Understanding the biology of Oak Lake

- Describe how nutrients influence the biological/chemical processes of lakes and water quality.

- Connect this to the main findings of the Hutchinson report on water quality

- NOT an exhaustive summary of the report

Hutchinson presentation and report is now available

Available at: https://www.quintewest.ca/en/your-city-hall/oak-lake-water-assessment.asp
329 pages. 83 text description – the rest are tables/figures.

Provincial and National standards available at:
https://www.ontario.ca/page/water-management-policies-guidelines-provincial-water-quality-objectives

http://ceqg-rcqe.ccme.ca/en/index.html

As long as I'm plugging websites… https://www.friendsofoaklake.com

Eutrophication

Aquatic systems: “When a body of water becomes enriched with nutrients, leading to excessive growth of algae or other plants”

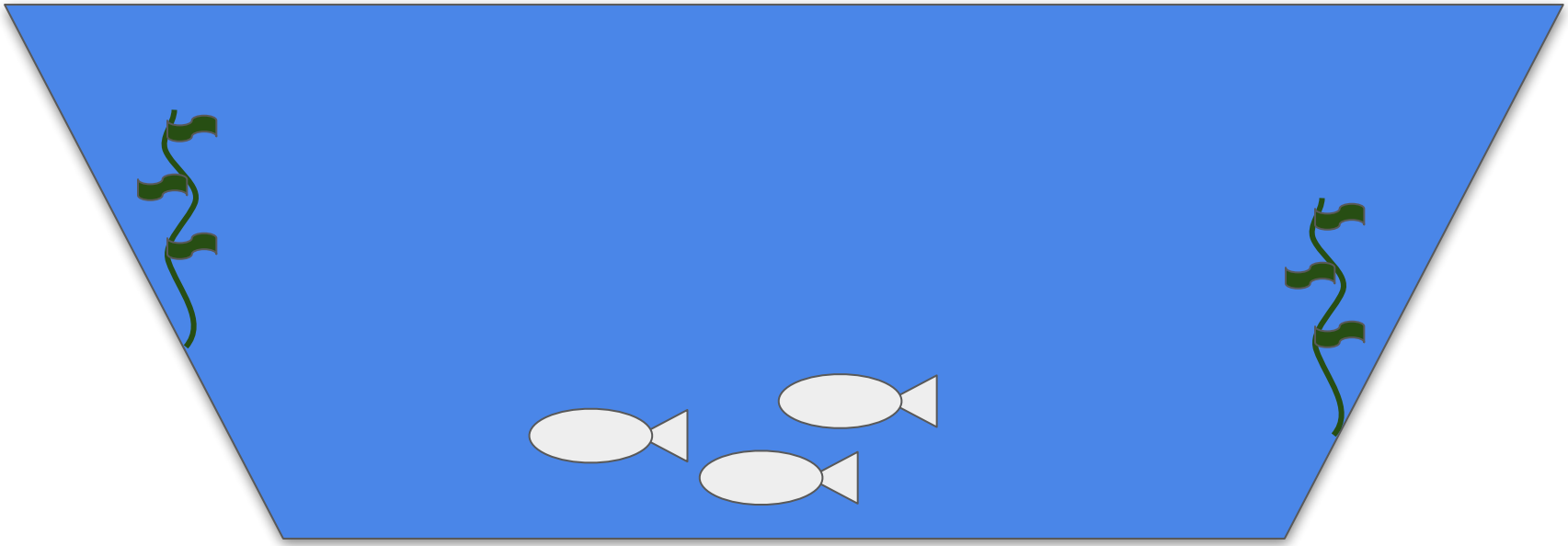
Water quality

P/N level: Normal

Dissolved oxygen: Normal

Algal growth: Normal

Fish/invert health: Normal



Water quality

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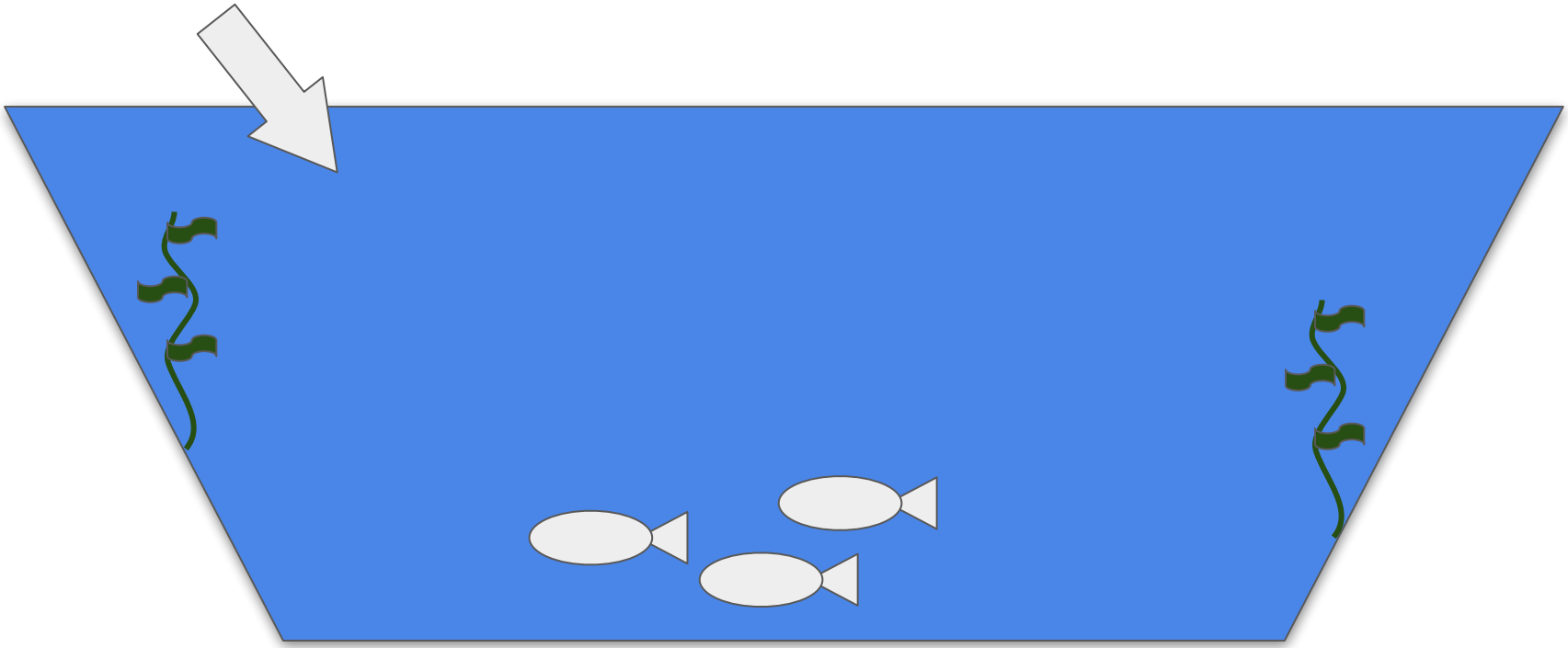
Phosphorus/Nitrogen inputs



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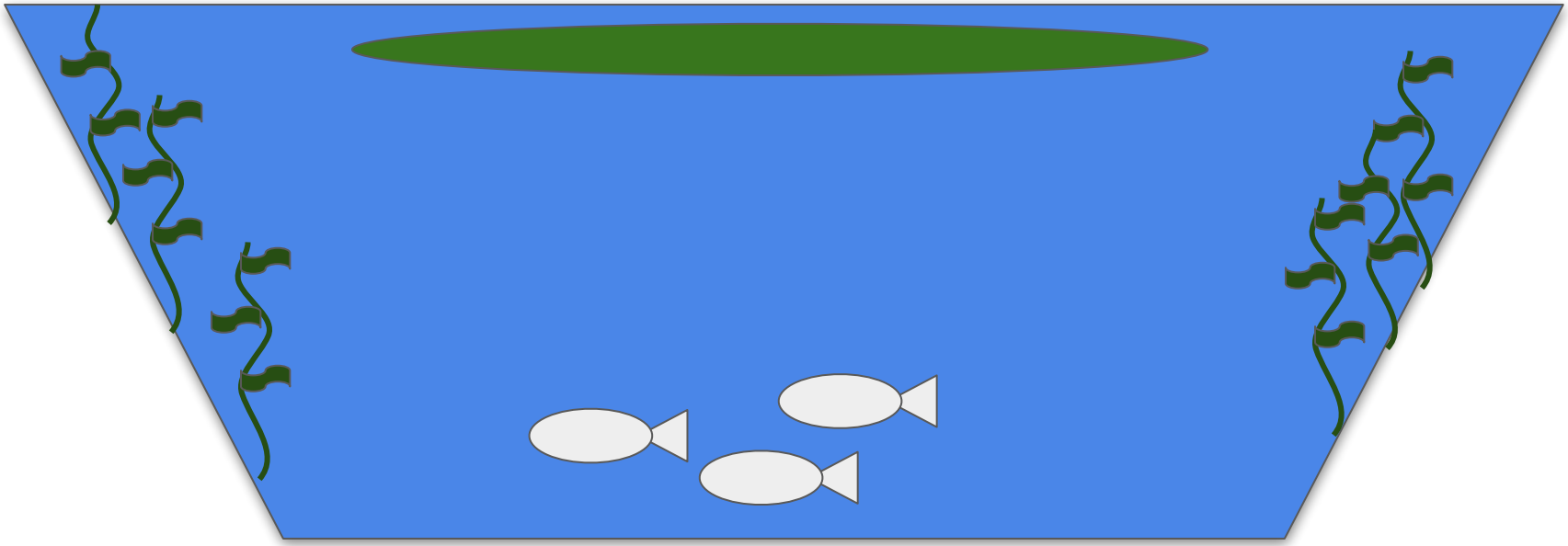

