WELCOME

Public Information Centre #2

Town of Hanover

Wastewater Treatment Plant Upgrades

Hanover
Ontario, Canada

Schedule C Class Environmental Assessment

Ainley GROUP CONSULTING ENGINEERS PLANNERS

Class Environmental Assessment (EA) Process

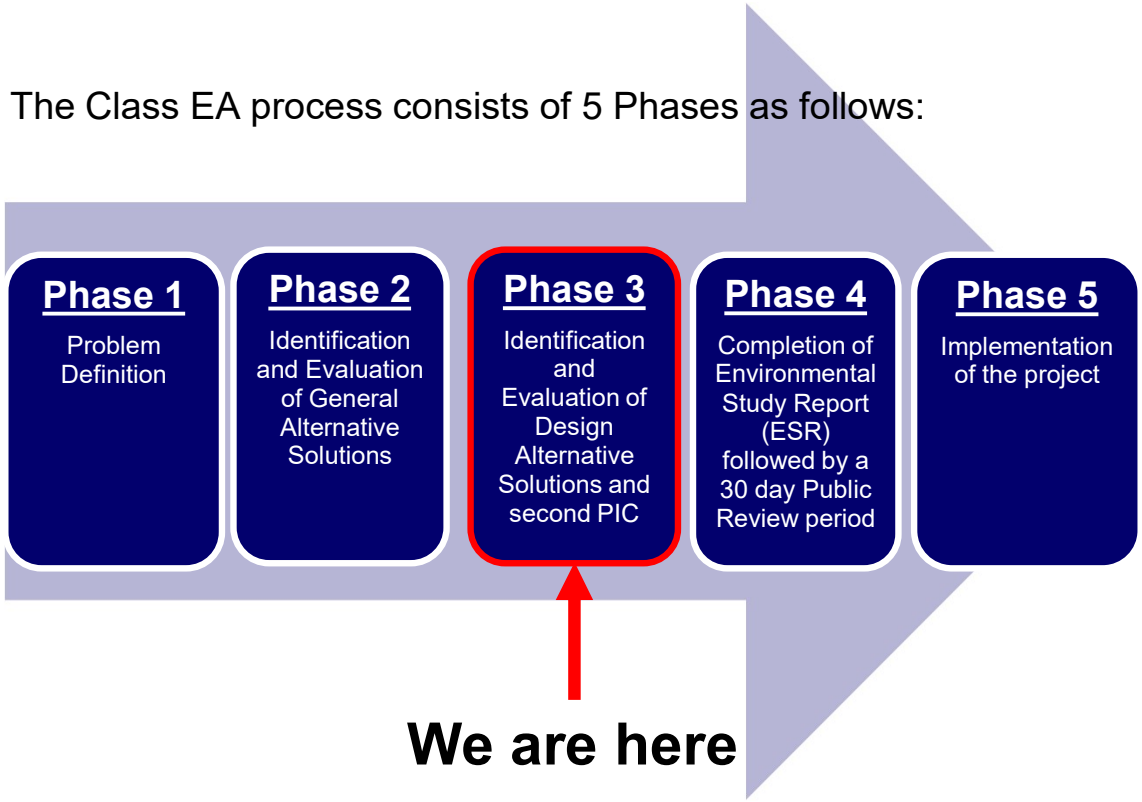
Key Principles of Class EA

- Consultation with affected parties early and throughout the process.
- Consideration of a reasonable range of alternatives.
- Consideration of effects on all aspects of the environment.
- Systematic evaluation of alternatives.
- Documentation & traceability.

Purpose of this Public Information Centre (PIC)

- Identification and evaluation of Design Alternative Solutions (Phase 3);
- Confirm and present the preferred Design Alternative Solution.

