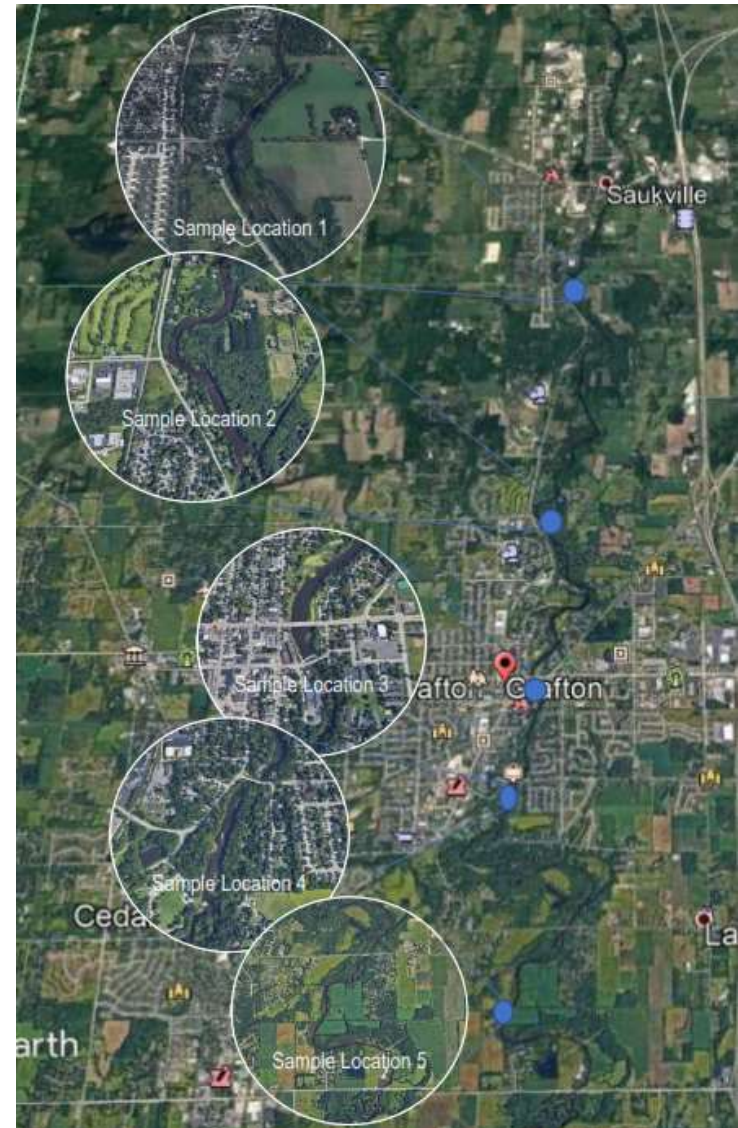
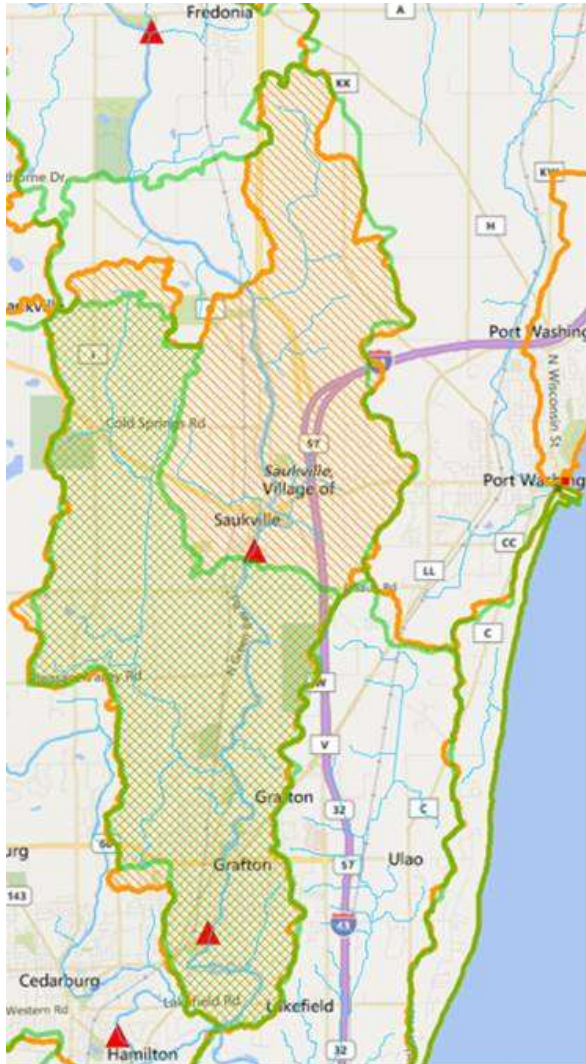
- In the end, the Village felt:
  1. The in-river TP concentration is 0.01 mg/L over the criteria – it is worth it a try to see if it can be lowered
  2. The Village can always switch to treatment plant upgrades or trading
  3. There is an active Watershed group that can help the Village
  4. The Village plans to use an administrator to implement the plan
  5. The Village can apply for funding to help reduce the cost to the Village