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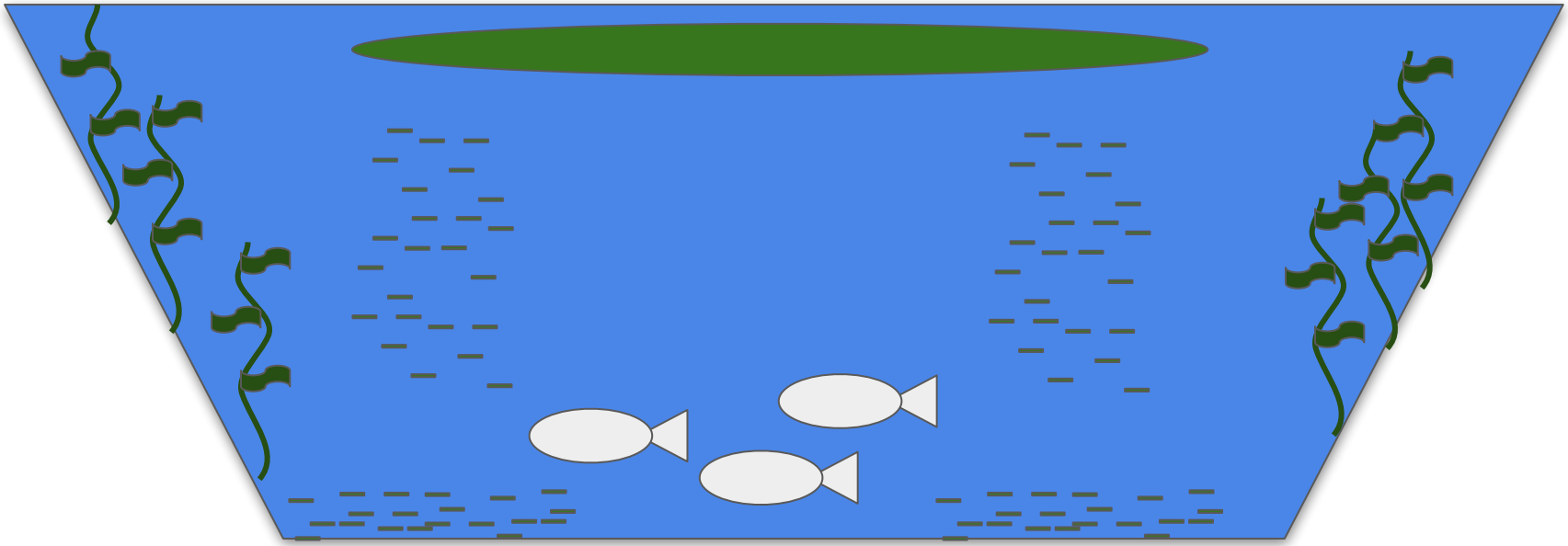