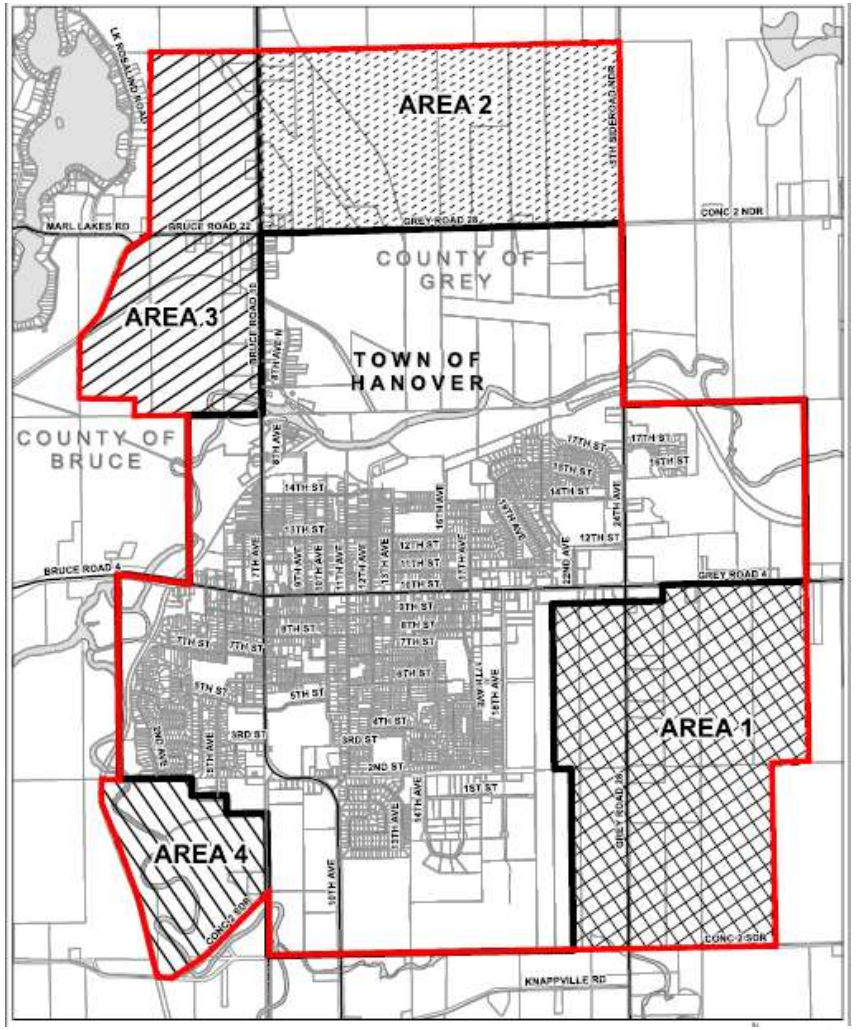
The Class EA process consists of 5 Phases as follows:



Review of PIC#1 and Study Area

In 2024, the Town has completed the PIC#1 to identify the Problem/Opportunity Statement and evaluate General Alternative Solutions.

- The historical Average Daily Flow (ADF) has reached nearly 85% of plant's current rated capacity, resulting insufficient capacity to service future growth within the Town.
- A projected wastewater treatment ADF capacity of 13,789m^3/d is needed to accommodate the projected 2052 growth.
- The Study Area includes:
  - The current Town of Hanover urban area,
  - Two areas (area 1 and 2) in Grey County,
  - Two areas (area 3 and 4) in Bruce County.

