

Class Environmental Assessment to Provide Additional Sanitary Sewage Capacity to Sunderland

Public Information Centre No. 1



Service Excellence for our Communities



Land Acknowledgement



We are currently located on land which has long served as a site of meeting and exchange among the Mississauga Peoples, and is the traditional and treaty territory of the Mississaugas of Scugog Island First Nation. We honour, recognize and respect this nation and Indigenous Peoples as the traditional stewards of the lands and waters on which we meet today.

Why are we here?



To learn about the **Municipal Class Environmental Assessment Process** being followed for this project

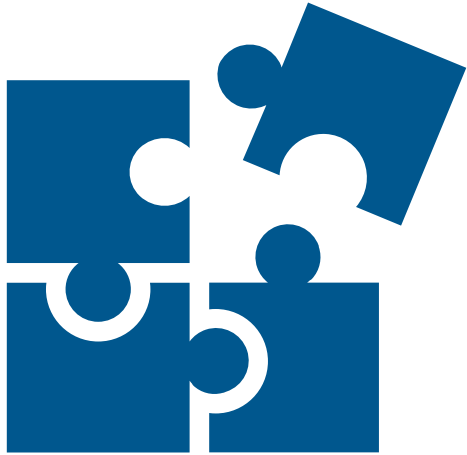


To review the results of the activities completed to date and the **Solutions being recommended**



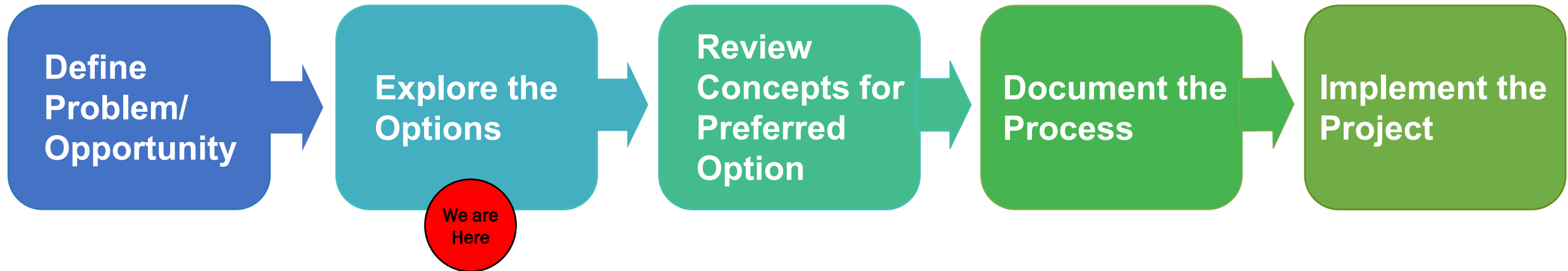
To outline how you can provide **Your Feedback** on the information presented and **Stay Informed and Involved.**

What is the Purpose of the Study?



To identify the preferred solution to provide wastewater servicing in Sunderland to 2031 and beyond.

