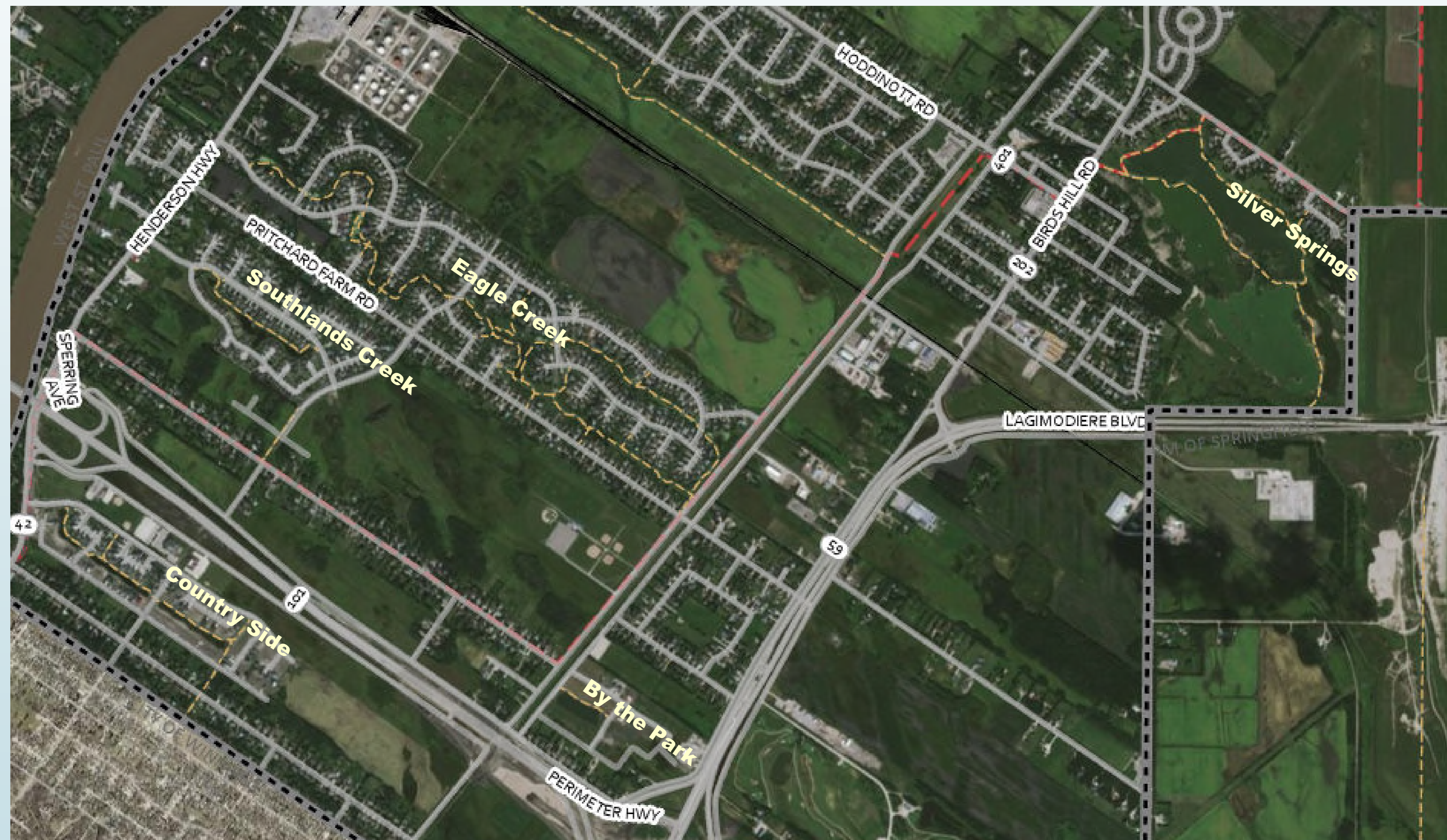




RM OF EAST ST. PAUL

Healthy Ponds and Creeks



RM East St. Paul Information & Feedback Session

A dark blue arrow points right from the left edge of the slide. Several thin, curved lines in shades of blue and grey originate from the left side and sweep across the slide towards the right.

Objectives

- ▶ Provide information on how the ponds function
- ▶ Provide an update on what the RM has learned this year
- ▶ Discuss possible options and solutions
- ▶ Gather feedback on additional information you would like and the role you would like to have

Thank you for joining us today!

What services do our ponds and creeks provide?



Provides drainage

- Regulate and temporarily store runoff from spring melt water and rain

Provides habitat

- Aquatic and shoreline plants
- Fish and other aquatic species
- Wildlife – birds, aquatic mammals

Aesthetic and recreation asset

- Vistas
- Walking paths
- Winter ice rinks
- Catching frogs

Filters water

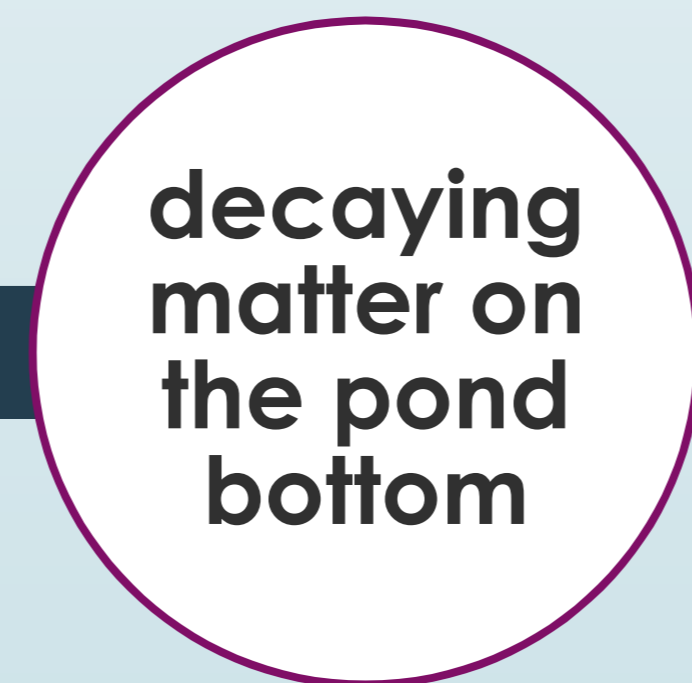
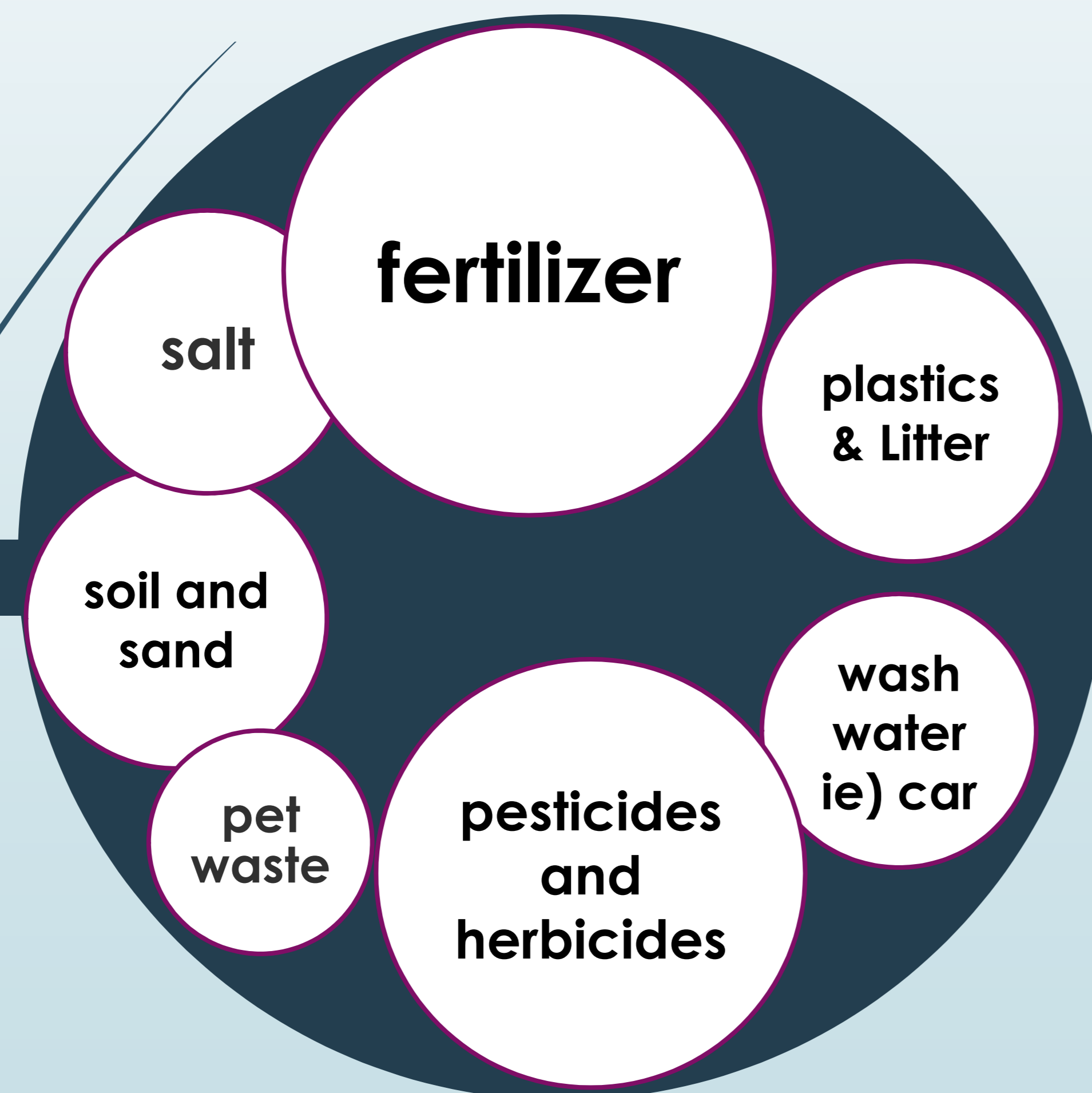
- Filters water before released to Red River
- Captures soils, sand and gravel
- Collects and processes nutrients

What influences pond health?