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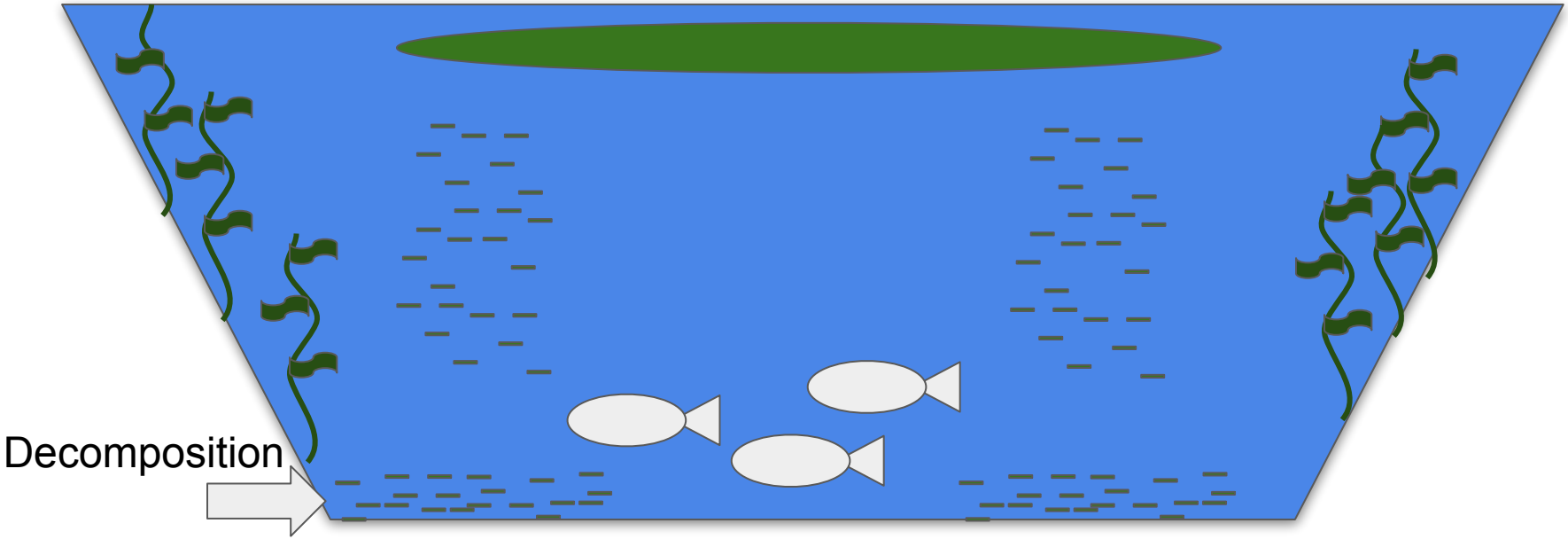

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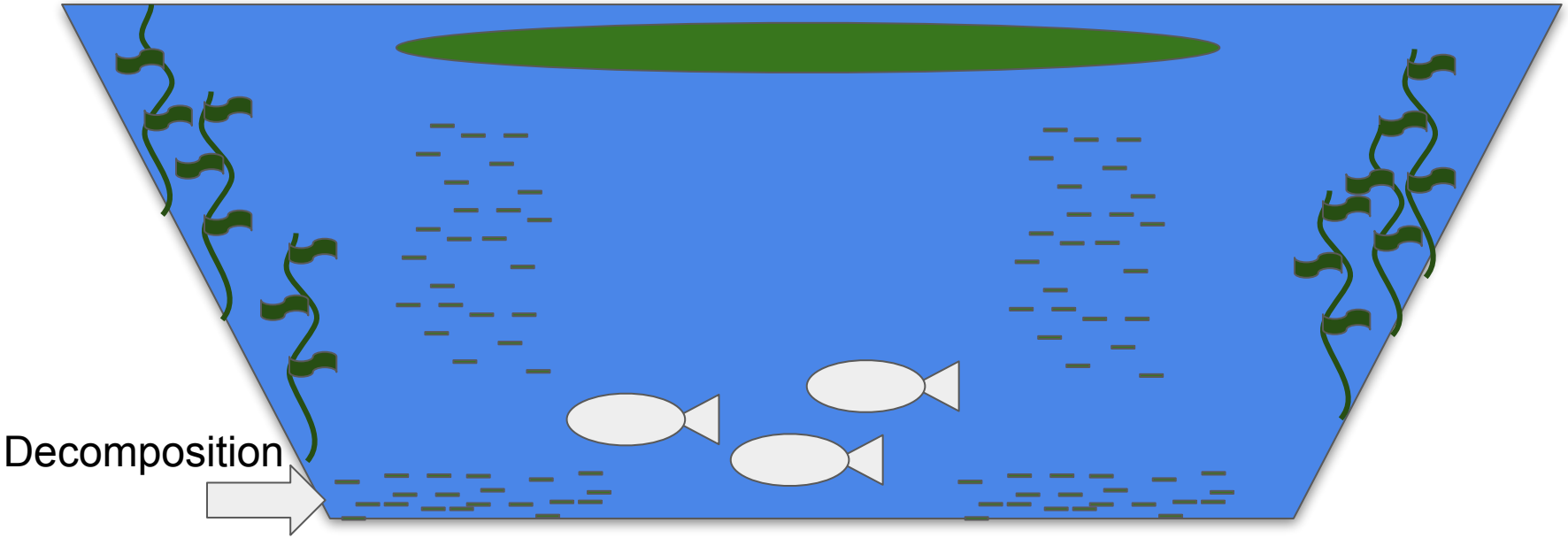