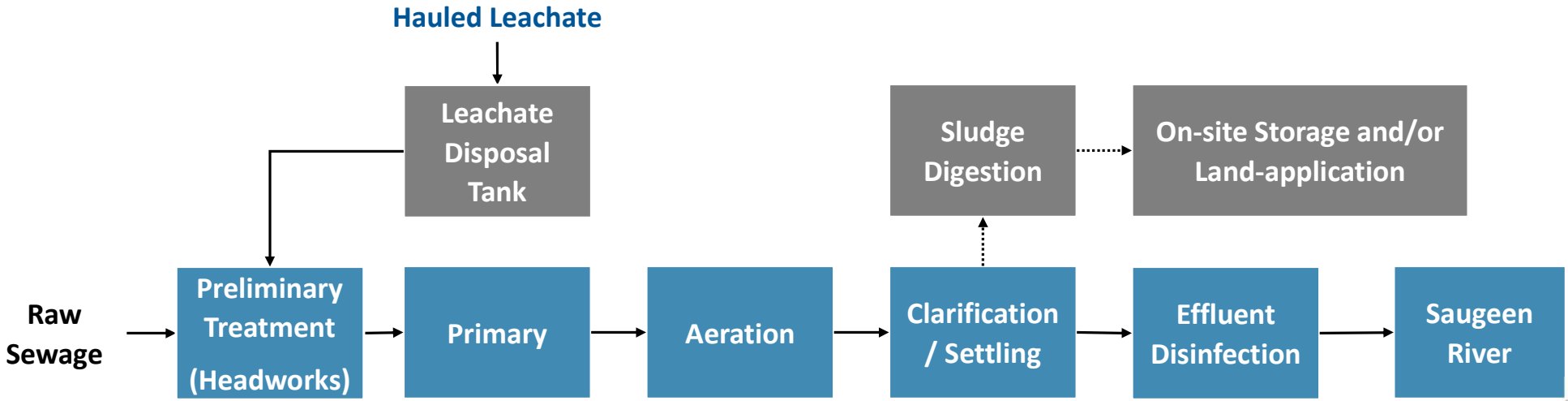


Preferred General Alternative in PIC#1

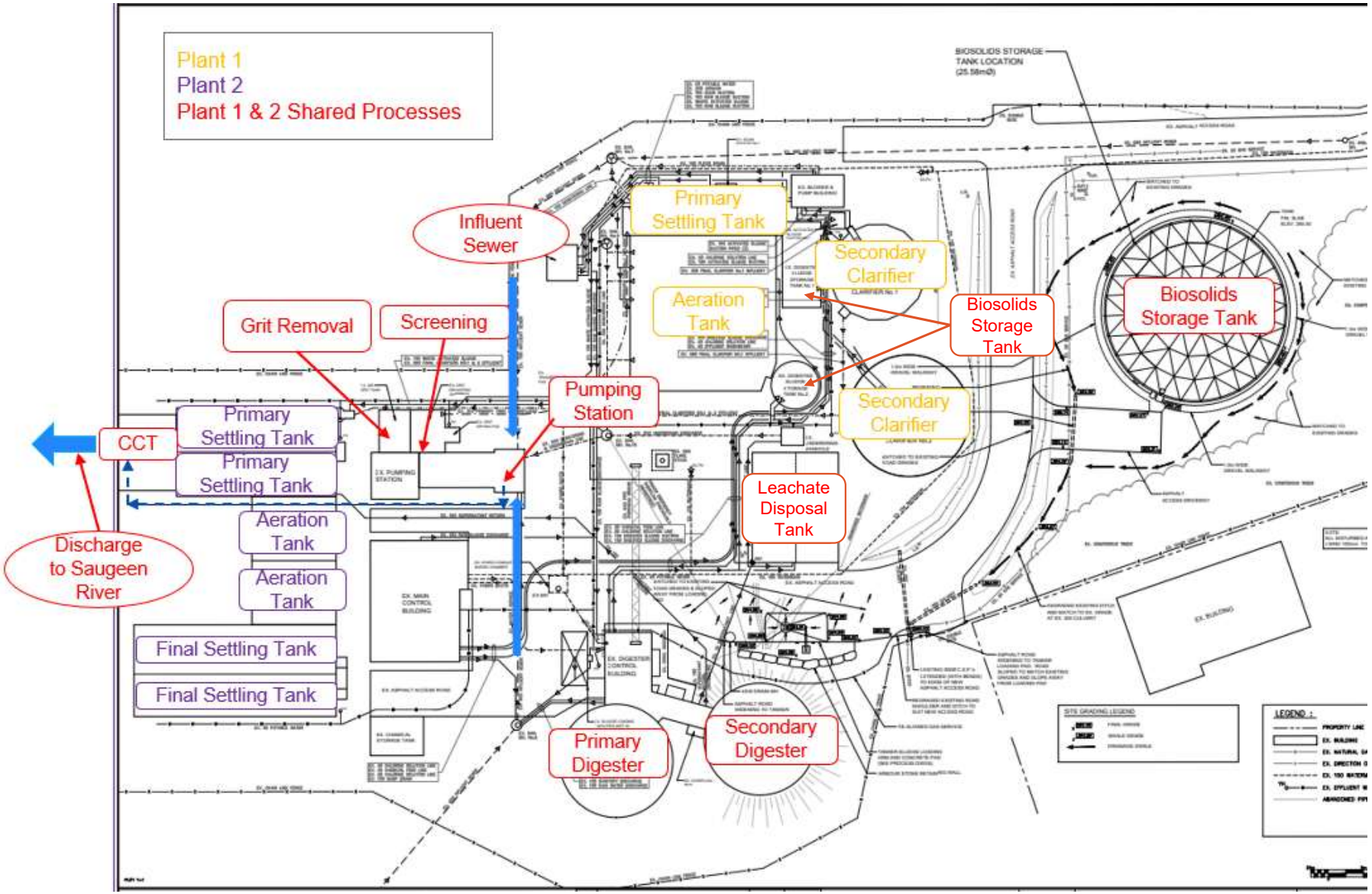
- In PIC#1, the general alternative of "Expand and Upgrade the Existing WWTP" is the preferred solution
- The proposed expansion area is situated on the southern side of the plant.

Existing Hanover Wastewater Treatment Plant (HWWTP)

Process	Brief Description and Treatment Steps
Preliminary and Primary	Remove screenings, grit and settleable solids.
Aeration	Provide oxygen to bacteria for treating and stabilizing the wastewater.
Clarification / Settling	Remove solids from aeration step.
Sludge Digestion	Stabilise waste organic solids.
Effluent Disinfection	Remove harmful pathogens from effluent.