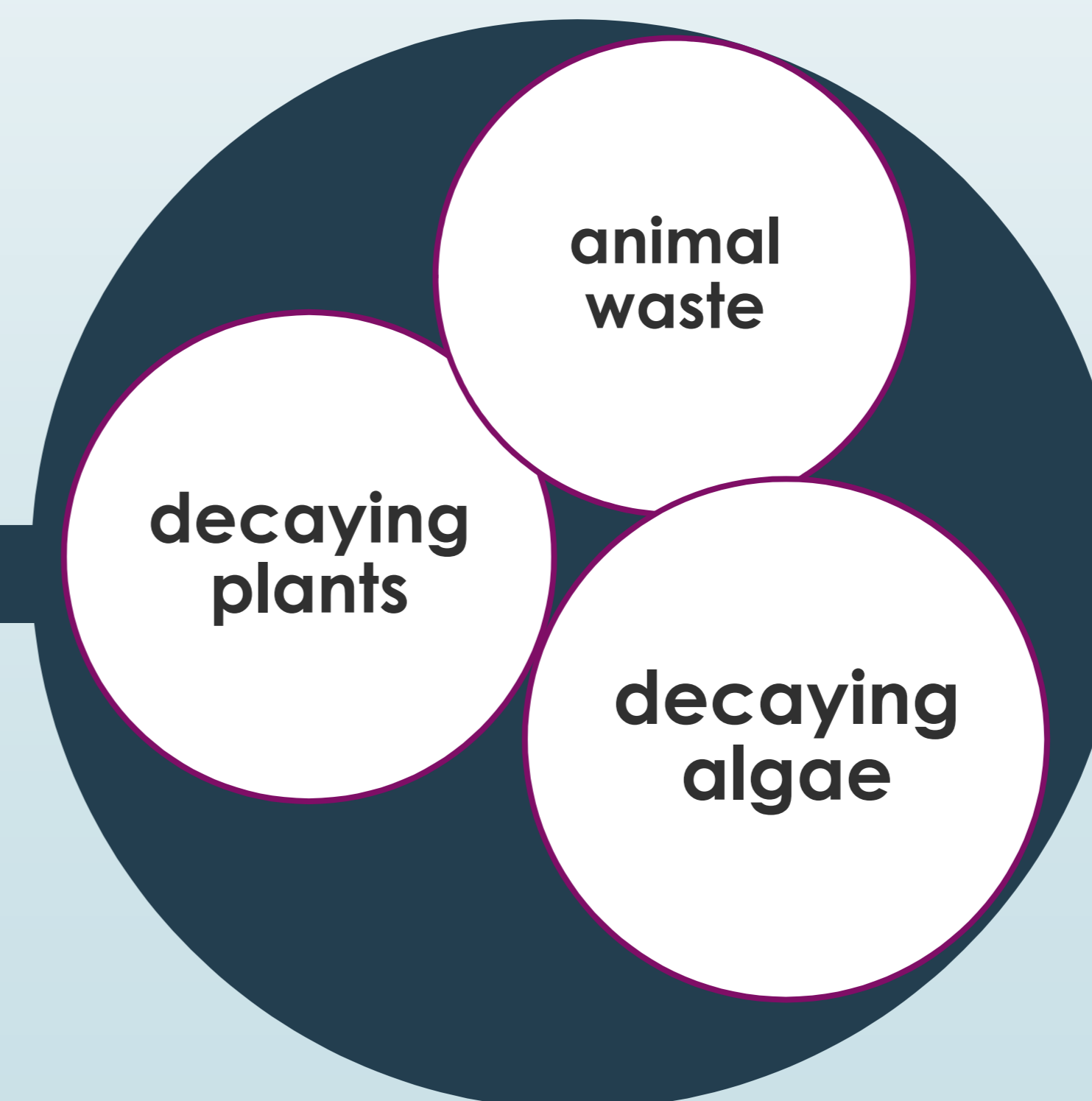
Runoff loading from streets, yards and green spaces

Instream loading

upstream inputs



(Loads from current and previous years)



river to lake



Background - Water Quality in the Ponds: parameters of interest

► Dissolved Oxygen –

- measure of oxygen available for fish and other organisms including the bacteria that decompose organic material.
- Provincial guideline is above 6mg/L

► pH -

- A measure of the alkalinity (acidic) or basic (caustic). Ideally levels remain between 6.5 and 9.5.
- Levels above 10 can adversely influence plants and organisms.

► Water temperature -

- Influences aquatic plants and the bacteria growth. In warmer temperatures, the rate of growth increases.
- As temperatures rise, the rate of decomposition increases. If the rate of decomposition is too fast, the oxygen in the water can be used up, stressing fish and other aquatic organisms.
- Warmer water also holds less oxygen.
- Shaded water temperatures are 3-5 degrees lower than non-shaded water.



Background - Water Quality in the Ponds: parameters of interest

► Nutrients -

- Fertilizers are nutrients that are used by plants to fuel growth.
- Fertilizers that are not fully taken up by the grass and flowers in our yards or by agricultural crops run into the storm drains during rain events or during spring melt.
- These fertilizers are then taken up by aquatic plants including duckweed and algae which fuels their growth.
- When plants die, the nutrients are released through the decay process to be used again - in this way nutrients build up within the ponds.

Nitrogen

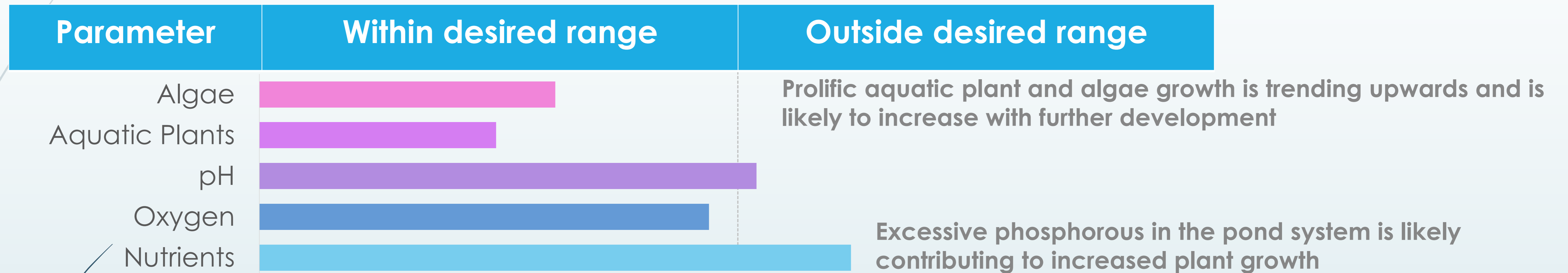
- Nitrogen is non limiting – converts to a gas and is available from the air for uptake by plants and algae.

Phosphorus:

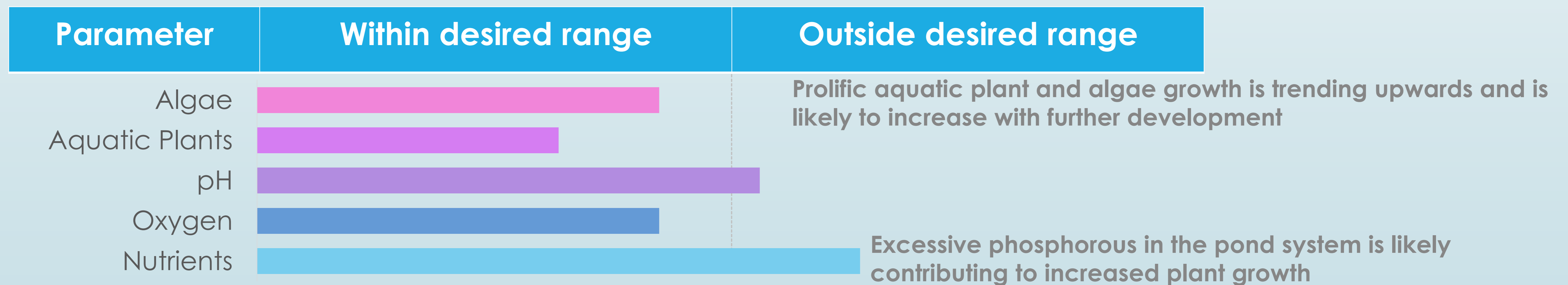
- Key driver of excessive aquatic plant growth and algae blooms.
- It can accumulate in sediments and be suspended in the water column.