The Municipal Class EA Process



BROCK CONCESSION ROAD 7

RESIDENTIAL
DEVELOPMENT AREA

EMPLOYMENT
DEVELOPMENT AREA

Sunderland
WPCP

HIGHWAY 7 & 12

Ex. Forcemain

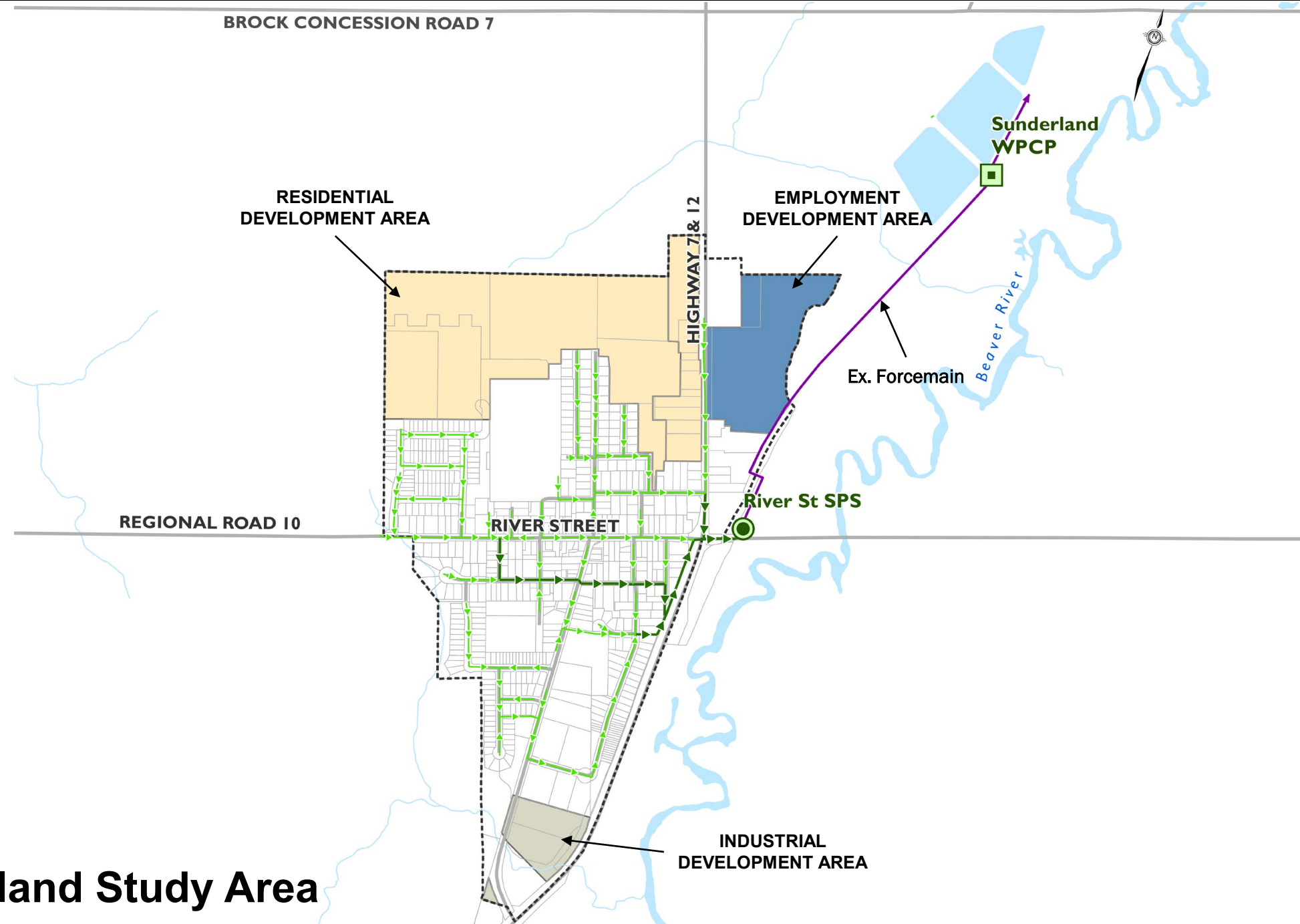
REGIONAL ROAD 10

RIVER STREET

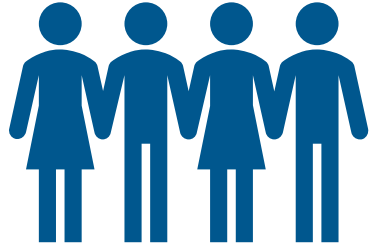
River St SPS

INDUSTRIAL
DEVELOPMENT AREA

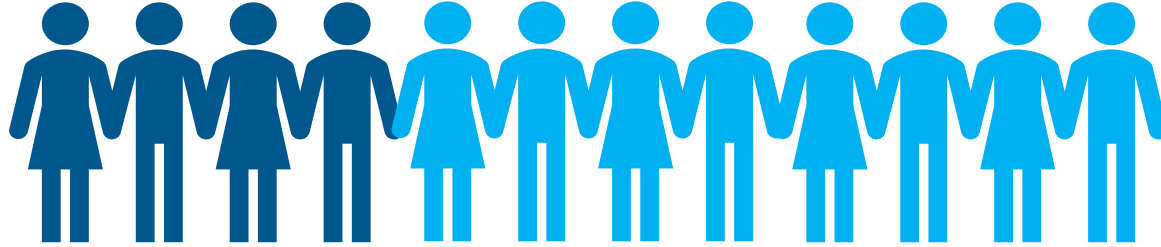
Sunderland Study Area



Future Population Estimates

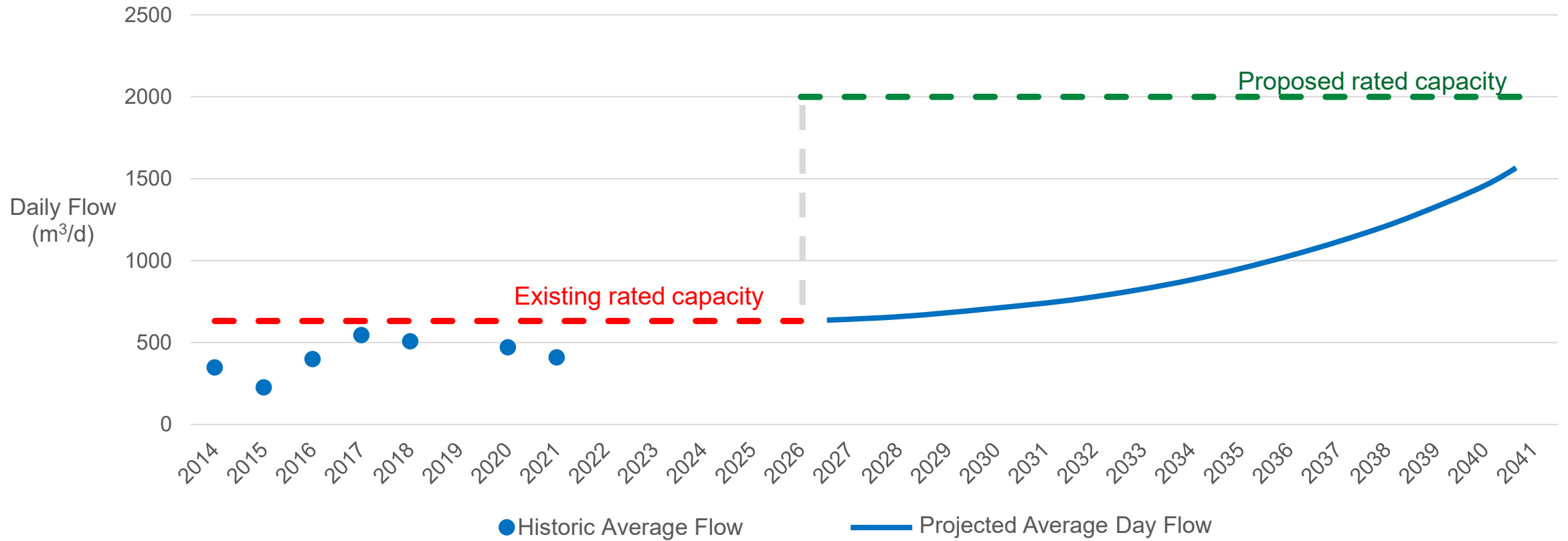


2020
Existing Population



Ultimate Buildout
Proposed Population (~3X Existing)

Projected Flow for Sunderland WPCP



Problem/Opportunity Statement



Infrastructure improvements and expansion are required for the Sunderland wastewater servicing system to provide additional capacity to support growth forecasts within the existing urban boundary, up to the ultimate build-out.

Study Breakdown



The Class EA study for Sunderland needs to address two questions:

- 1) How do we convey wastewater flows?
- 2) How do we treat the wastewater flows?

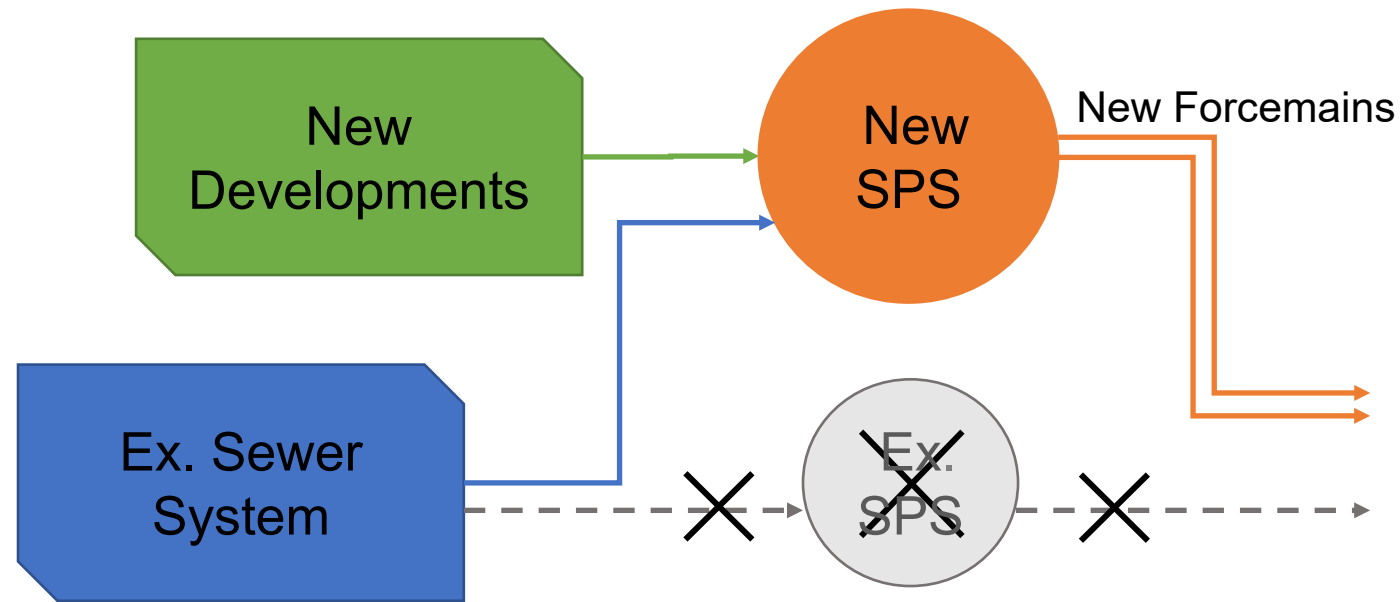
How do we select the preferred option to convey flows?