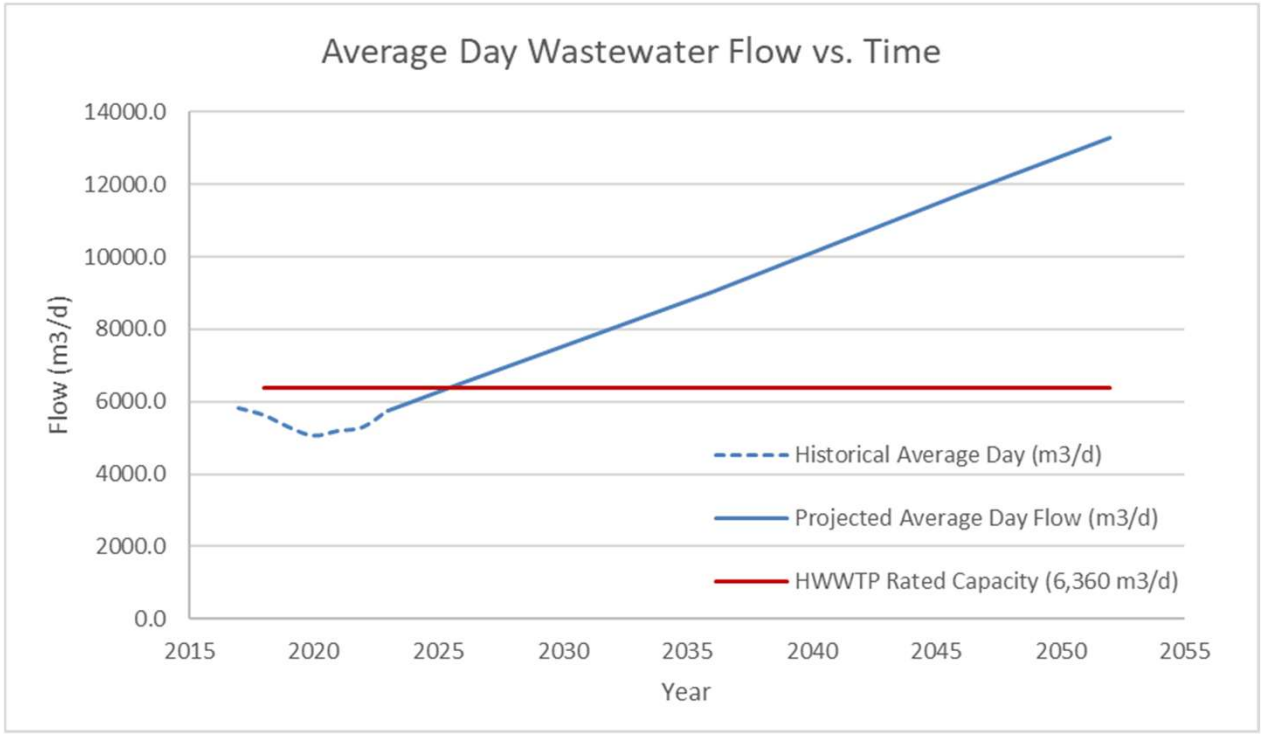
Existing Hanover Wastewater Treatment Plant (HWWTP)



Population and Flow Projections

As part of this Class Environmental Assessment, future population and flow projections were conducted for the Hanover Wastewater Treatment Plant (HWWTP).

- Development has been projected to proceed at a pace of 137 persons and 59 new jobs each year based on Official Plan Amendment #11. This leads to a total population growth of 4,242 and 1,824 new jobs by the year 2052.
- The 30-year projected growth (until 2052) will require a total treatment capacity (ADF) of 13,789 m^3/d.



Upgrade and Expansion Plan

The existing plant cannot accommodate the 2052 flow projections, and its current rated capacity will soon be reached. Therefore, it is recommended that planning for additional HWWTP capacity begin immediately after the Class EA identifies the preferred design solutions.

To reduce construction and maintenance costs while meeting treatment requirements, the upgrade and expansion plan will be carried out in three phases.

- Phase 1: Conduct plant-wide Stress Test to confirm plant can handle 7,000 m^3/d with both Plant 1 and Plant 2 operational. This phase is already underway.

- Phase 2: Construct a new facility to increase the treatment capacity to 10,500 m^3/d with Plant 1 decommissioned.
  - Plant 2 Capacity of 3,500 m^3/d
  - New Plant Capacity of 7,000 m^3/d

- Phase 3: Expand the new plant to bring the treatment capacity to 13,789 m^3/d.

Background Studies and Reports Completed

Background studies were undertaken during this Class EA to support the evaluation of alternative design solutions, identify potential impacts and mitigation measures, and to support the evaluation process.