New Ponds

By the Park

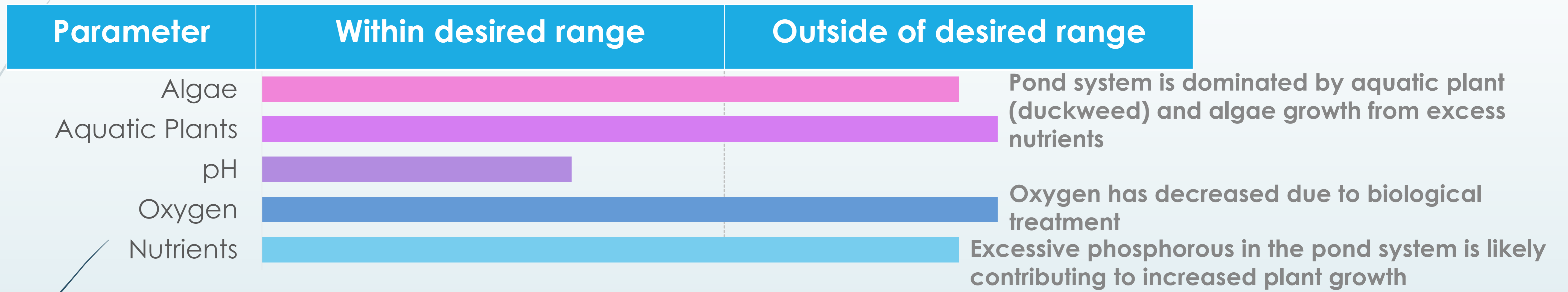


Countryside Crossings

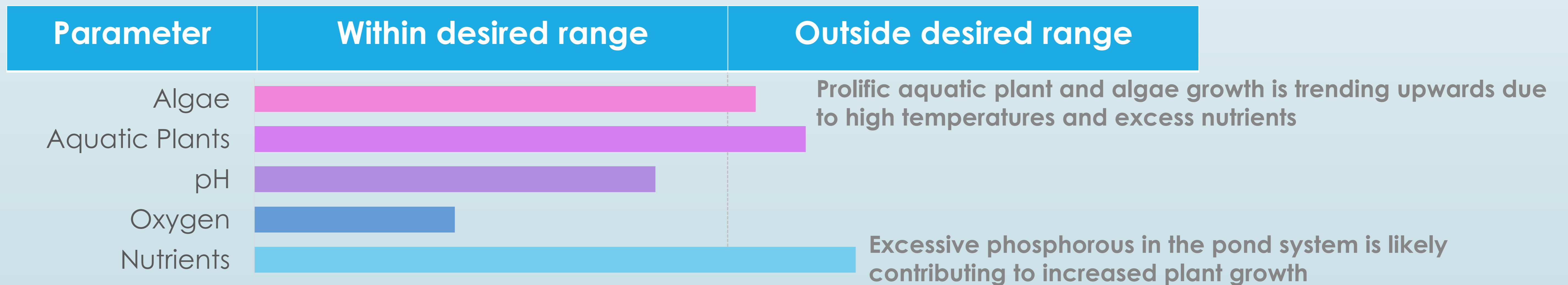


Established Ponds

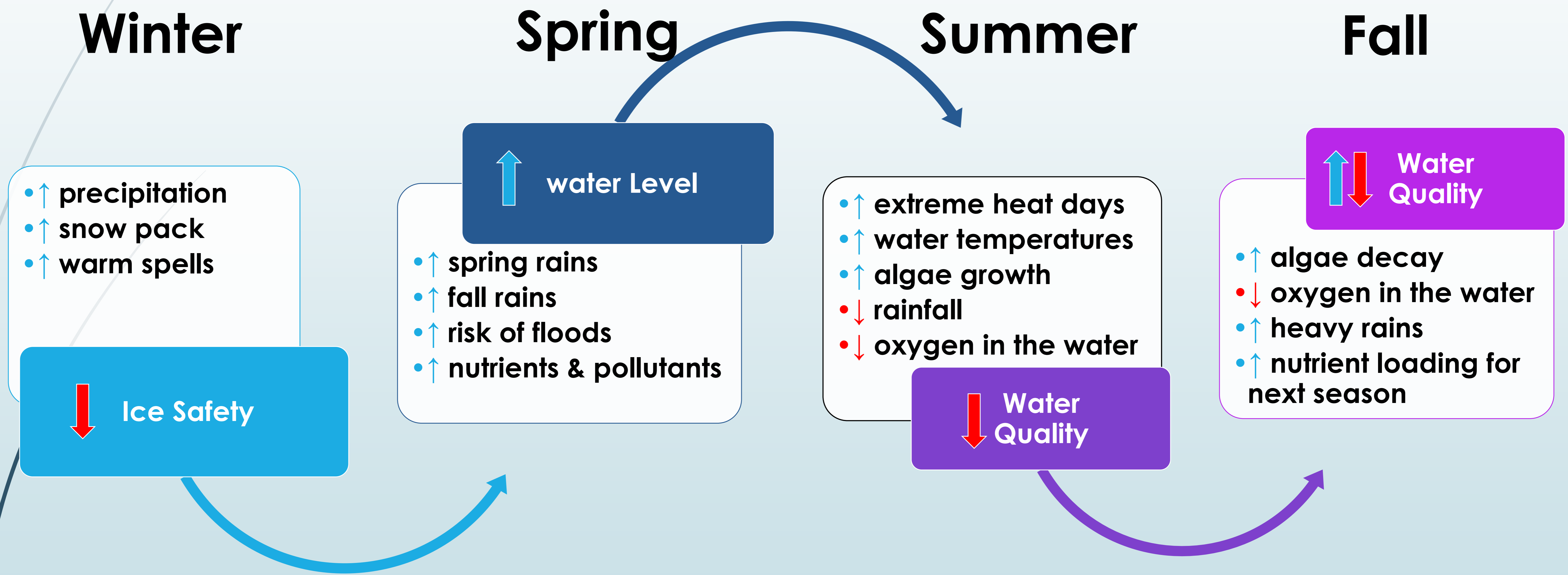
Eagle Creek



Southlands



How might climate change affect our ponds?



RM Efforts

RM has been actively working on pond health for 3 years:

- ▶ Pilot programs to test methods of reducing algae and other plant growth.
- ▶ Aeration to raise oxygen levels to support natural decomposition.

This year have instituted a detailed investigation program to understand what drives changes in the ponds such as:

- ▶ Weekly sampling of pond water quality and visual inspections;
- ▶ Lab analysis of water quality every two weeks;
- ▶ Reviewing observations and data with aquatics specialists;
- ▶ Research into possible opportunities to improve conditions; and
- ▶ Targeted pilot tests with detailed monitoring to check effectiveness.

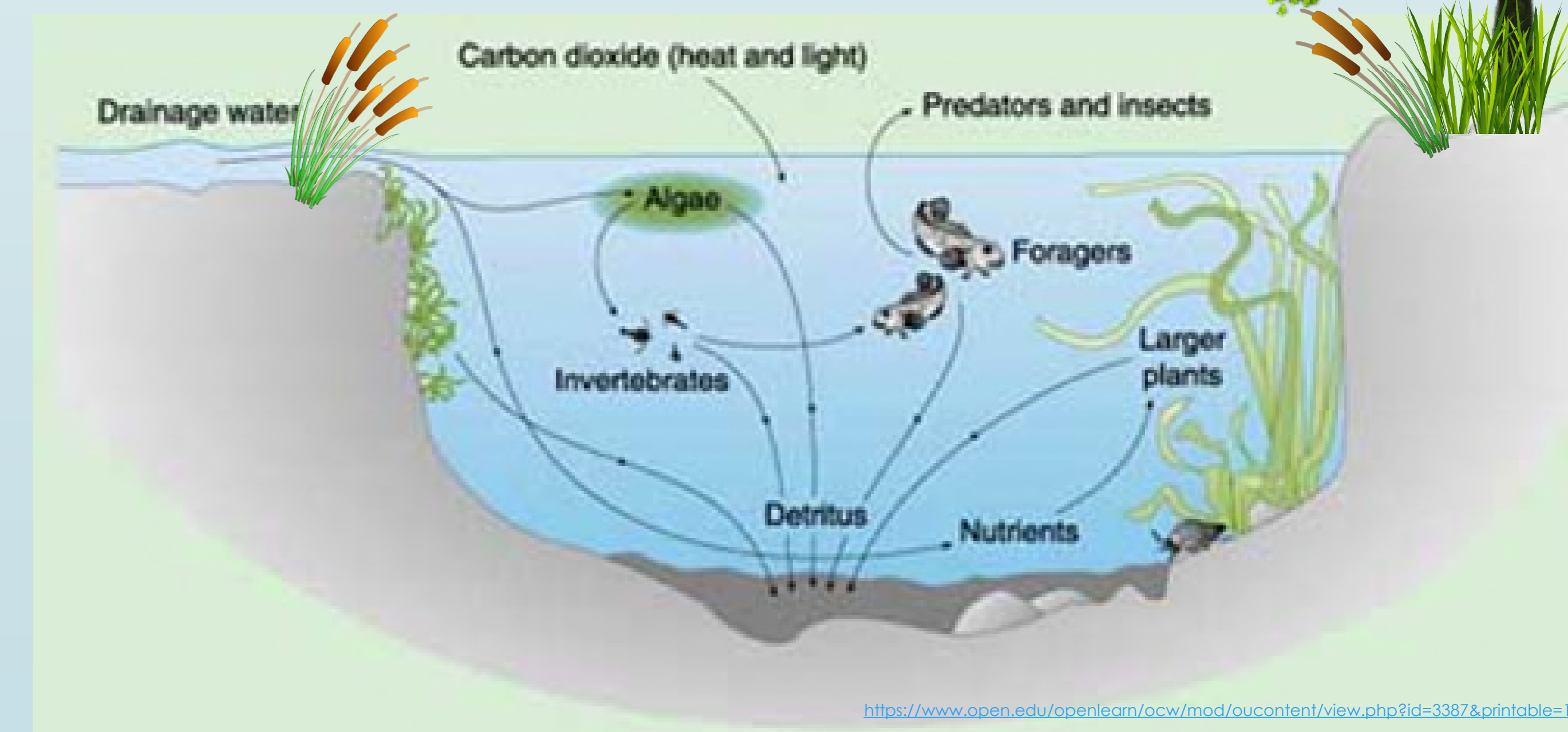


What we have learned about our ponds

Ponds are complex systems

- ▶ Change over the season:
 - ▶ respond to temperature, light and moisture
- ▶ Change over time:
 - ▶ Older ponds are further evolved than newer ponds
- ▶ Vegetation along the bank (riparian zone) has a positive effect on water quality:
 - ▶ Native grasses draw nutrients, anchor the soils and protect the banks
 - ▶ Trees and shrubs draw nutrients, shade the water and keep it cooler.
 - ▶ Cattails draw out nutrients
 - ▶ Filters out sediment

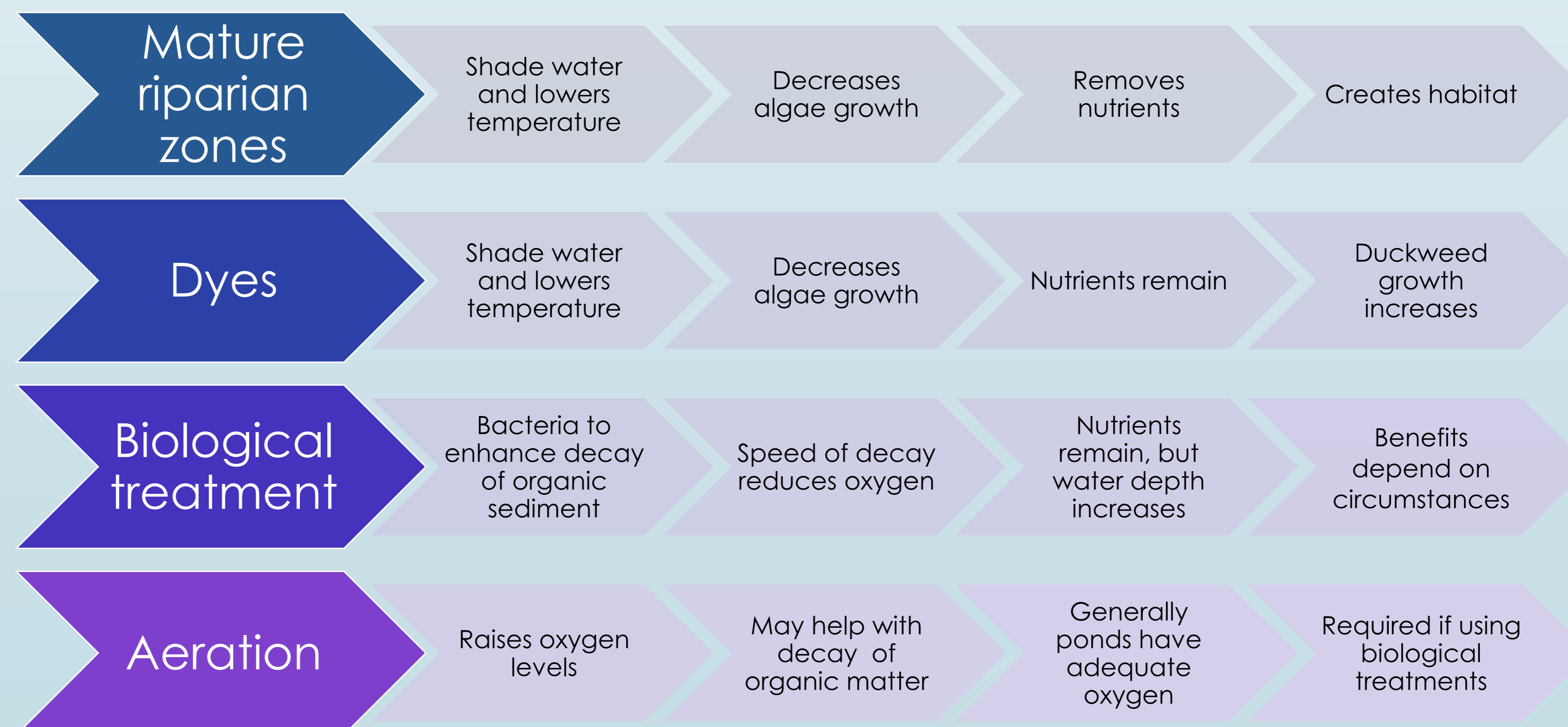
Vegetation along the bank is called the riparian zone



Evaluation of management options

What we have learned from this year's monitoring:

- There is no single solution.
- The actions of individual property owners are just as important as the steps taken by the RM.
- Conditions change over the season - weather influences conditions(i.e.. temperature, rainfall).
- Ponds are ecosystems – P=ponds change as they mature and Mother Nature tries to find an equilibrium based on the resources on hand (water levels, nutrients, etc.).
- Healthy riparian vegetation improves water quality
- It has taken a long time for the ponds to evolve to this point and any improvements will take a long time



How can residents protect our creeks and ponds?