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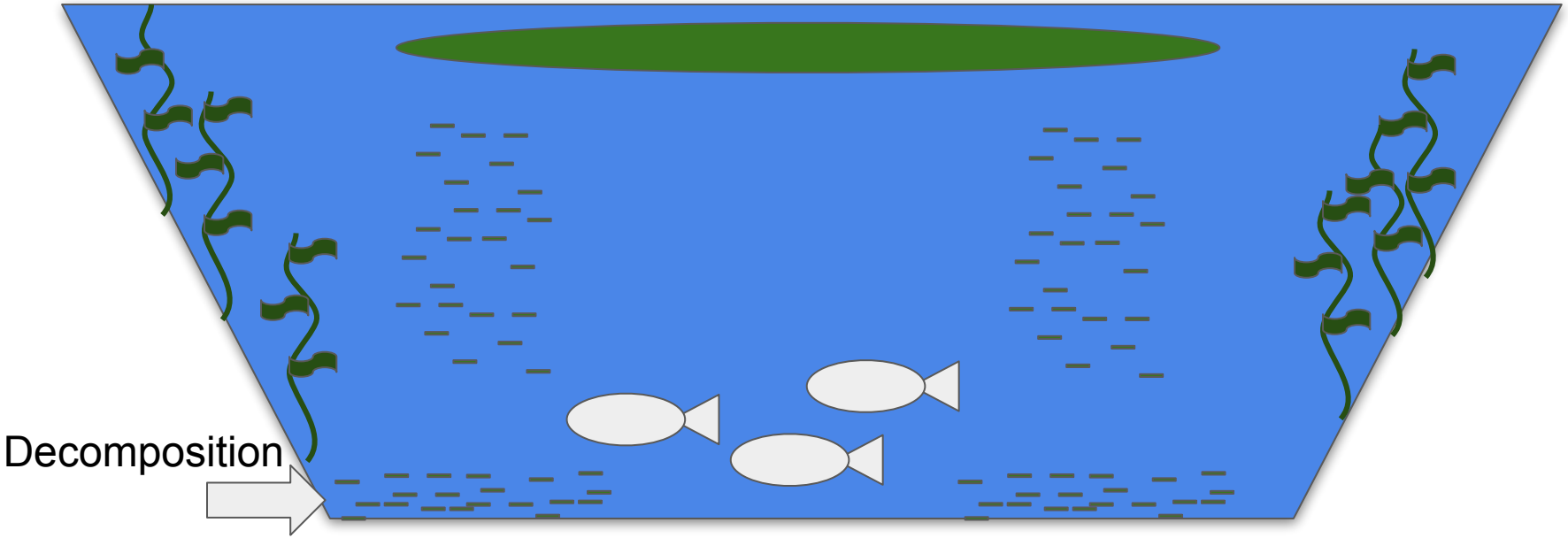