The studies and the summary of their findings include:

- **Assimilative Capacity Study (ACS):** A receiving water assessment was conducted in consultation with MECP to determine effluent criteria for point-source dischargers with stricter effluent objectives and compliance limits proposed for the upgraded and expanded plant.
- **Archaeological Assessment:** The results of the Stage 1 and Stage 2 Archaeological Assessment indicate that the study area is considered clear of further archaeological concern.
- **Cultural Heritage Assessment:** Construction activities and staging should be suitably planned and undertaken to avoid impacts to identified Built Heritage Resources (B.H.R.s) and Cultural Heritage Landscapes (C.H.L.s).
- **Natural Heritage Assessment / Environmental Inventory Study (EIS):** The report documents existing ecological conditions, evaluates potential impacts of four WWTP secondary treatment alternatives, and outlines mitigation measures and permitting requirements to support the Town of Hanover's proposed plant expansion.
- **Floodplain Study:** Based on the findings of this study, the proposed expansion area is located within the floodplain extent; however, it can be filled without negatively impacting floodplain depths or extents.

Wastewater Treatment Processes

An overview of the processes within a modern wastewater treatment plant are identified below:

Process	Brief Description and Treatment Focus
Preliminary / Primary Treatment	Removal of screenings and grit and removal of settleable solids by gravity
Secondary Treatment	Oxidize organics and ammonia and partly remove nitrogen and phosphorus