Minimize use of fertilizers

Time fertilizer application so that rain does not wash it into the ponds

Keep yard waste like grass clippings out of the ponds

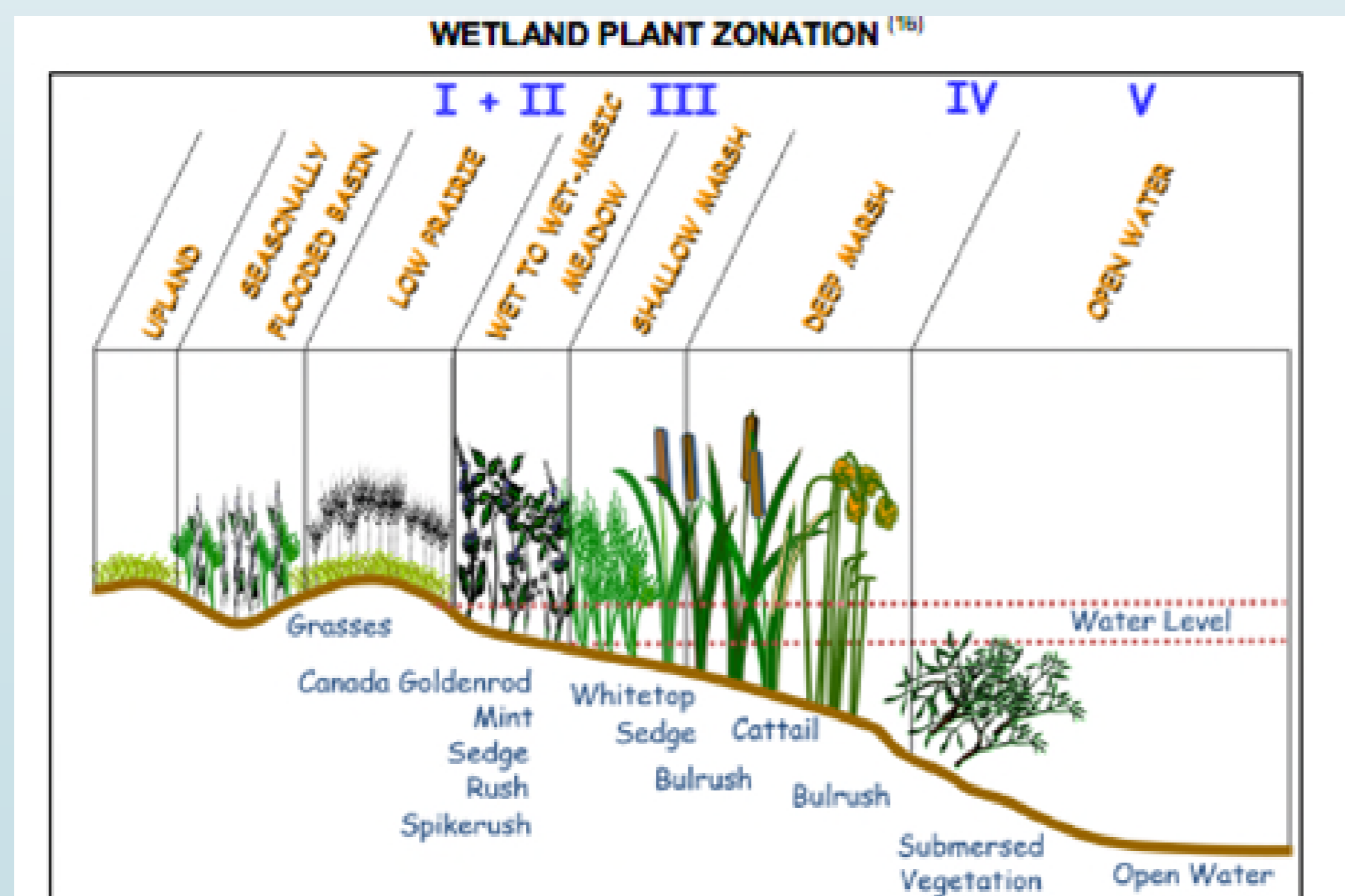
Discourage geese: plant tall grasses by the water and do not feed the geese

Protect the plants around the ponds

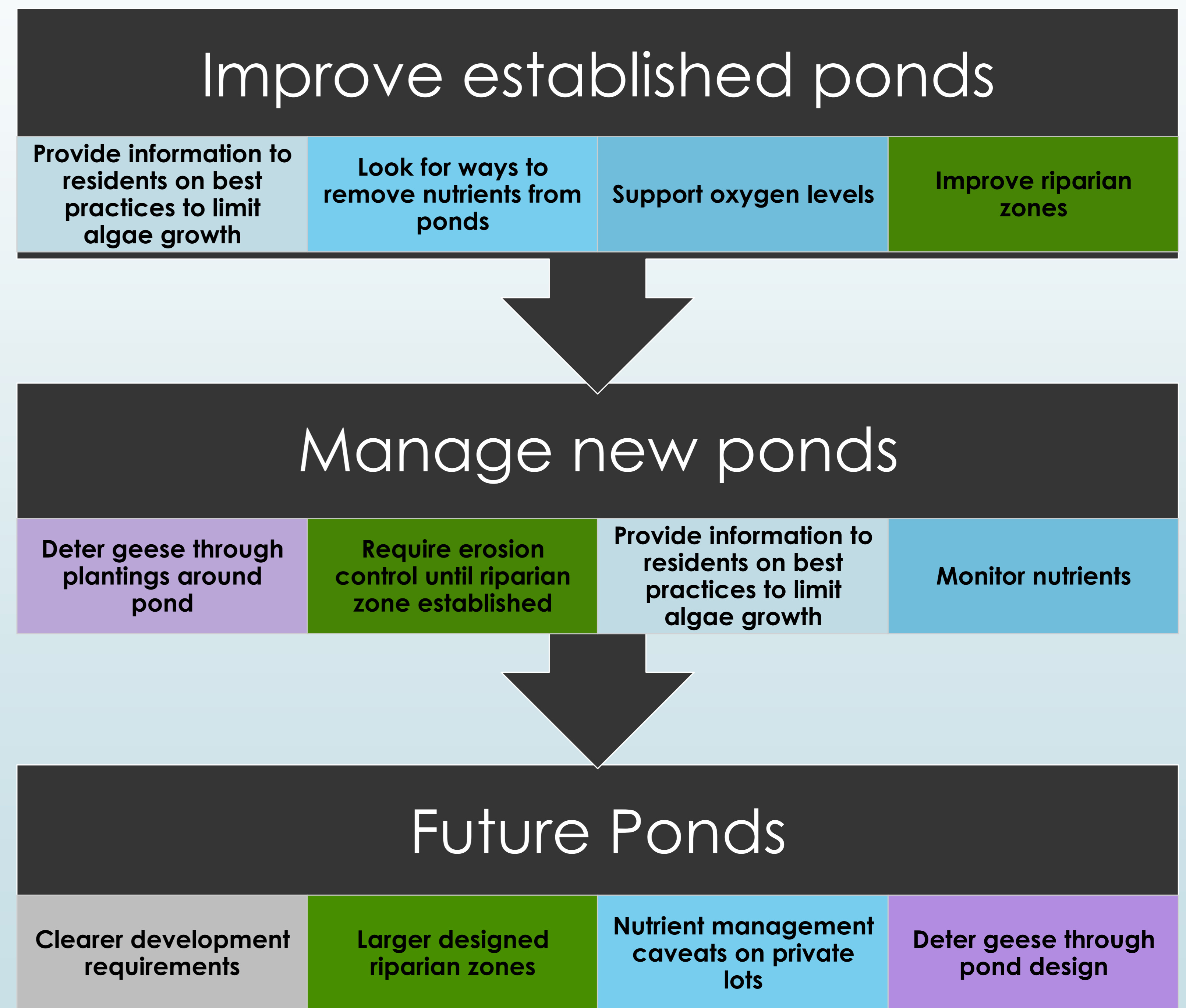
Xeroscape: native plants stabilize soils without watering or fertilizers

Options being considered by the RM....

- Expand riparian plantings around ponds
- Investigate ways to limit nutrient loading
- Remove nutrients from ponds
- Develop new ponds differently



Native Plant Solutions and Ducks Unlimited Canada. 2015. Nettley-Libau Marsh Restoration-Literature Review and Synthesis. December 2015.

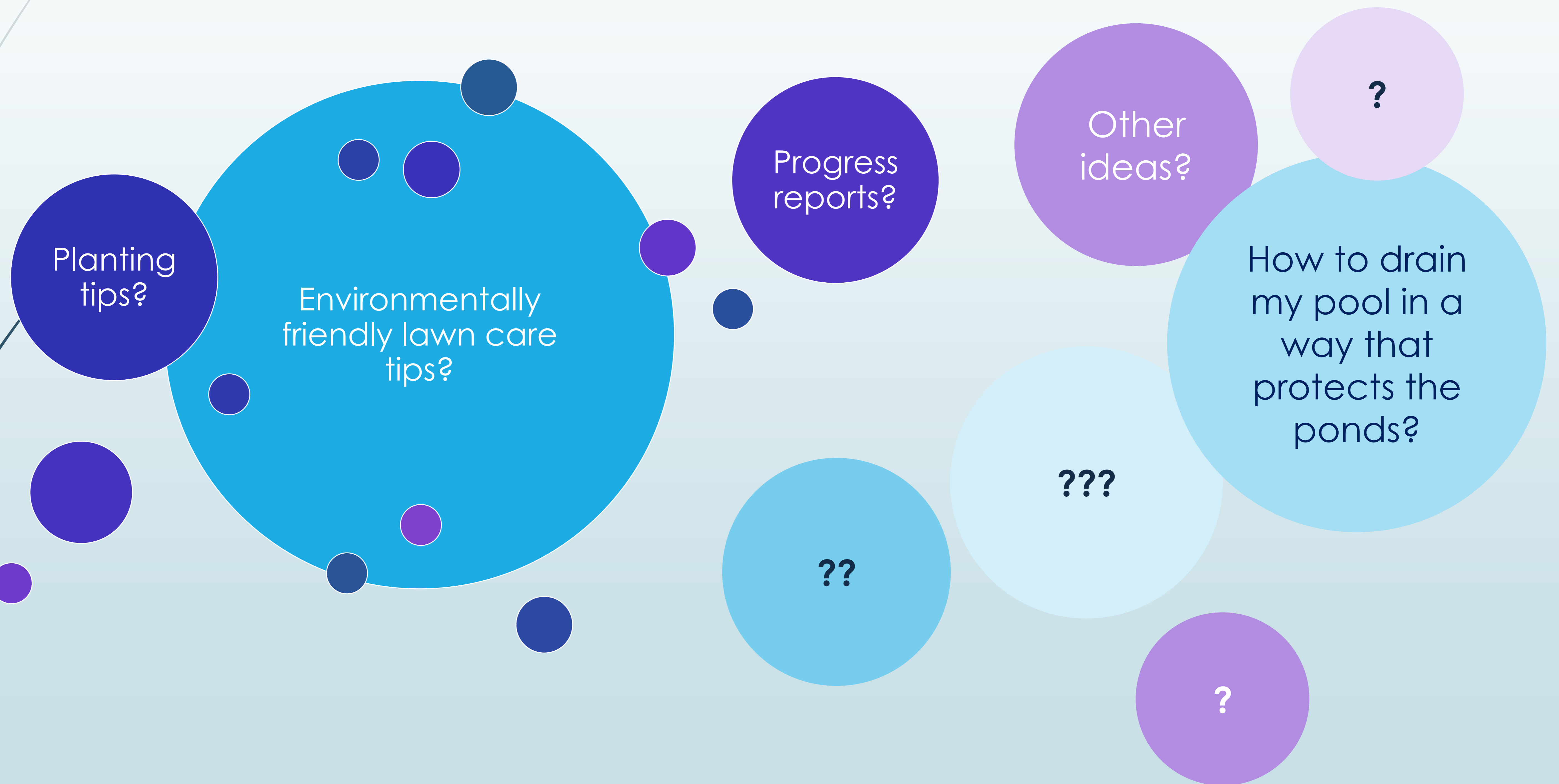




How can the RM best engage you and your neighbours regarding the ponds?