Hutchinson report partial-summary

> “Moderately” enriched from Phosphorus and Nitrogen

Hutchinson report partial-summary

> “Moderately” enriched from Phosphorus and Nitrogen

> Anoxic (i.e. oxygen too low to support life) for parts of the season

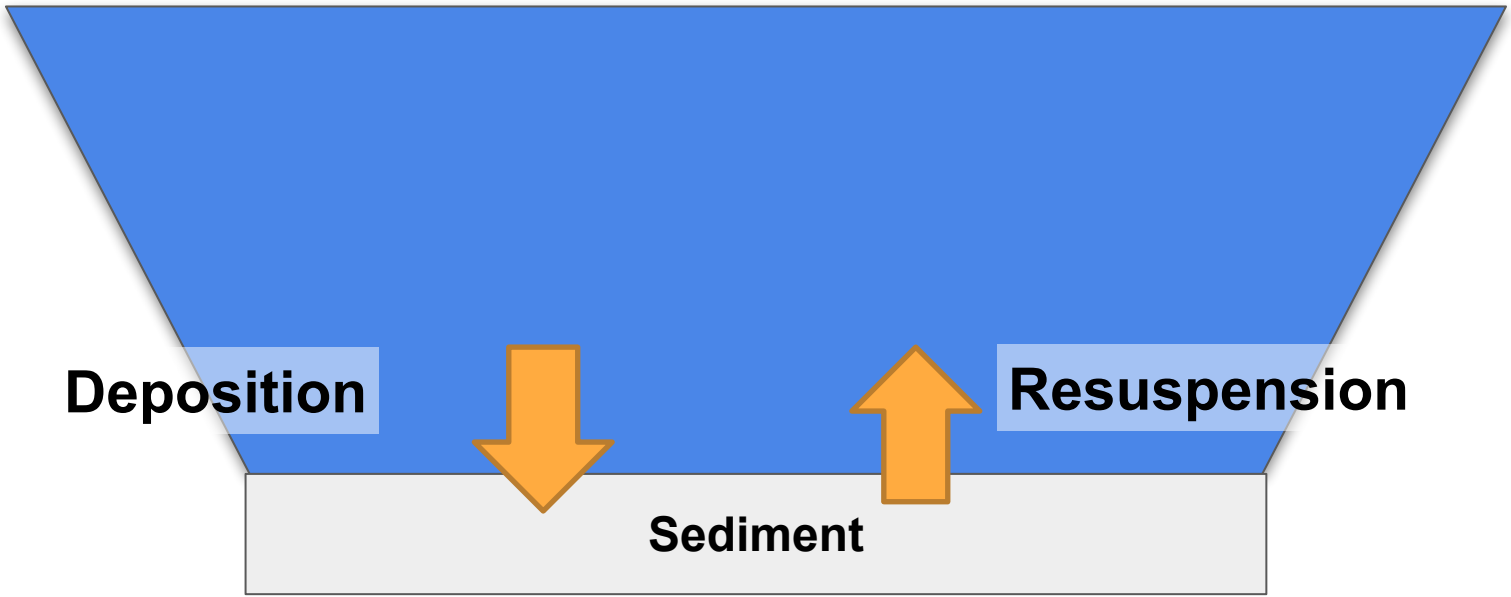
> These patterns vary across the lake and throughout the year. Generally higher nutrients around the tile drain

Hutchinson report partial-summary

> Generated Phosphorus budget

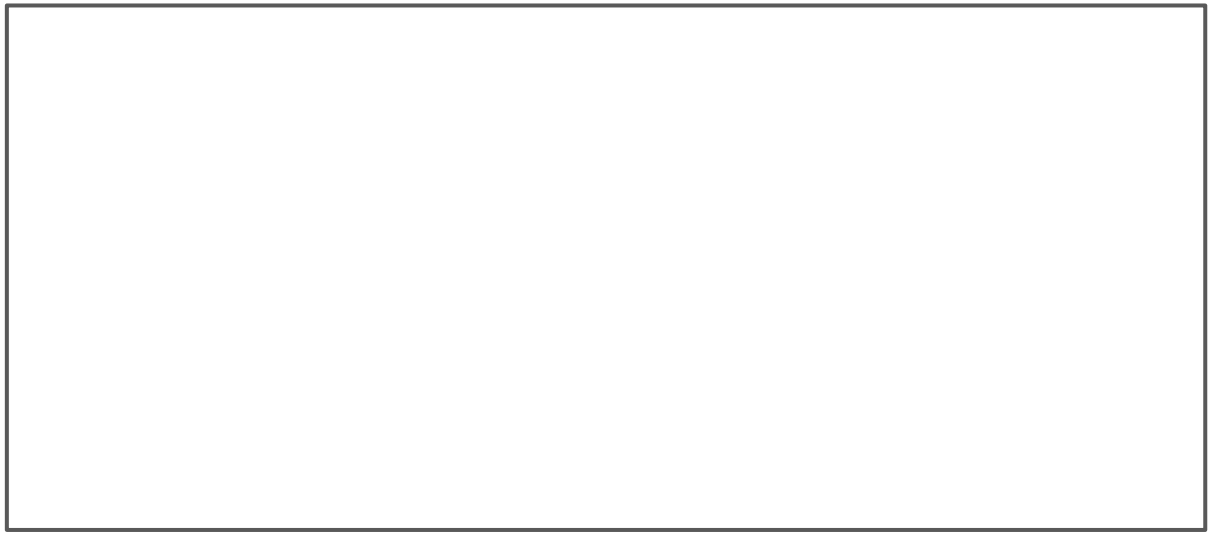
- Internal loading contributes 44% of P inputs