Tertiary Treatment	Further removal of phosphorus and suspended solids to meet the effluent criteria
Disinfection	Inactivation of pathogenic organisms
Biosolids Management	Process to thicken, stabilize and dewater the liquid sludge for reuse
Aeration of Treated Effluent	Process to elevate the dissolved oxygen levels in the treated effluent

Screening criteria for identifying appropriate treatment technologies for expansion and upgrades:

- Regulatory Compliance: Ability to meet current and anticipated future regulations;
- Proven Reliability: Demonstrated track record of consistently meeting or exceeding treatment objectives;
- Ease of Expansion: Ability of the system to easily expand to meet the Hanover WWTP full build-out capacity, and feasibility of the system footprint to fit into the available site;
- Operation and Maintenance: The simplicity of operation and maintenance and level of staffing required;
- Cost: Have benefits/value in-line with the anticipated capital costs and operation and maintenance costs.

Detailed Evaluation of Treatment Technologies

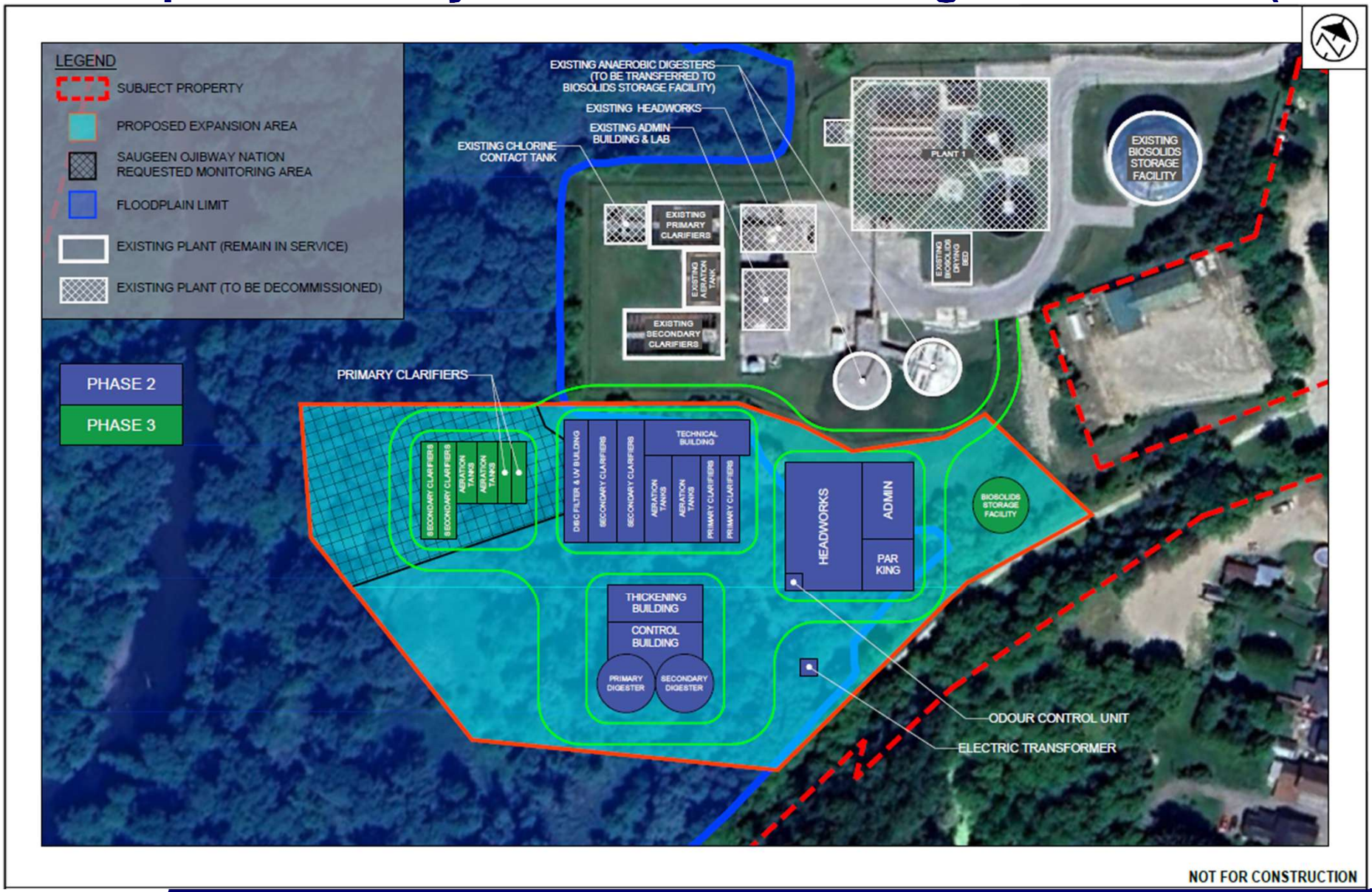
Rating	Social/Cultural	Technical	Natural	Economic
Most Preferred (4-5)	Low Impact	High Technical Merit	Low Impact	Low Cost
Moderately to Highly Preferred (3-4)	Low to Moderate Impact	Moderate to High Technical Merit	Low to Moderate Impact	Low to Moderate Cost
Moderately Preferred (2-3)	Moderate Impact	Moderate Technical Merit	Moderate Impact	Moderate Cost
Less Preferred (1-2)	Moderate to High Impact	Low to Moderate Technical Merit	Moderate to High Impact	Moderate to High Cost
Least Preferred (0-1)	High Impact	Low Technical Merit	High Impact	High Cost