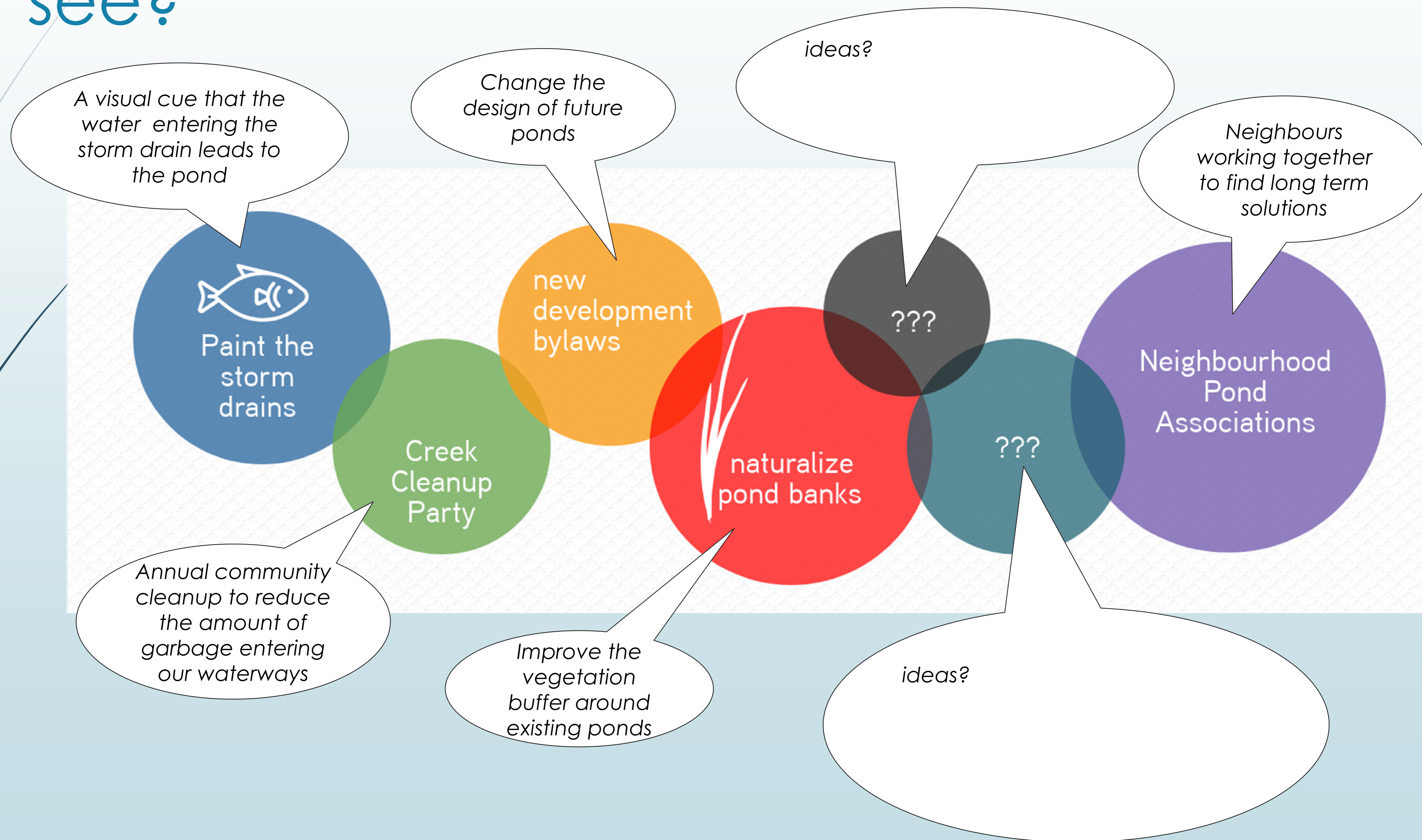
- Website
- Email Blast
- Facebook
- Twitter
- Community Newsletter
- Surveys
- Other (give us your ideas!)

What information would help you support pond health?



Dotmocracy!

What future actions would you like to see?





RM OF EAST ST. PAUL

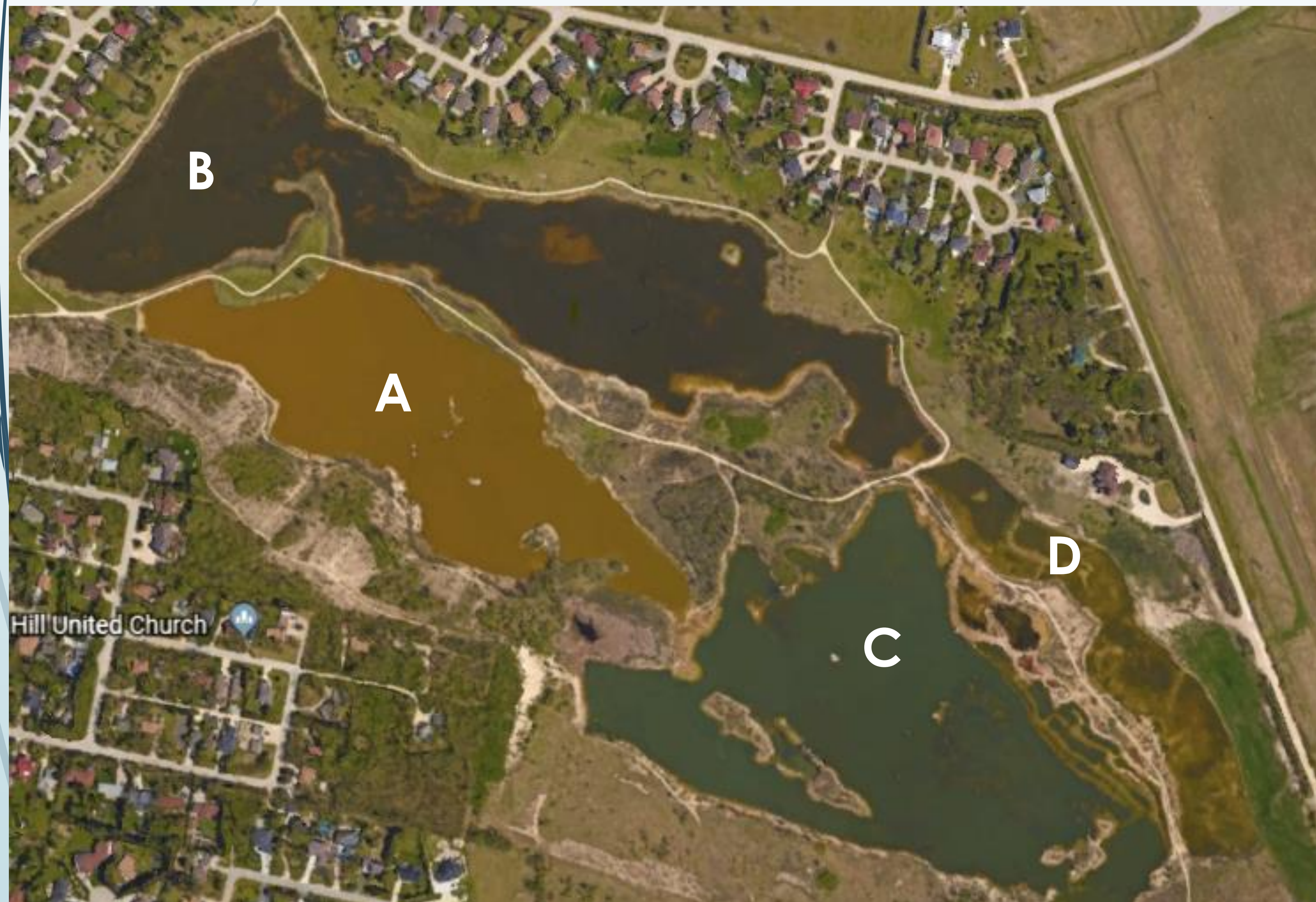
Thank you for coming!

- ▶ Your input will help us make future decisions.
- ▶ Before you go please fill in our participation survey to help us improve.

Thanks again for joining us today!