Does this option have ability to **meet long-term capacity needs**?

Does the option **efficiently use existing infrastructure**?

Can the option be **implemented without major disruption** to the current servicing system?

Pumping Option 1 – New SPS and Forcemain, Decommission Existing SPS



Does this option have ability to **meet long-term capacity needs**?



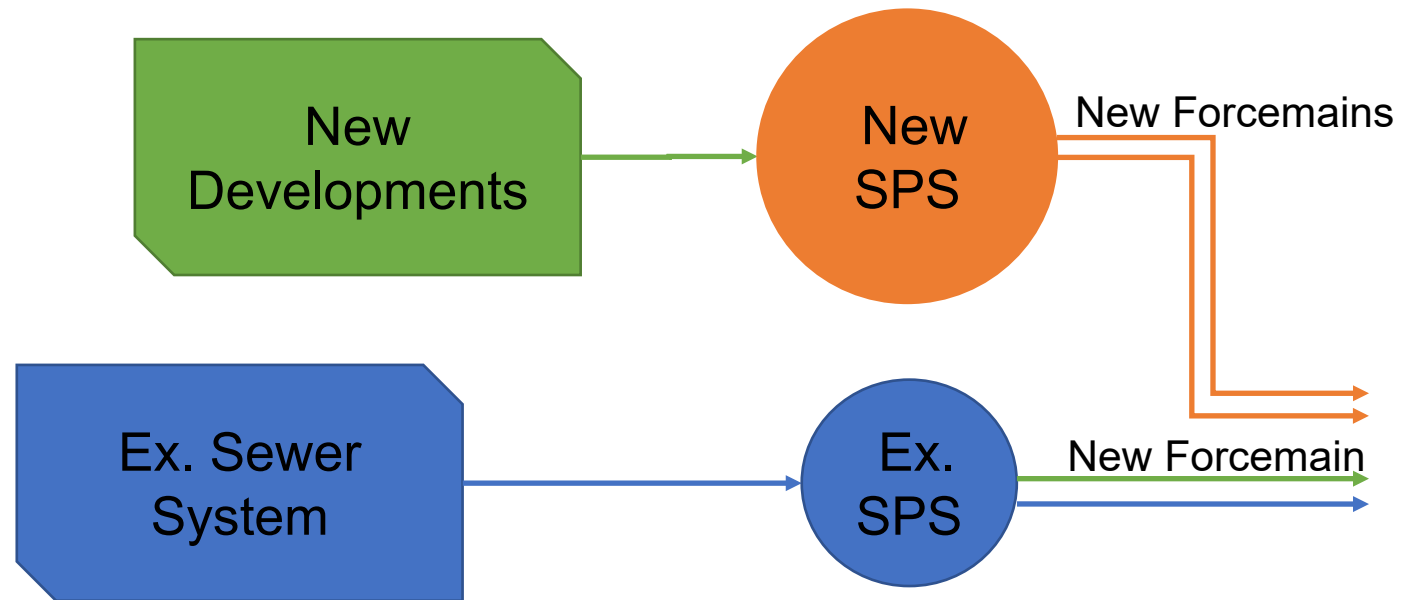
Does the option **efficiently use existing infrastructure**?



Can the option be **implemented without major disruption** to the current servicing system?



Pumping Option 2 – New SPS and Forcemain, Twin Forcemain for Existing SPS



Does this option have ability to **meet long-term capacity needs**?



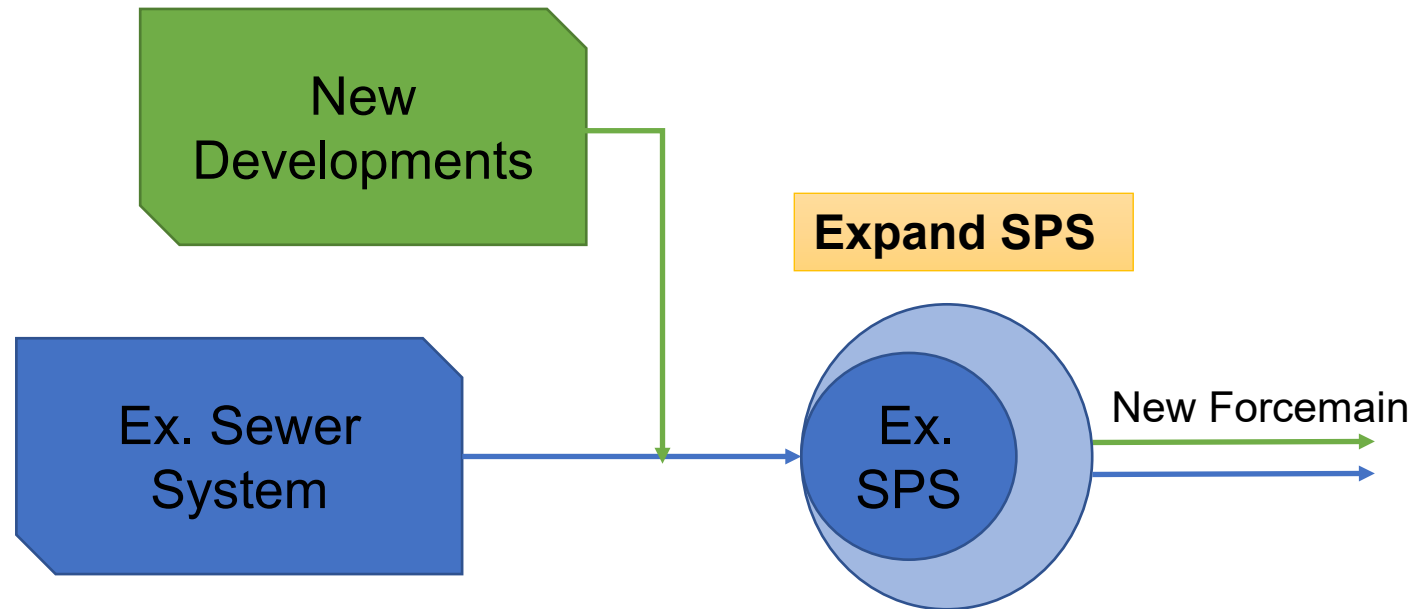
Does the option **efficiently use existing infrastructure**?



Can the option be **implemented without major disruption** to the current servicing system?



Pumping Option 3 – Expand Existing SPS and Twin Forcemain



Does this option have ability to **meet long-term capacity needs**?



Does the option **efficiently use existing infrastructure**?



Can the option be **implemented without major disruption** to the current servicing system?