Internal phosphorus loading



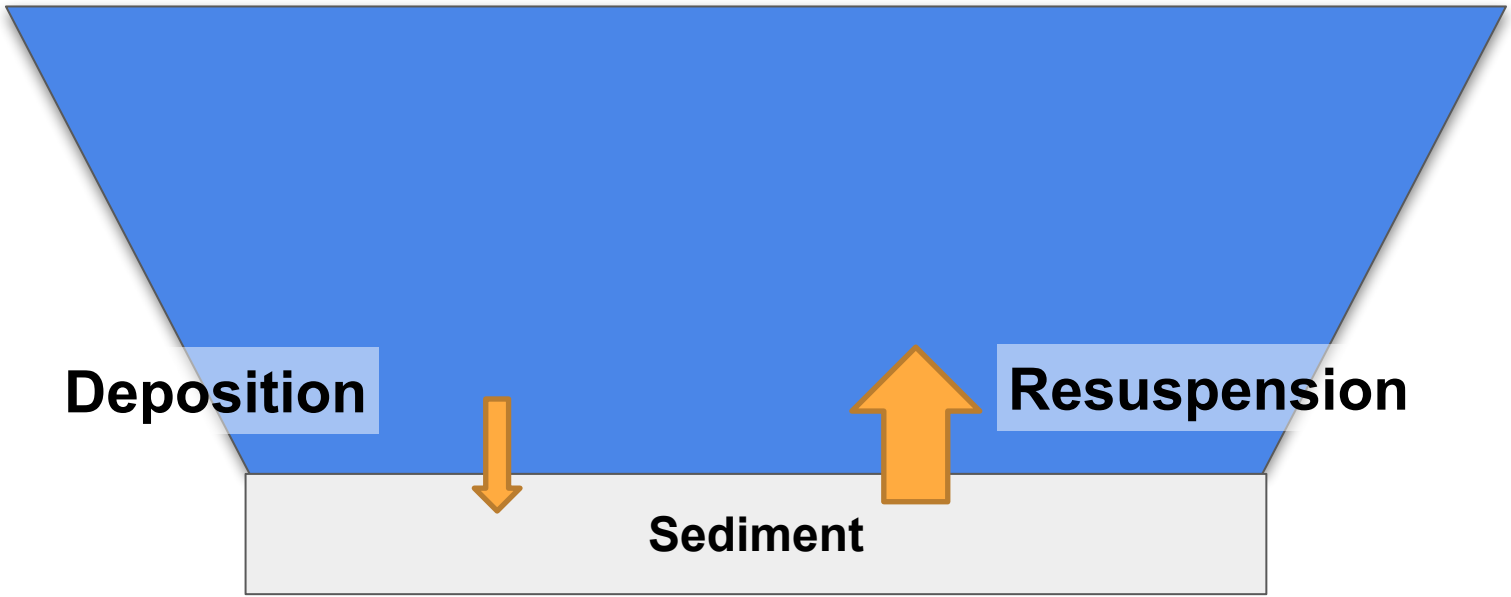
Internal phosphorus loading

P concentration in water



Reduced P inputs

Internal phosphorus loading



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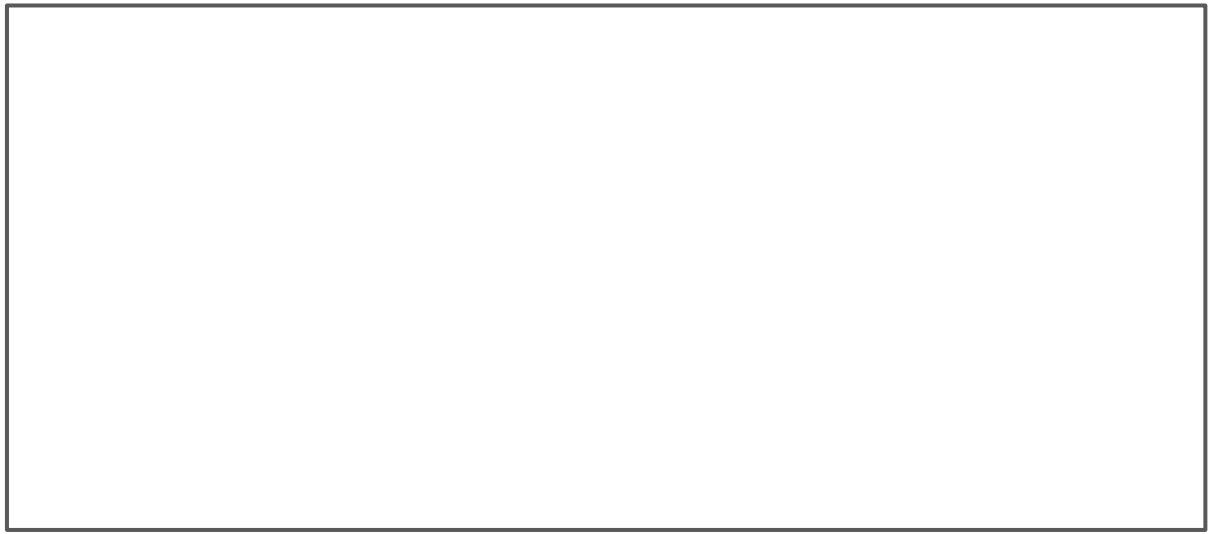