Silver Springs Ponds

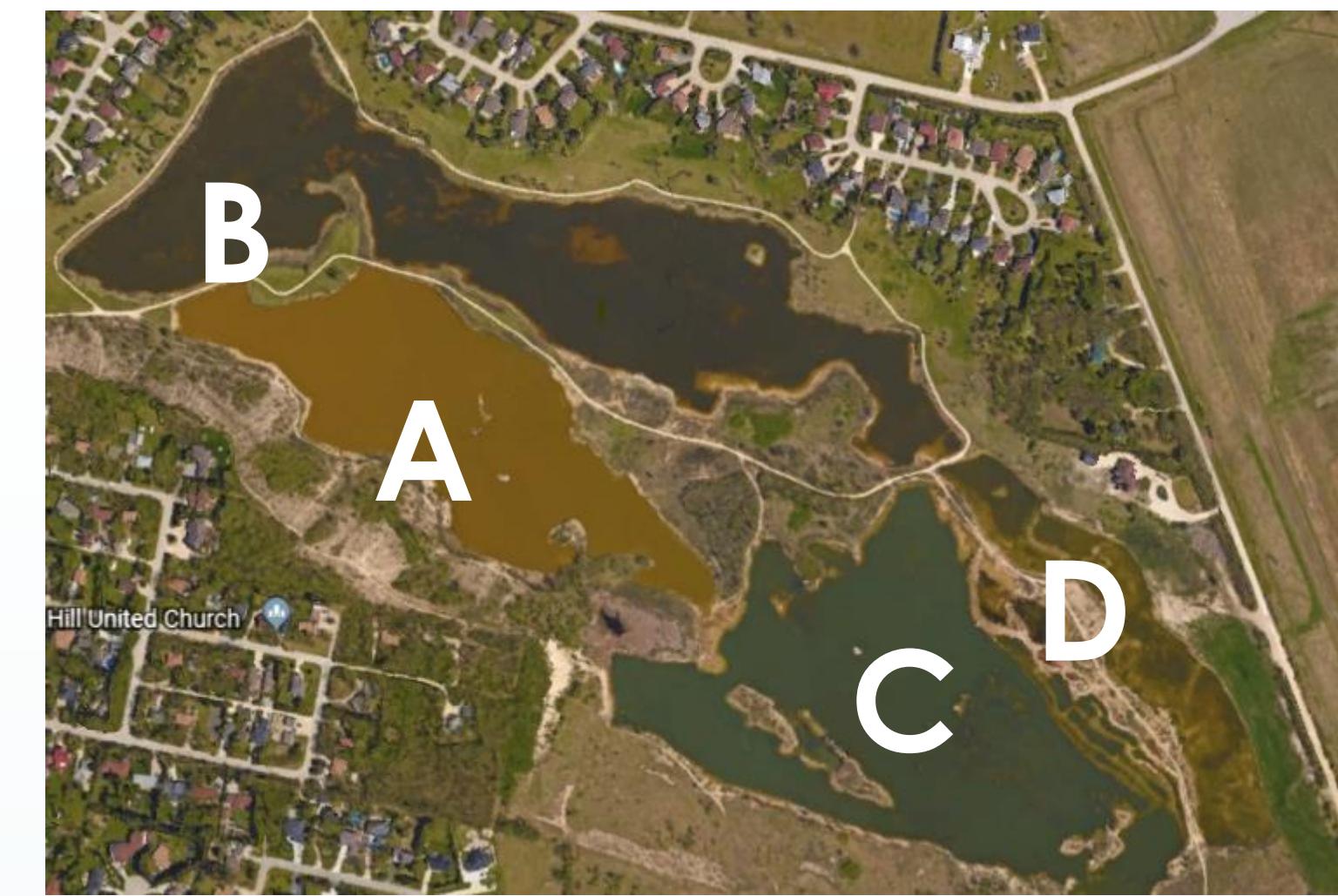
The ponds in Silver Springs Park are four unique systems.



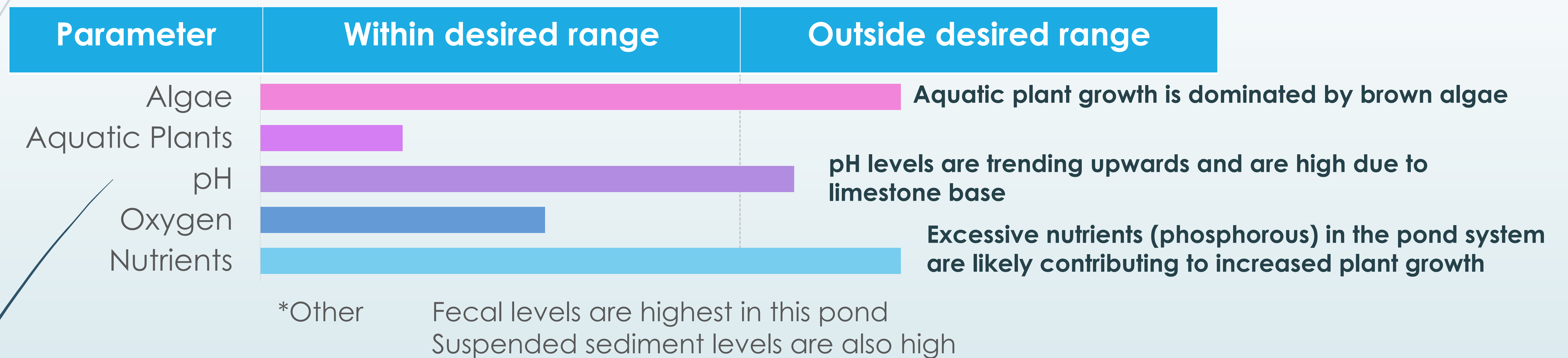
Each pond is behaving differently

- The water quality is different
 - pH levels are very high – especially in B and D
 - Organic sediments may be helping to keep pH levels from getting higher
- Pond depths vary
 - The shallowest pond is D at approximately 30cm
 - The deepest is approximately 2m
- Nutrient loading is common between all ponds
- Each has different aquatic vegetation –
 - Where aquatic plants dominate, algae levels are low.