How do we Convey Flows? Comparison of Options

Preferred

Option 1 – New SPS
and Forcemain,
Decommission
Existing SPS

Option 2 – New SPS
and Forcemain,
Twin Forcemain for
Existing SPS

Option 3 – Expand
Existing SPS and
Twin Forcemain

Does this option have ability to **meet long-term capacity needs?**

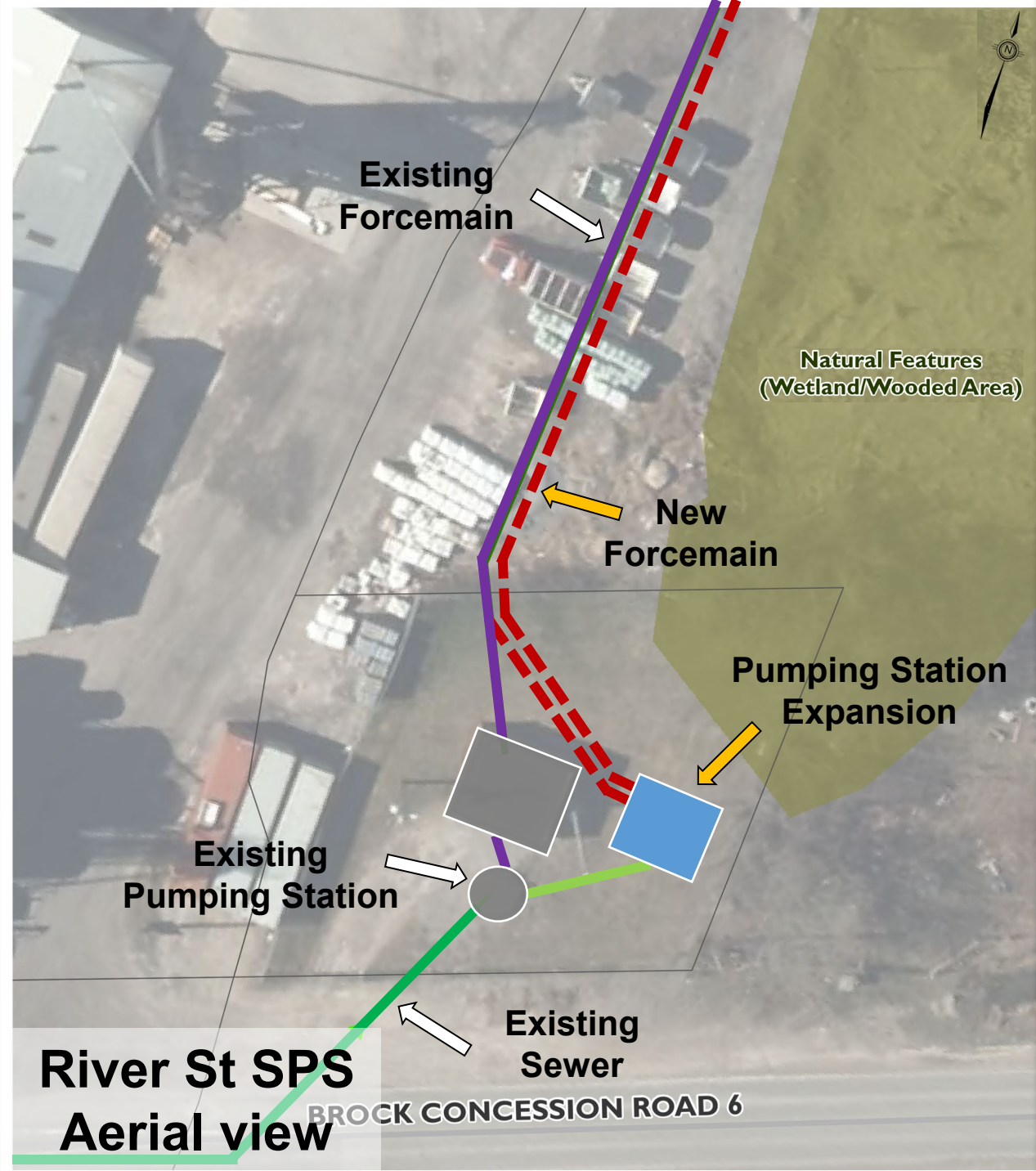


Does the option **efficiently use existing infrastructure?**

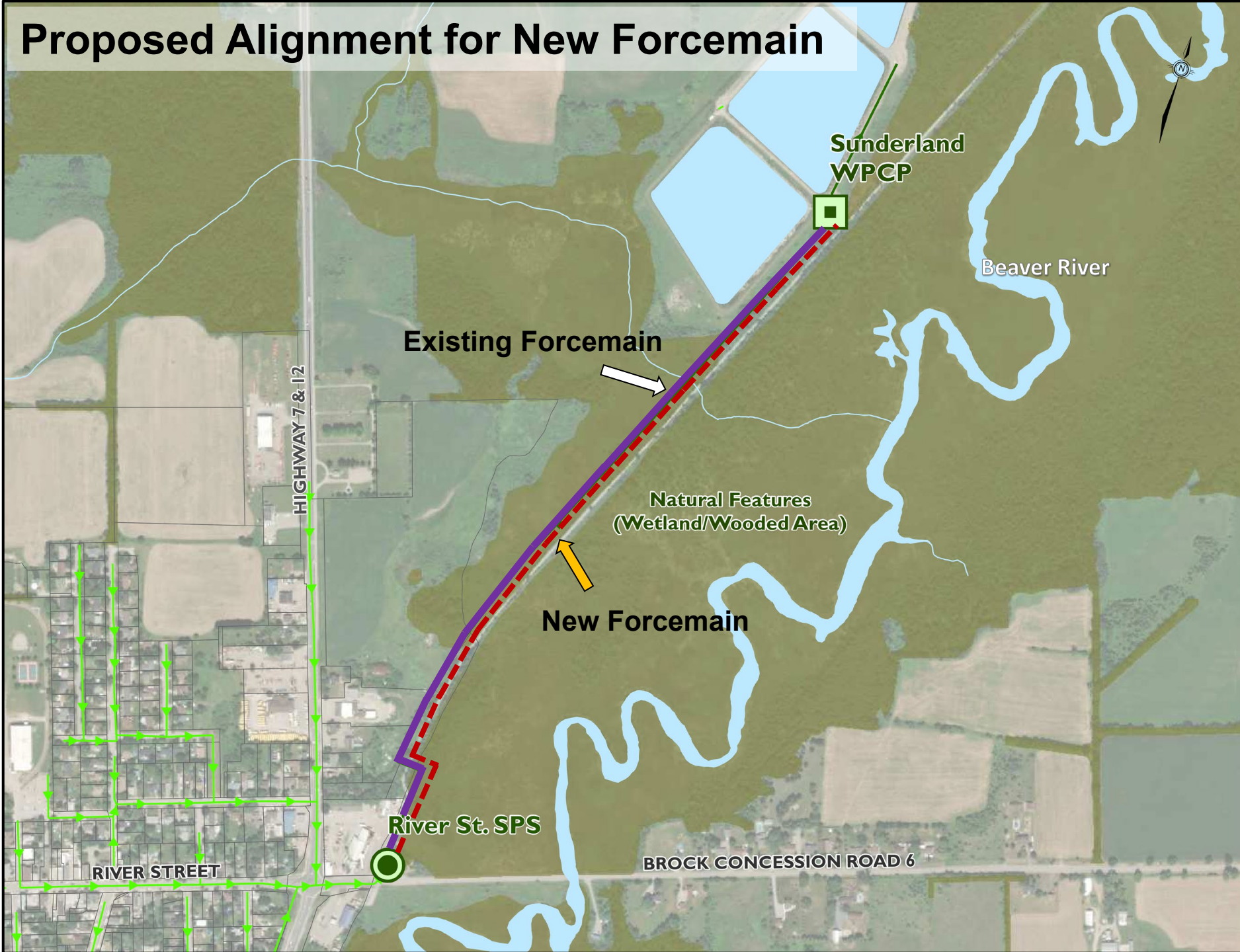


Can the option be **implemented without major disruption** to the current servicing system?