# So what's the plan?

- Assist the County with improvements to Mole Creek
- Install BMP's along the Milwaukee River within action area
- Install ag BMP's up-river from the action area
- Invest in small improvement to the WWTP

# Action Area & Monitoring Plan



# Reduction Targets

Location	Reduction Target
	Lb/yr
Mole Creek & Milwaukee River within the action area	1,000
Milwaukee River upstream from action area	5,160
Treatment Plant	1,280
Total	7,440

# The Village has already started

The Village has committed up to \$5,000 per farm up to 4 farms to:

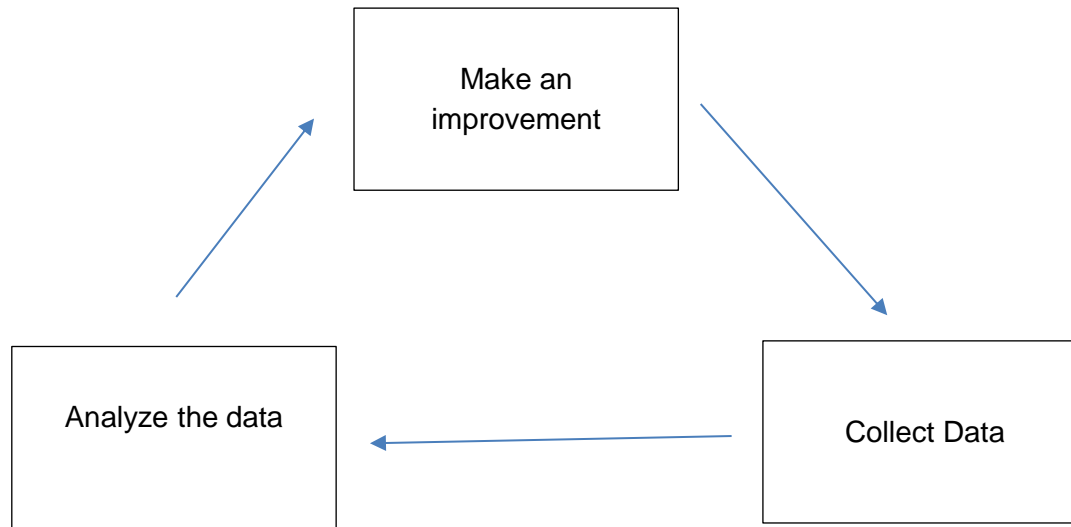
- Plant cover crops in the fall of 2019

- To practice no till

The Village has pledged this support for 2019-2020 and 2020-2021.

This work is being done in conjunction with Ozaukee County and the Milwaukee River Watershed Clean Farm Families.

# The plan will be iterative ...



## The goal

- Return the River TP concentration to WQ criteria at as low a cost to the Village rate payers as possible

# What's next?

- *The Village will submit the AM plan with the permit renewal application*
- *The Village will begin water monitoring program in May 2020*
- *The Village will complete the first year of funding ag partners Spring 2020*
- *The Village expects to advance some small projects within the action area throughout 2020*