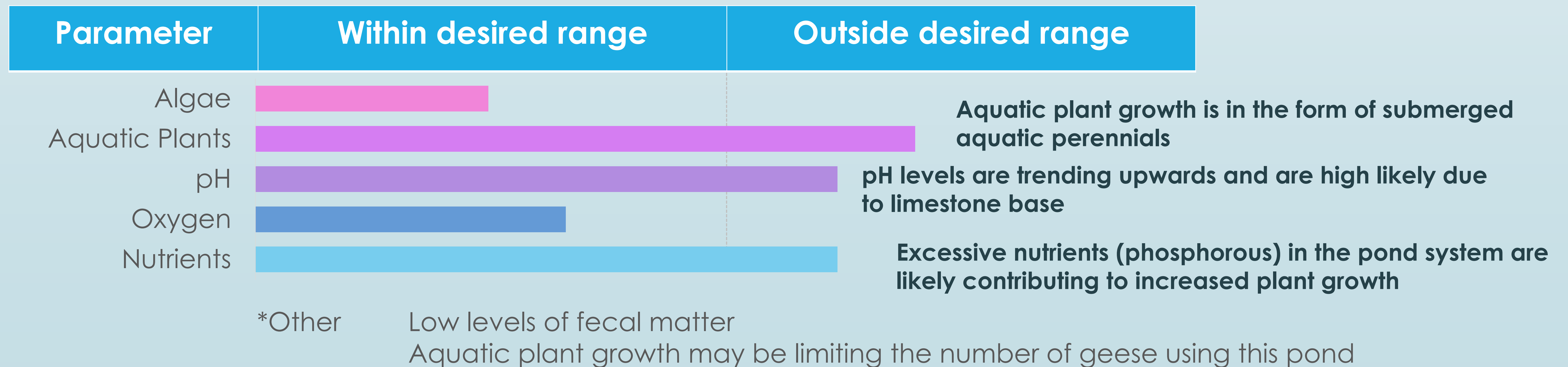
Silver Springs Water Quality



Pond A

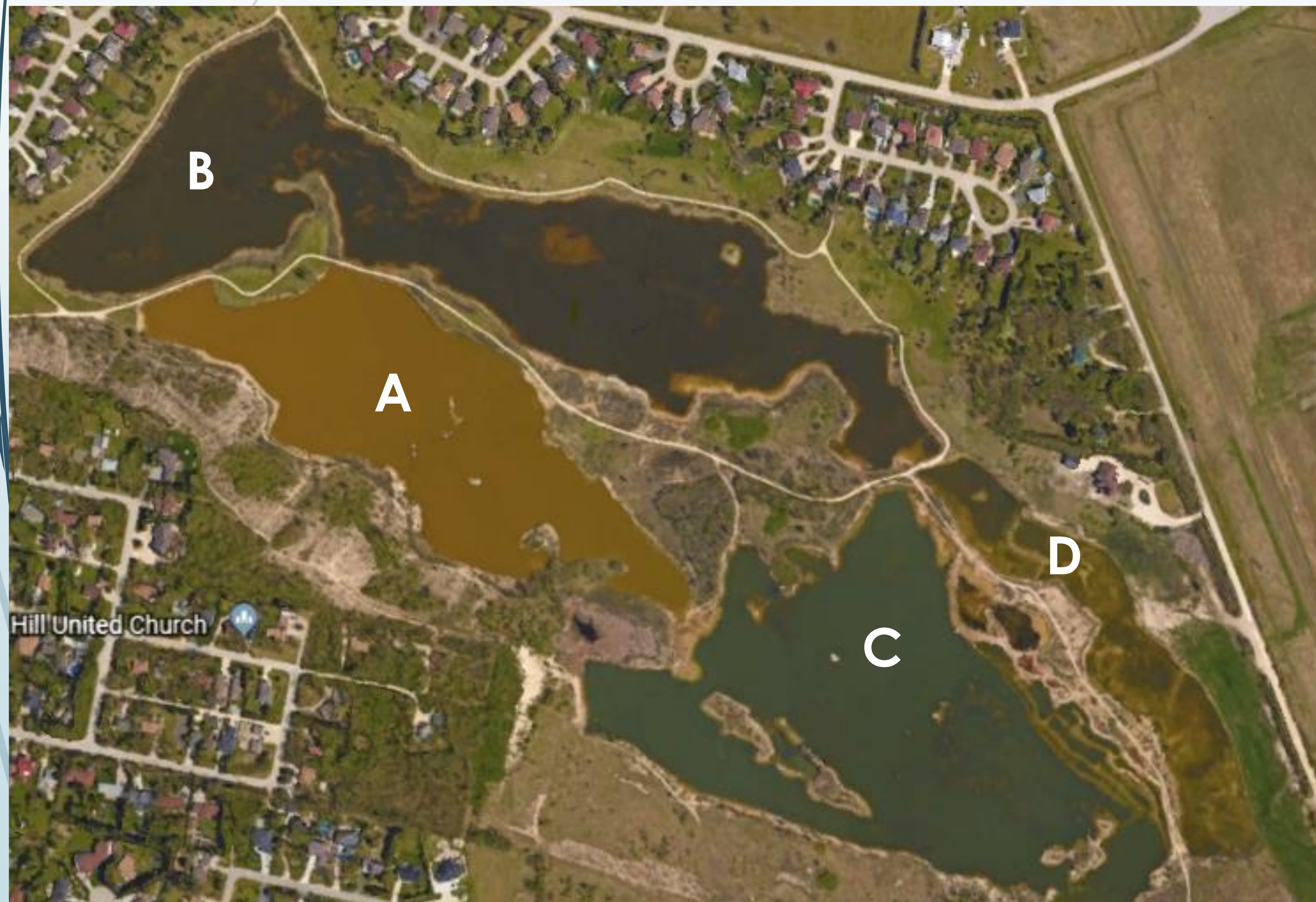


Pond B



Silver Springs Ponds

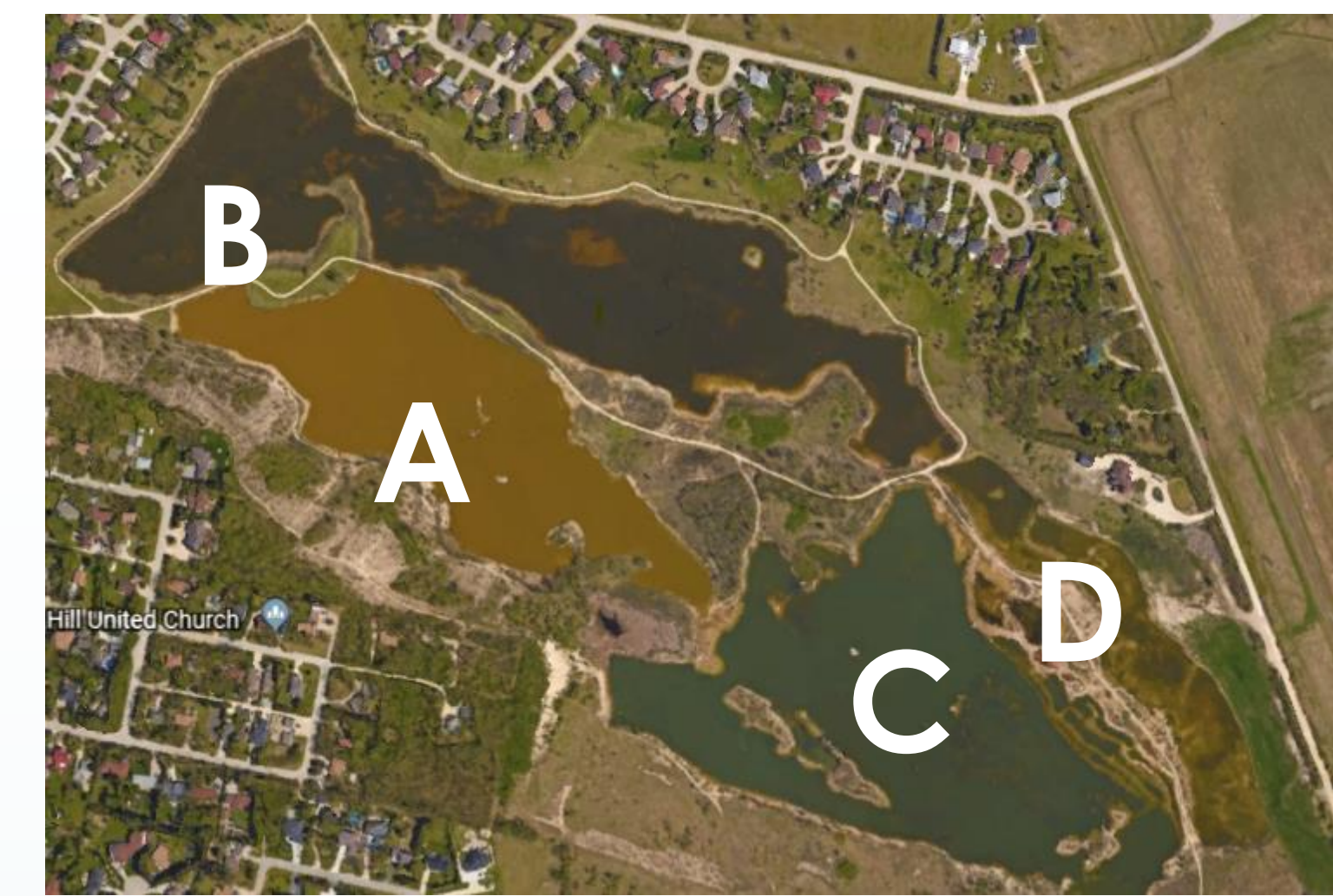
The ponds in Silver Springs Park are four unique systems.



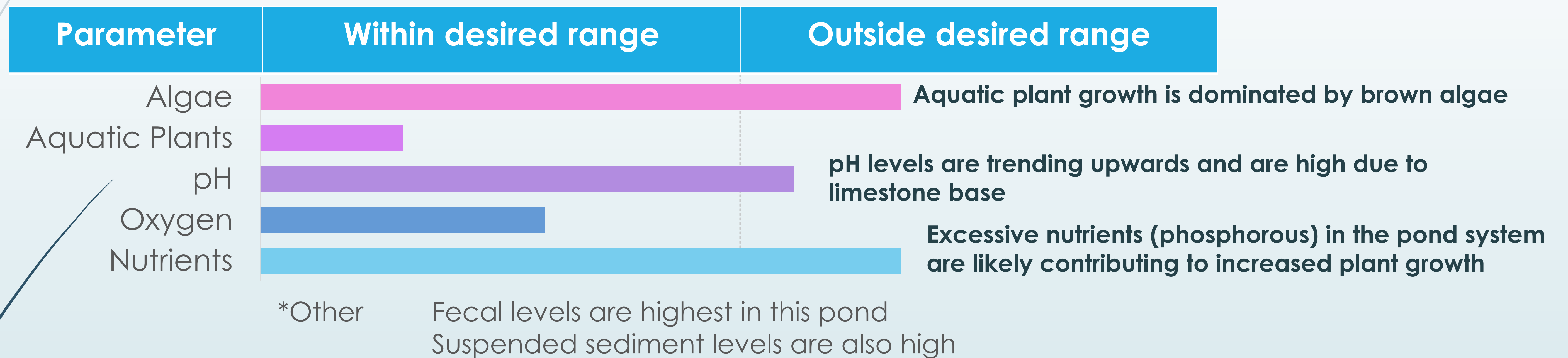
Each pond is behaving differently

- The water quality is different
 - pH levels are very high – especially in B and D
 - Organic sediments may be helping to keep pH levels from getting higher
- Pond depths vary
 - The shallowest pond is D at approximately 30cm
 - The deepest is approximately 2m
- Nutrient loading is common between all ponds
- Each has different aquatic vegetation –
 - Where aquatic plants dominate, algae levels are low.