Proposed Alignment for New Forcemain



Study Breakdown (Continued)



The Class EA study for Sunderland needs to address two questions:

- 1) How do we convey wastewater flows?
- 2) How do we treat the wastewater flows?

How do we select the preferred option to treat flows?

Does this option have ability to **meet long-term capacity needs**?

Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?

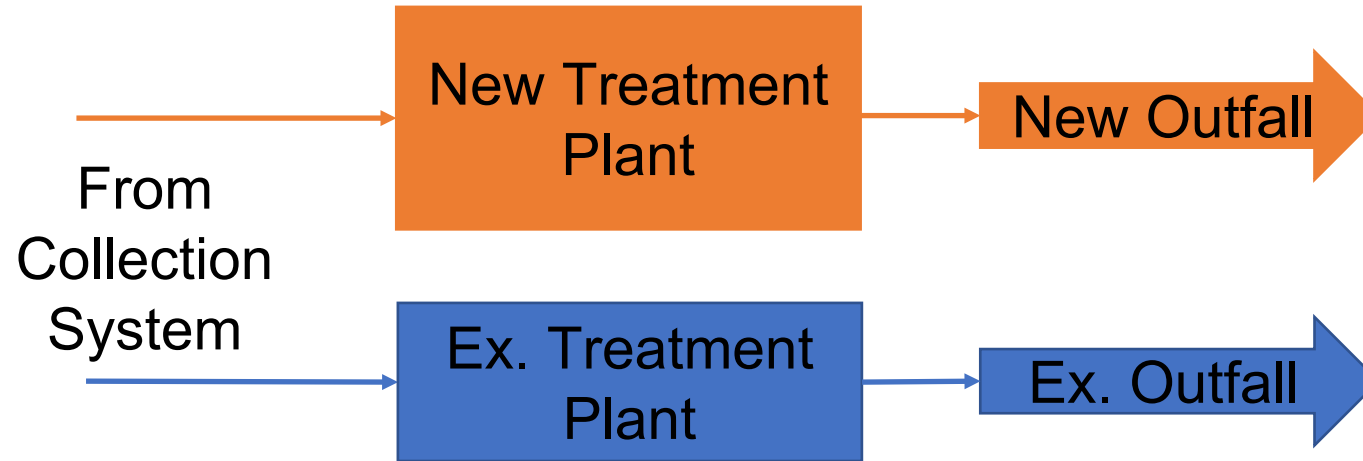
Does the option **efficiently use existing infrastructure**?

Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?

Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?

Treatment Option 1

New WPCP, Keep Existing WPCP



Does this option have ability to **meet long-term capacity needs**?



Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?



Does the option **efficiently use existing infrastructure**?



Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?



Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?



Treatment Option 2

New WPCP, Decommission Existing WPCP



Does this option have ability to **meet long-term capacity needs**?



Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?



Does the option **efficiently use existing infrastructure**?



Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?

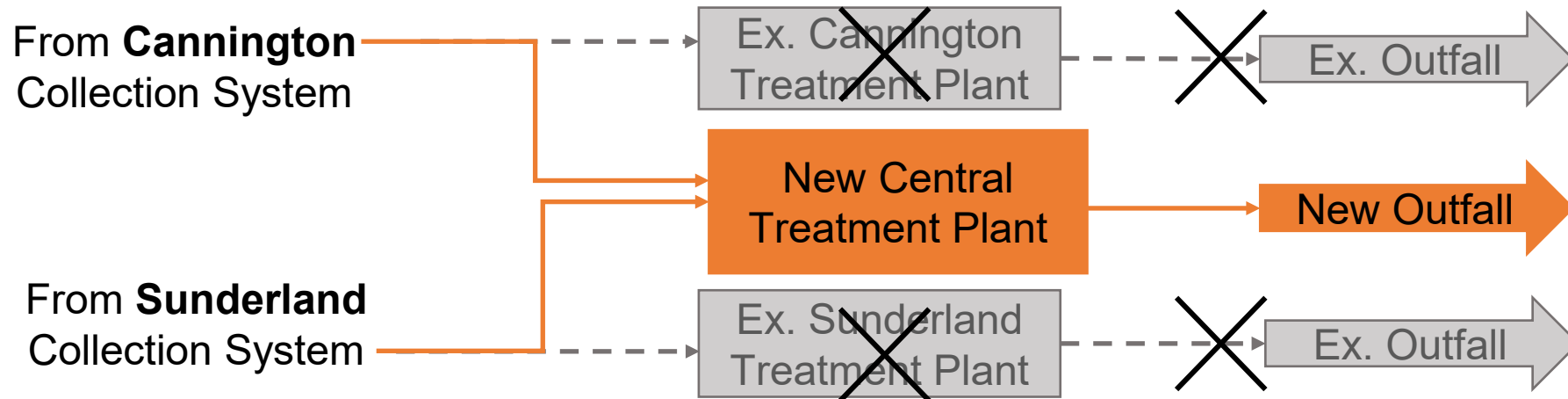


Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?



Treatment Option 3

New Central WPCP, Decommission Existing WPCPs



Does this option have ability to **meet long-term capacity needs**?



Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?



Does the option **efficiently use existing infrastructure**?



Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?

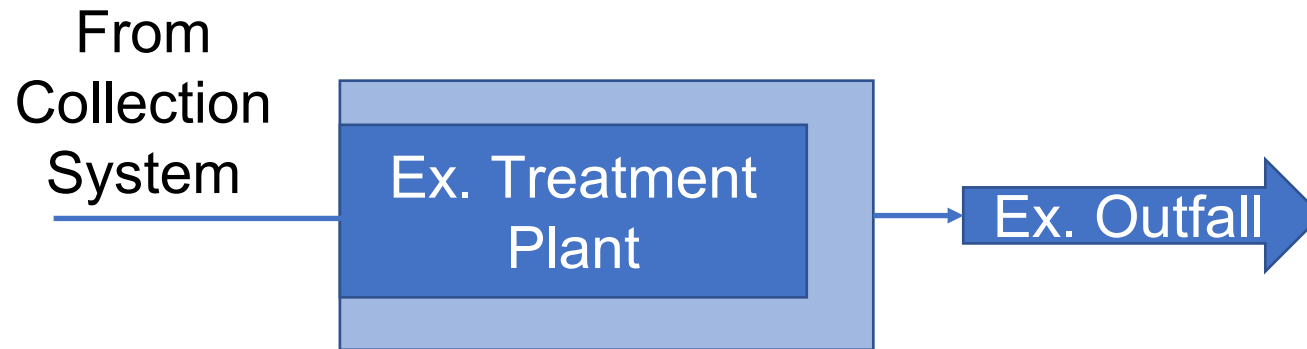


Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?



Treatment Option 4

Expand Existing WPCP



Does this option have ability to **meet long-term capacity needs**?



Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?



Does the option **efficiently use existing infrastructure**?



Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?



Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?