- Each of the treatment technologies were evaluated based on their potential impacts on the environment (Social/Cultural, Technical, Natural, and Economic), with “Low Impact” as the most preferable result and “High Impact” as the least preferable result.
- The scoring system used and implemented for detailed evaluation is defined below. The treatment technology with lower environmental impacts will be scored higher in the evaluation.
- The technology with higher overall scoring in each of the wastewater treatment processes will be selected as the preferred potential design solutions.

Summary of Detailed Evaluation

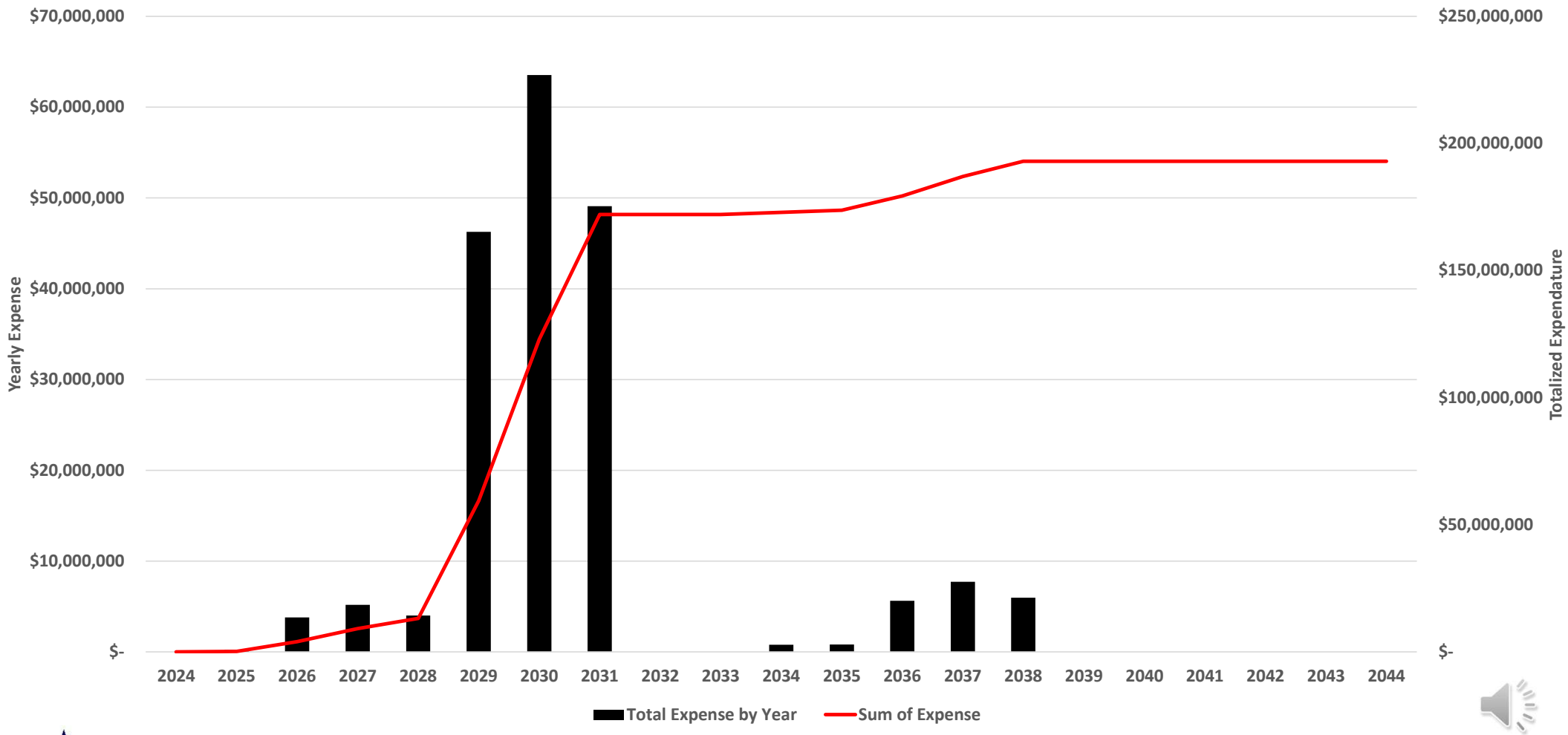
Treatment Process		Treatment Technologies	Results
Liquid Treatment	Preliminary Treatment	Headworks: Facility where wastewater enters a wastewater treatment plant, may consist of bar racks or bar screens, shredders or grinders and a pumping station.	✓ Preferred
	Secondary Treatment	Conventional Activated Sludge (CAS): Consists of preliminary treatment, primary treatment, aeration, and secondary clarification.	✓ Preferred
		Aerobic Granular Sludge Reactor (AGS): Use aerobic granular biomass for biological nutrient removal.	× Not Preferred
		Membrane Bioreactor (MABR): Use fixed-membrane biological treatment with gas transfer through specially designed membranes.	× Not Preferred
		Moving Bed Biofilm Reactor (MBBR): Use specialized plastic media to facilitate the biofilm process.	× Not Preferred
	Tertiary Treatment	Disc Filter: Remove suspended solids by passing wastewater through disc filter media.	✓ Preferred
		High-rate Clarifier: Remove suspended solids from wastewater by sedimentation at high water linear velocity.	× Not Preferred
	Disinfection	UV Radiation: Use high-intensity ultra-violet lamps to inactivate pathogens.	✓ Preferred
Solids Treatment	On-site Sludge Stabilization	Mesophilic Anaerobic Digestion: Treats organic waste in an oxygen-free environment at moderate temperatures.	✓ Preferred
		Aerobic Digestion: Degrade the organic sludge solids in the presence of oxygen.	× Not Preferred

Conceptual Site Layout – Preferred Design Alternative (CAS)