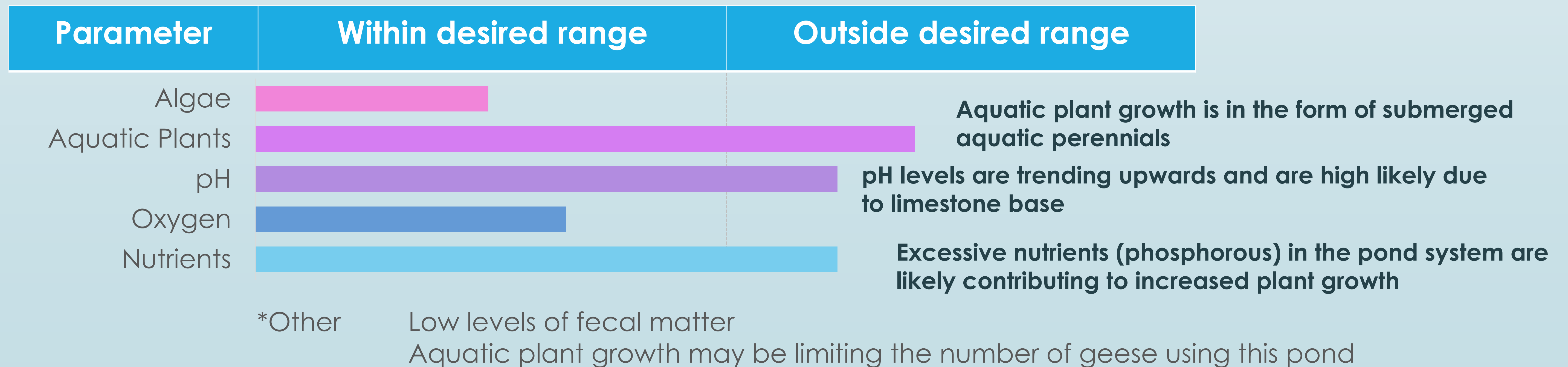
Silver Springs Water Quality



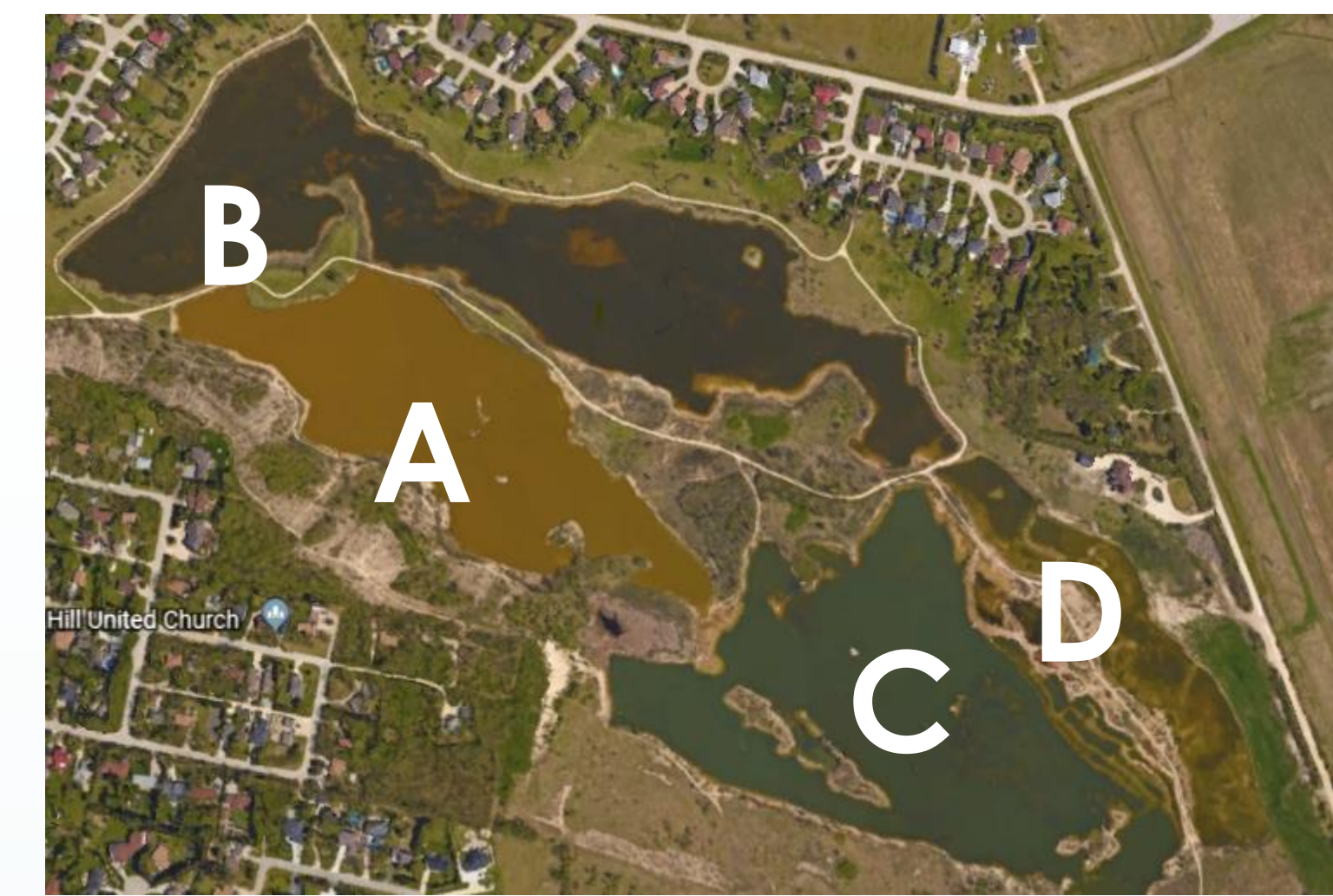
Pond A



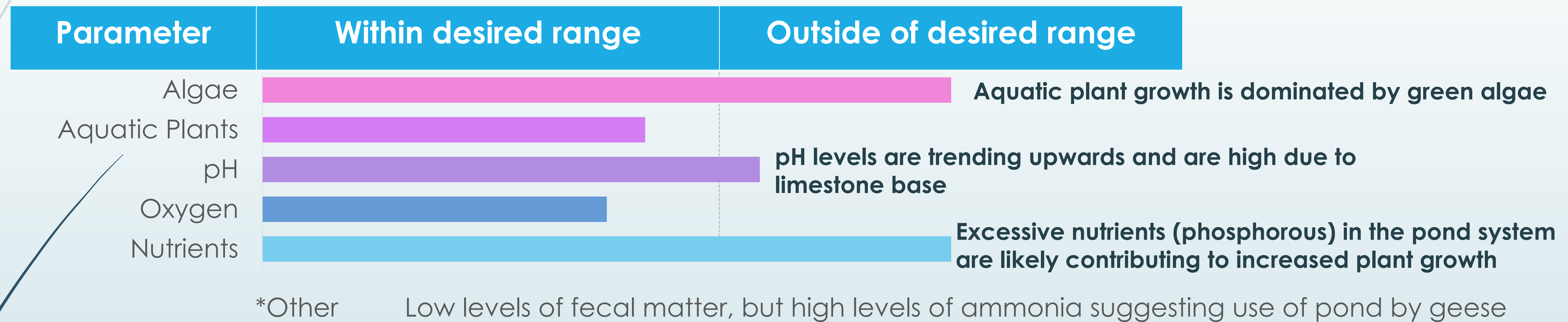
Pond B



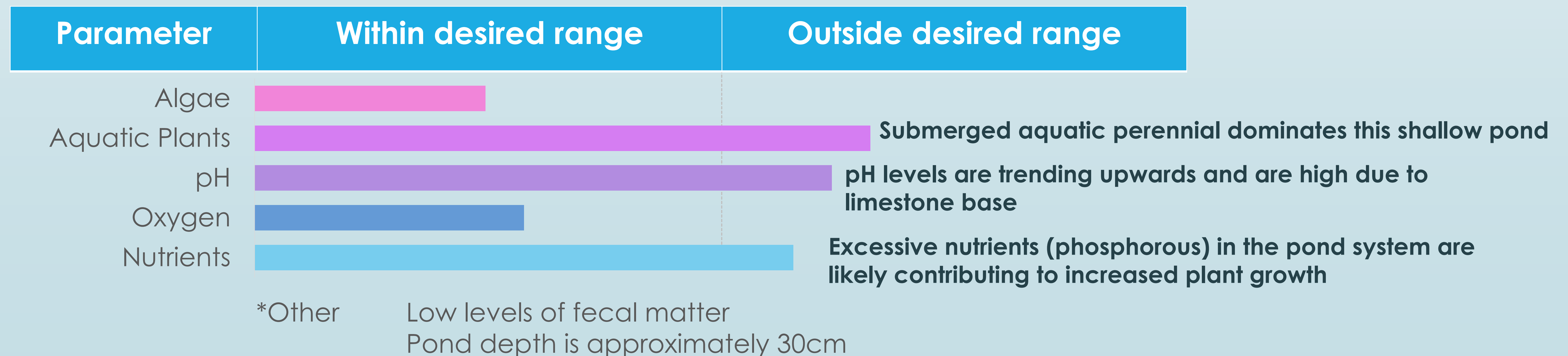
Silver Springs Water Quality



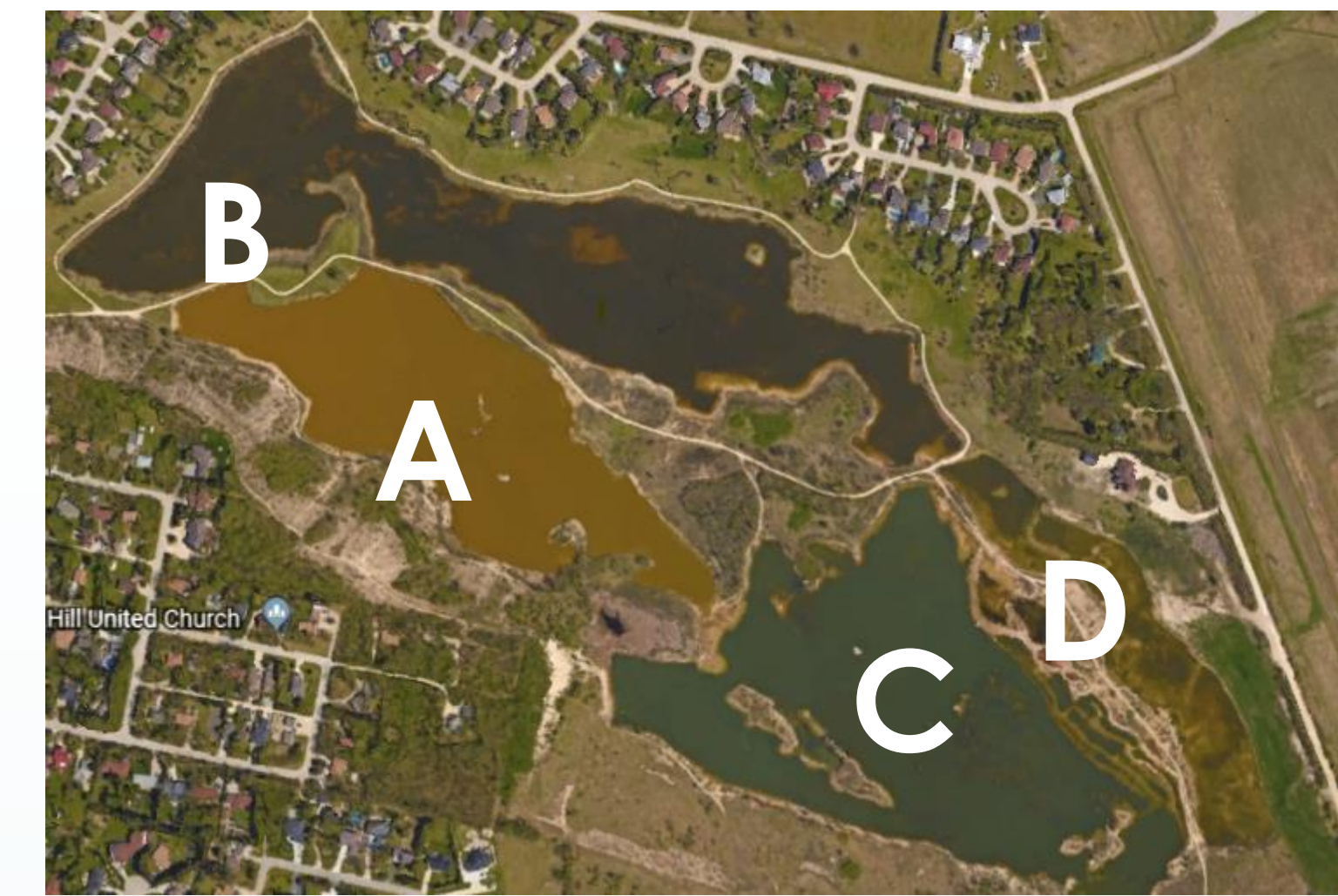
Pond C



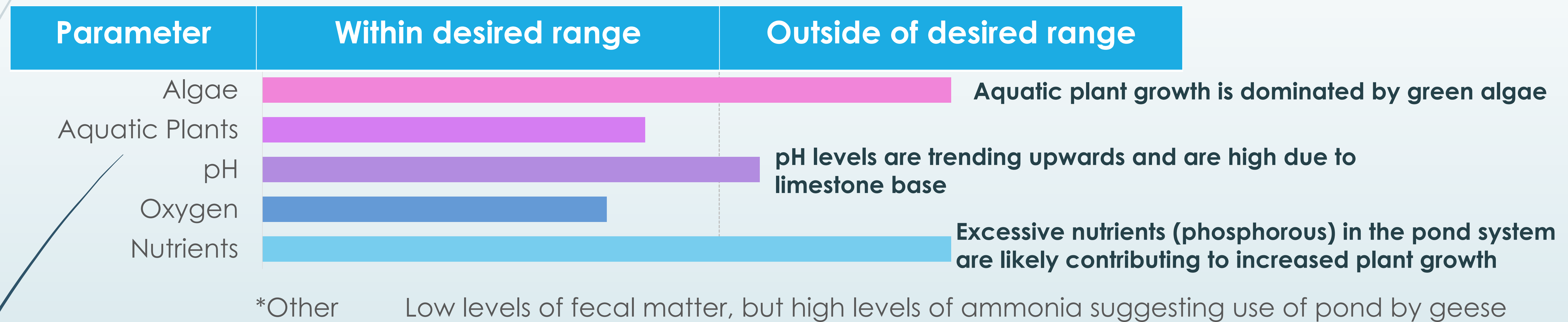
Pond D



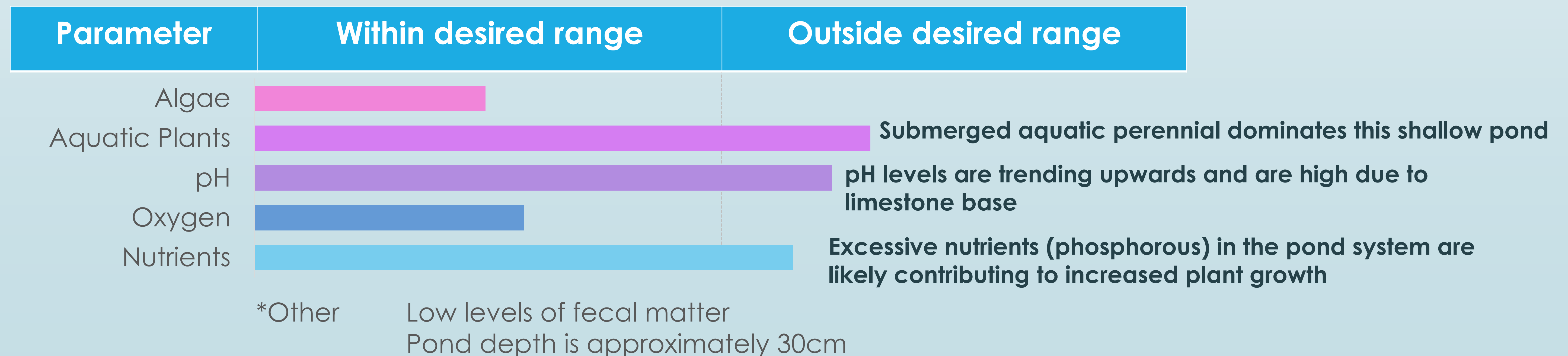
Silver Springs Water Quality



Pond C



Pond D



What changes have **YOU** seen?

Vegetation

How has the vegetation changed?

- ▶ Shoreline vegetation?
- ▶ Pond vegetation (algae, submerged aquatic plants)?



Have **you** noticed any other changes in the pond systems?

Other?