How do we Treat Flows? Comparison of Options

Preferred

	Option 1 – New WPCP, Keep Existing WPCP	Option 2 – New WPCP, Decommission Existing WPCP	Option 3 – New Central WPCP, Decommission Existing WPCPs	Option 4 – Expand Existing WPCP
Does this option have ability to meet long-term capacity needs ?	✓	✓	✓	✓
Does this option allow the discharge to consistently meet effluent quality objectives and discharge policies under existing and projected load conditions?	✓	✓	✓	✓
Does the option efficiently use existing infrastructure ?	✗	✗	✗	✓
Is this option compatible with existing treatment processes and operational practices , such that implementation will not significantly impact existing operations ?	✗	✗	✗	✓
Can the servicing strategy be implemented without major disruption to current sanitary sewage servicing?	✓	✓	✓	✓

Next Steps for Evaluation of Treatment Alternatives



We need to determine the following:

1. What are the **treatment objectives**?
2. What is the preferred **expansion strategy**?
3. What is the preferred **treatment technology**?
4. What is the preferred **design concept**?

What are the Treatment Objectives for Sunderland WPCP?

- An **Assimilative Capacity Study** of the Beaver River was completed to determine the treatment requirements for the Sunderland WPCP.
- The Sunderland WPCP will require upgrades to accommodate the higher flows and will need to meet more stringent treatment requirements:
 - Stricter **Ammonia** Treatment Objectives
 - Stricter **Total Phosphorus** Treatment Objectives

What are the Treatment Objectives for Sunderland WPCP? (Continued)

Parameter	Proposed Objectives	Proposed Limits
CBOD₅ (mg/L)	5	10
Suspended Solids (mg/L)	5	10
Total Ammonia Nitrogen (TAN) (mg/L)	1.5 (Jul 1 – Aug 31) 4.0 (Sep 1 – Nov 30) 7.0 (Dec 1 – Apr 30) 5.0 (May 1 – Jun 30)	2.0 (Jul 1 – Aug 31) 5.1 (Sep 1 – Nov 30) 9.2 (Dec 1 – Apr 30) 6.6 (May 1 – Jun 30)
TP (mg/L)	0.06	0.08
<i>E. coli</i> (number/100 mL)	100	200
pH	N/A	6.5 – 8.5

How Can we Expand the Existing Plant?

- **Facultative Lagoon System:** Add more lagoons
- **Mechanical Treatment System:** Construct a mechanical plant
- **Aerated Lagoon (Hybrid) System:** Install mechanical equipment in existing lagoons

Difference Between Facultative, Mechanical, and Aerated Systems

Facultative Lagoon

- Natural process (passive)
- Larger footprint
- Simple operations
- Seasonal discharge
- Typical for smaller communities

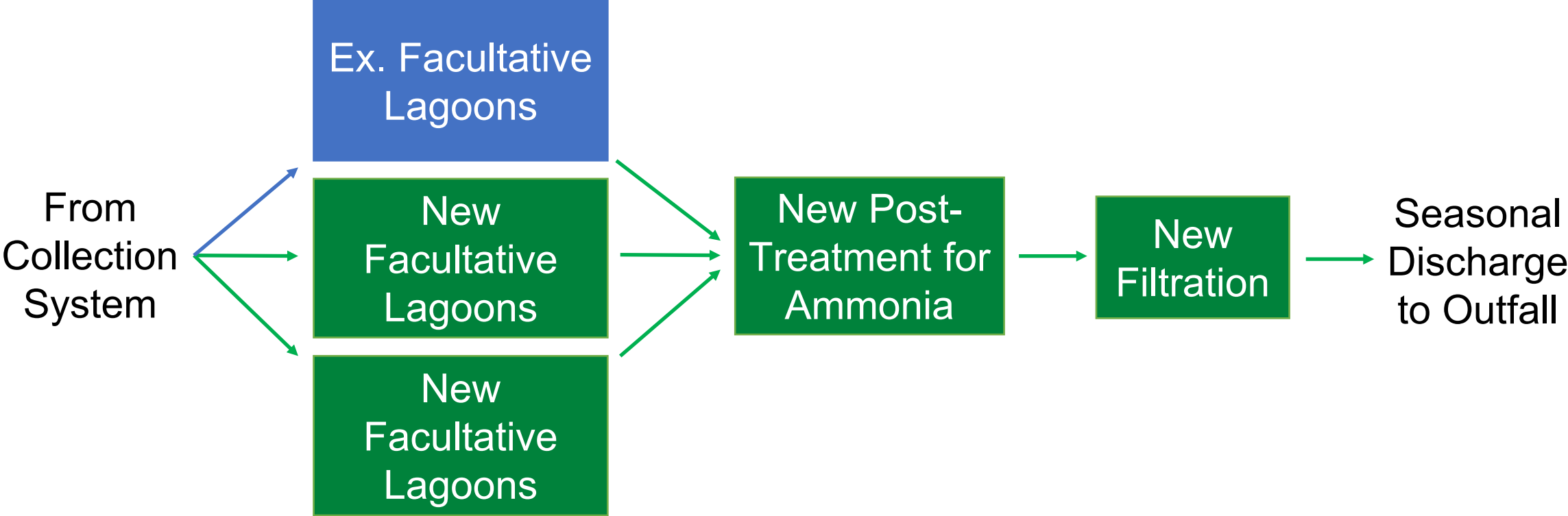
Mechanical WPCP

- Mechanical process
- Smaller footprint
- More operationally complex
- Continuous discharge
- Typical for larger communities

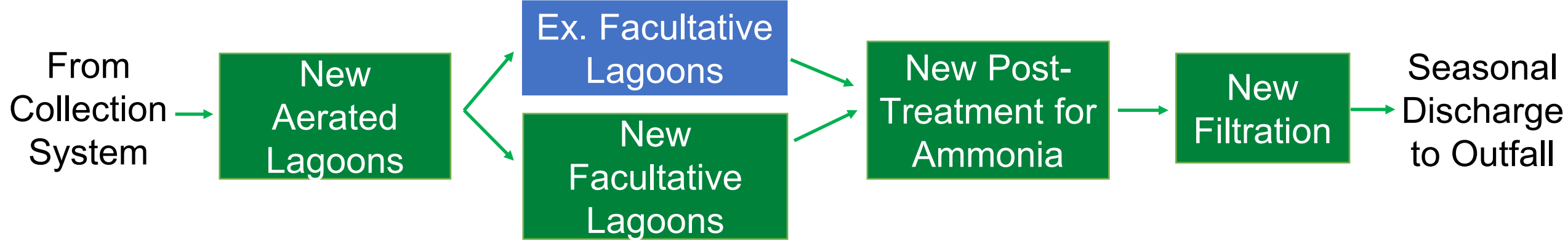
Aerated Lagoon

- Combination of natural and mechanical processes
- Smaller footprint than lagoon system, larger footprint than mechanical system
- Similar operations to mechanical system
- Continuous discharge
- Good option to expand existing lagoon facilities