Capital Plan – Inflation Adjusted Cost

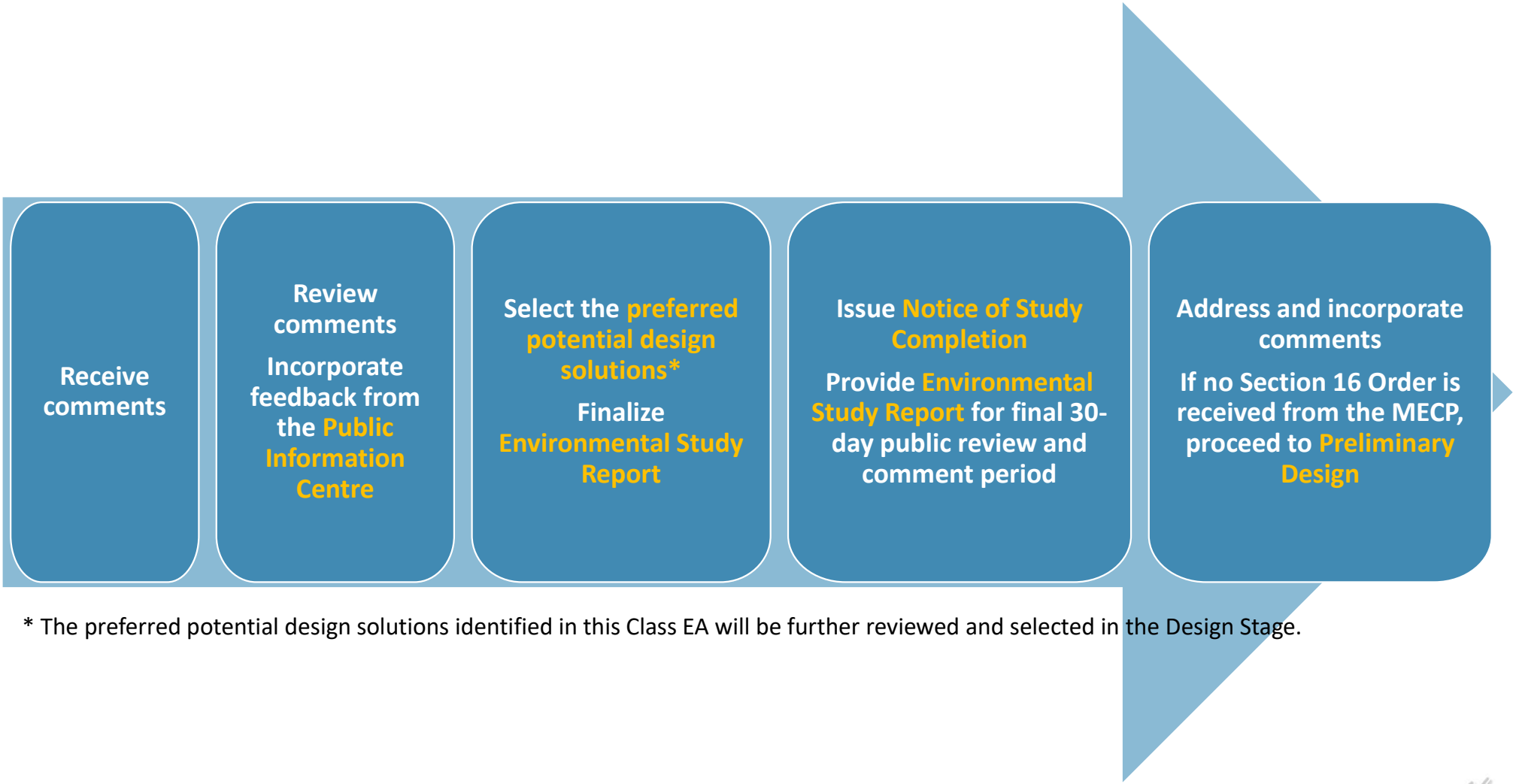
Phase 1 Duration	Phase 2 Design	Phase 2 Construction		Phase 3 Design	Phase 3 Construction	
2024-2025	2026-2028	2029-2031		2034-2035	2036-2038	



Mitigation Measures and Monitoring Program

Category	Mitigation Measures	Monitoring Program
Social/Cultural Environment	• Traffic Management Plan: Develop and implement a Traffic Management Plan to minimize disruption caused by construction vehicles; • Aesthetic Impacts Mitigation: Establish a visual barrier between the Hanover Community Trail and proposed works with berm and/or tree stand.	• Traffic Monitoring: Monitor traffic flow, congestion and incidents near the construction site to ensure effective implementation of the Traffic Management Plan.
Technical Environment	• Odour and Air Emission Control: Evaluate and implement best management practices for the mitigation of odour and air emissions; • Noise Control: House the noise sources in noise-attenuating structure to shield the environment and residents from the noise.	• Community Feedback: Assess noise levels, dust complaints, and overall community sentiment during construction and operation.
Natural Environment	• Environmental Management Plan: Complete an Environmental Management Plan to identify the impact to existing trees; • Aquatic Habitat Preservation: Implement exclusion and erosion control measures near water bodies; • Stormwater Management: Develop a Stormwater Management Plan and construct flood barrier for flood protection; • Climate Change Adaptation: Utilize rating system targeting at reducing energy usage and meeting climate change targets to improve energy efficiency and reduce GHG emissions.	• Water Quality Monitoring: Keep records of total phosphorus, nitrogen levels, suspended solids, and biochemical oxygen demand parameters; • Stormwater Monitoring: Constant monitoring during wet weather conditions;
Economic Environment	• Grants and Funding: Explore potential grants or funding opportunities to offset capital and operational costs.	• Cost Analysis: Track operational costs related to energy, chemical usage, and sludge management to assess budget compliance and identify potential savings.

Next Steps



* The preferred potential design solutions identified in this Class EA will be further reviewed and selected in the Design Stage.

Your Comment are Important to us

- Following this presentation, we invite you to submit any comments by completing the Comment Sheet. Comment Sheets may be provided to either of the following members of the Project Team by May 8th, 2025:

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