Reduced P inputs

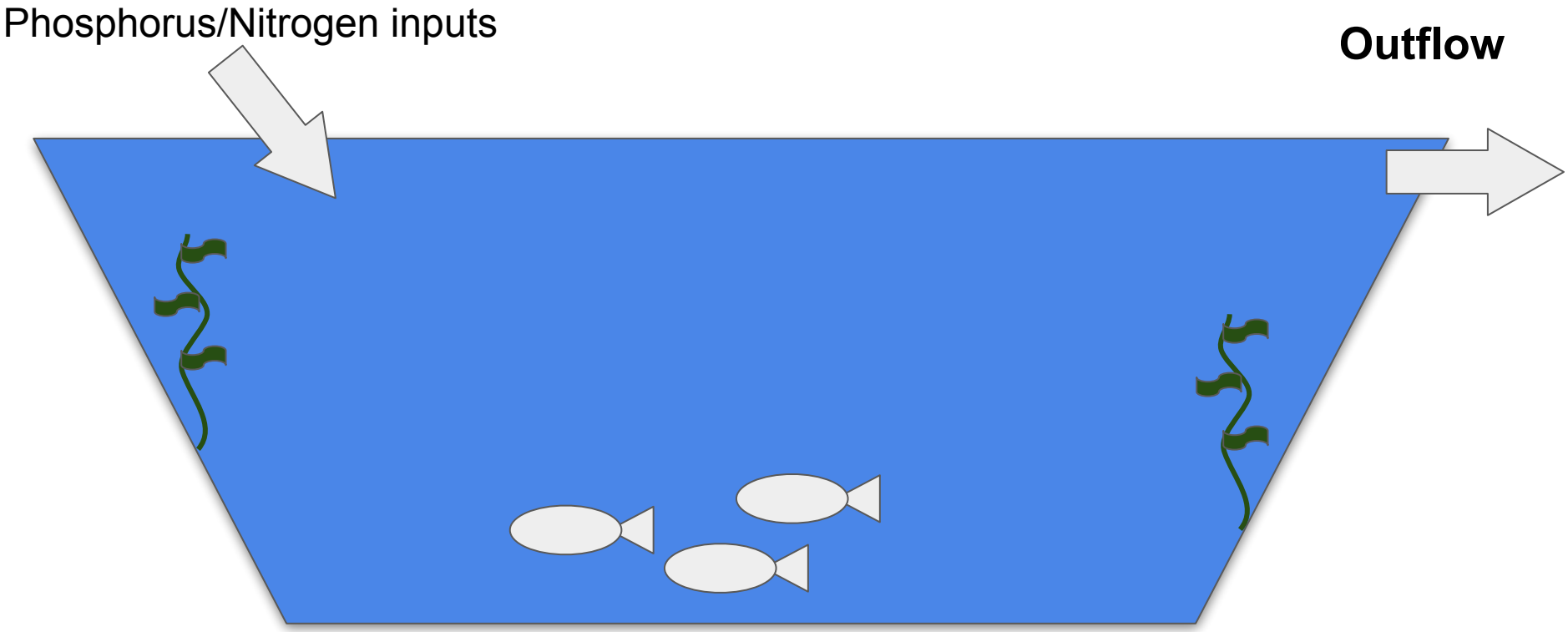
Hutchinson report partial-summary

> Phosphorus budget identified: Internal loading contributes 44% of P inputs

> Multiple recommendations for improving water quality:

- Monitoring/managing local septic systems and property development
- Diverting tile drain from farms to wetland instead of the lake and replacement of culverts

Proper drainage should be beneficial for nutrient enrichment



Concluding thoughts…

> Nutrient levels of lake linked to many things we care about

> Eutrophication is well studied concept and we have many tools to act to improve water quality of the lake

> Early, collaborative, long term action the best way to ensure a healthy lake

Thank you