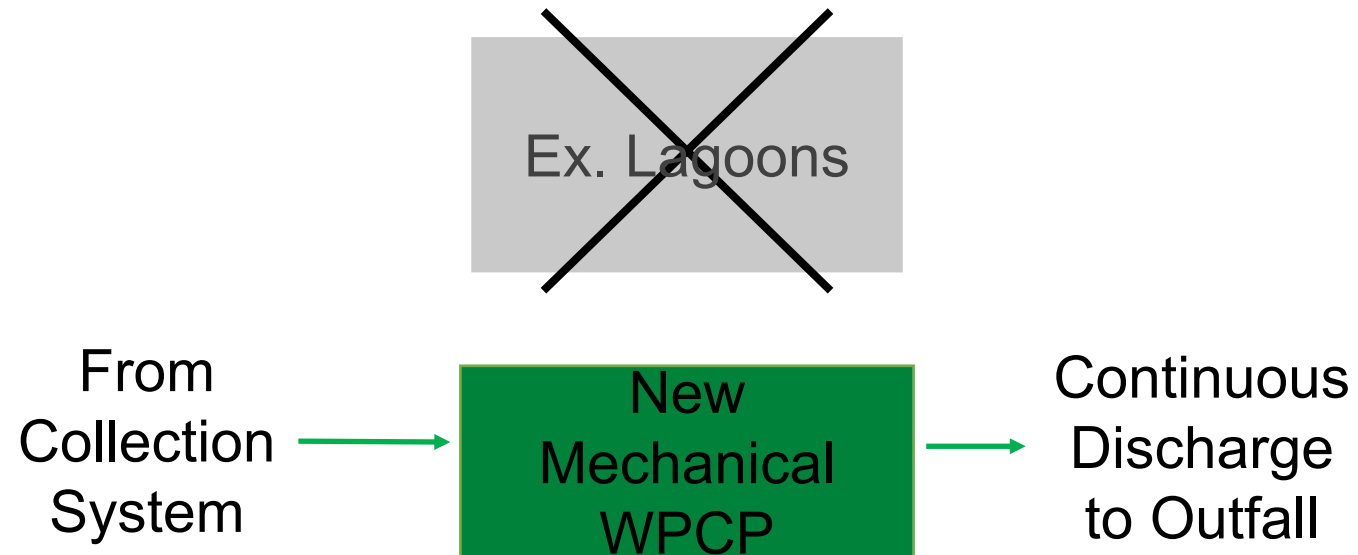
Expansion Strategy 1 – New Lagoons, Post-Treatment and Filtration with Seasonal Discharge



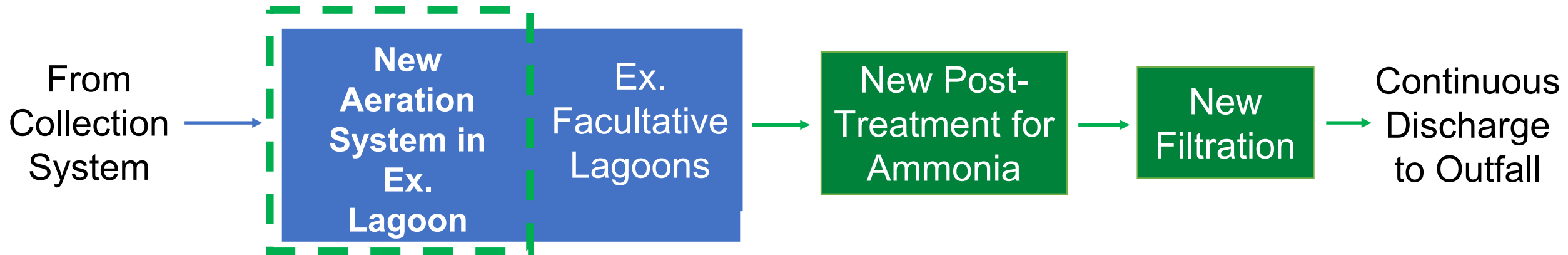
Expansion Strategy 2 – New Aerated Lagoons, Post-Treatment and Filtration with Seasonal Discharge



Expansion Strategy 3 – New Mechanical Plant with Continuous Discharge



Expansion Strategy 4 –Retrofit Existing Lagoons w/ Aeration, Post-Treatment and Filtration with Continuous Discharge



How do we select the preferred expansion strategy?

Does this option provide the ability to **meet long-term capacity needs**?

Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?

Does the option **efficiently use existing infrastructure**?

Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?

Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?

Comparison of Expansion Strategies

Preferred

**Option 1 –
New Lagoons,
Post-Treatment &
Filtration w/
Seasonal
Discharge**

**Option 2 –
New Aerated
Lagoons, Post-
Treatment &
Filtration w/
Seasonal Discharge**

**Option 3 –
New Mechanical
Plant w/
Continuous
Discharge**

**Option 4 –
Retrofit Ex. Lagoons
w/ Aeration, Post-
Treatment & Filtration
w/ Continuous
Discharge**

Does this option have ability to **meet long-term capacity needs**?



Does this option allow the discharge to consistently **meet effluent quality objectives and discharge policies** under existing and projected load conditions?



Does the option **efficiently use existing infrastructure**?



Is this option **compatible with existing treatment processes and operational practices**, such that implementation will **not significantly impact existing operations**?

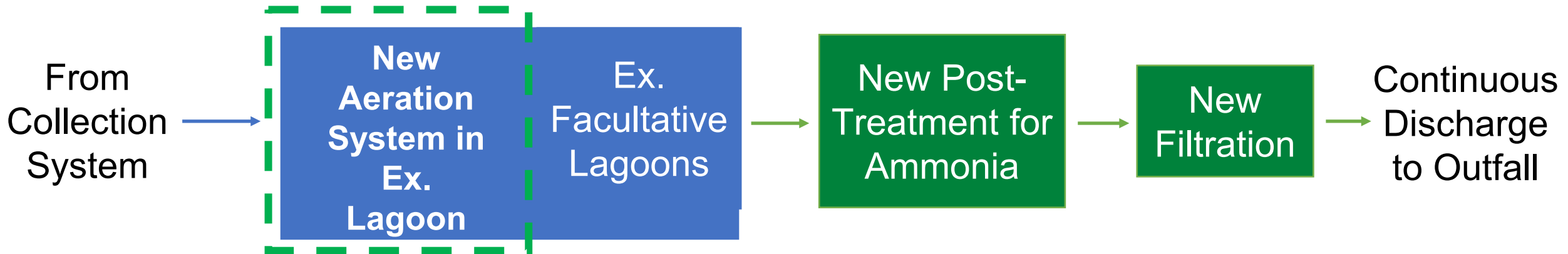


Can the servicing strategy be implemented **without major disruption** to current sanitary sewage servicing?

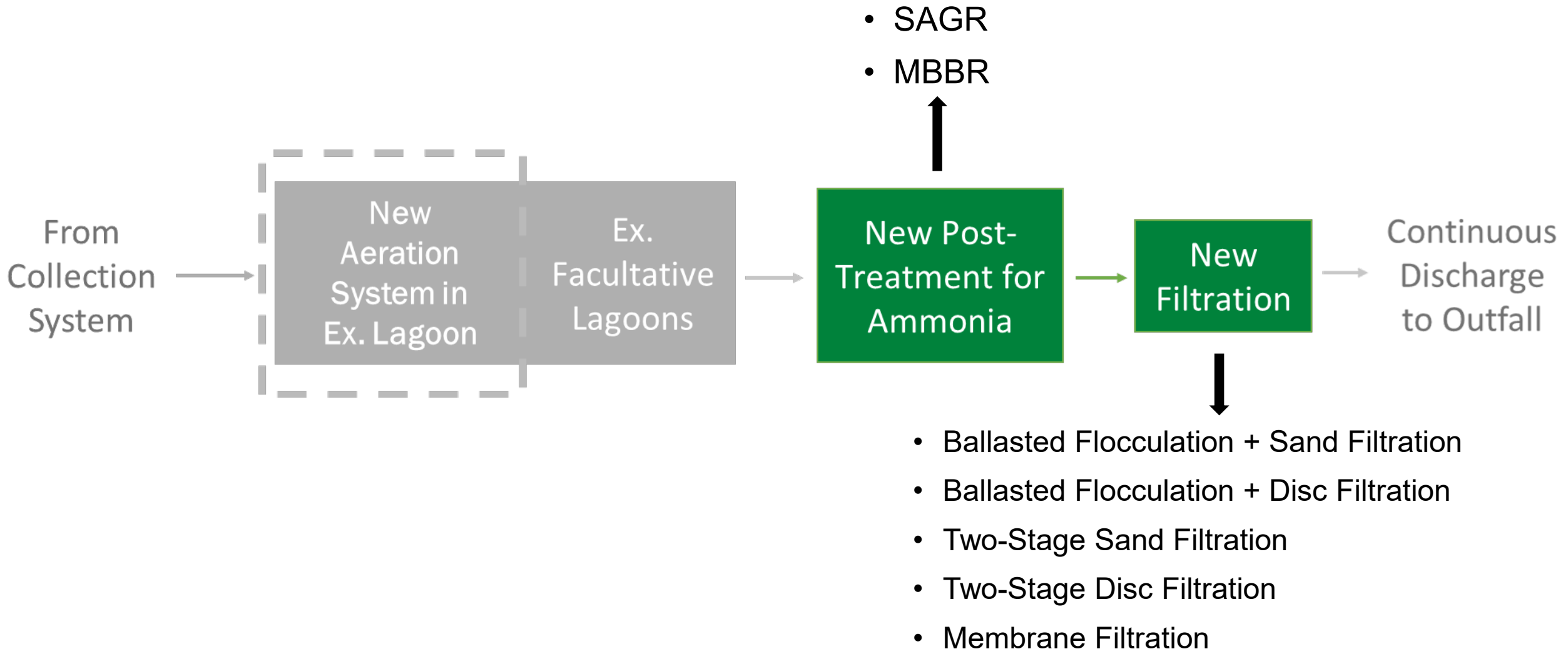


Preferred Expansion Strategy

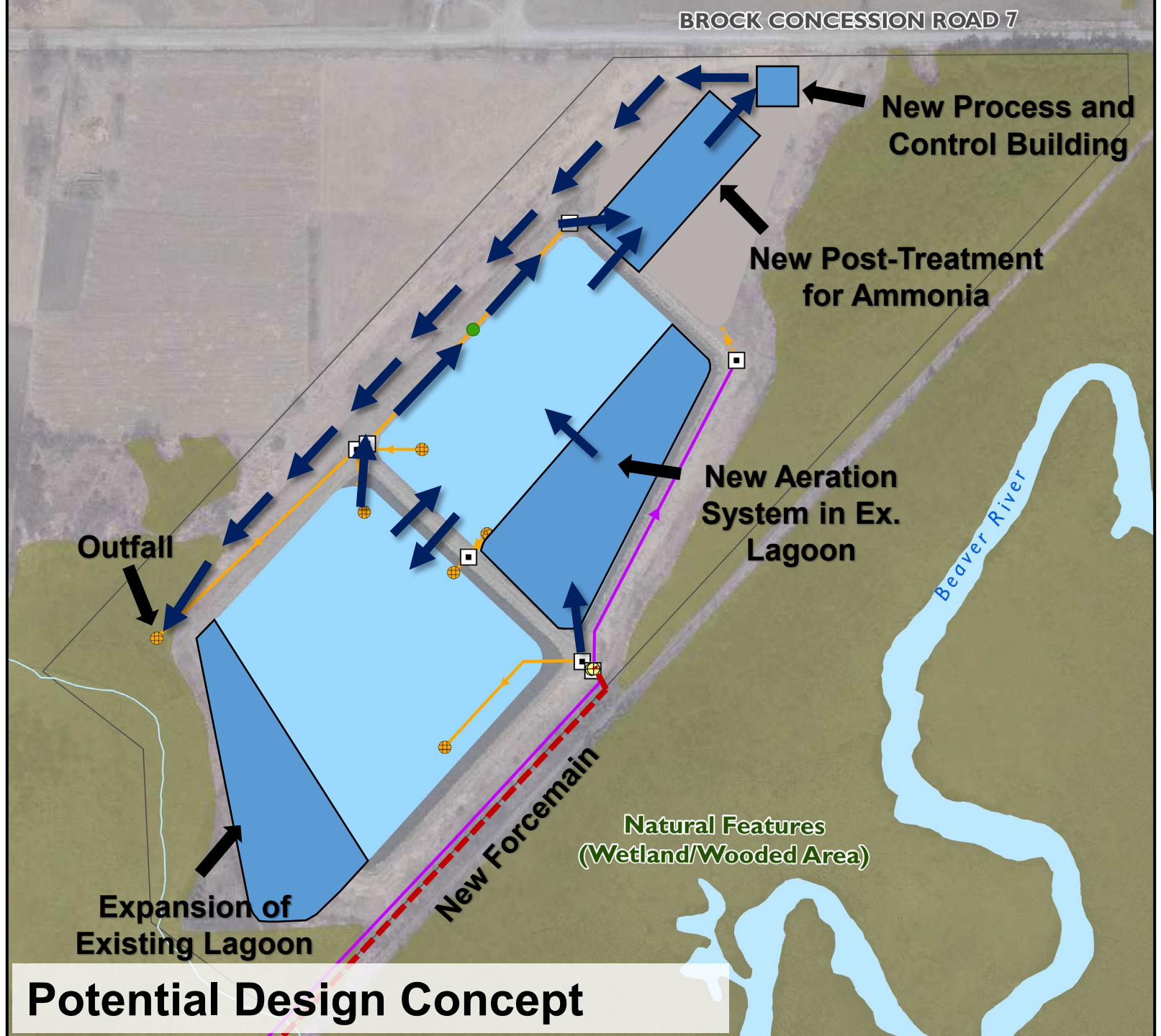
Retrofit existing lagoons with aeration, post-treatment and filtration;
convert to continuous discharge.



Treatment Technology Options



BROCK CONCESSION ROAD 7



Potential Design Concept

Envision

The **Envision** framework from the Institute for Sustainable Infrastructure will be used to evaluate the options.



Purpose
Wellbeing
Community



LEADERSHIP
10 Credits

Collaboration
Management
Planning



RESOURCE ALLOCATION
14 Credits

Materials
Energy
Water



NATURAL WORLD
15 Credits

Siting
Land + Water
Biodiversity



CLIMATE AND RISK
8 Credits

Emissions
Resilience



Thank you for Participating

Stay Involved!

Please email your Questions and Comments to Kelly.Murphy@durham.ca
Provide your responses by March 31, 2023.

For more information about this project, please visit our website:
durham.ca/BrockSewageCapacity