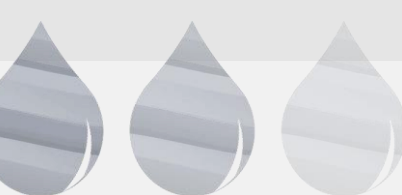


# South Niagara Falls Wastewater Solutions Schedule C Class Environmental Assessment

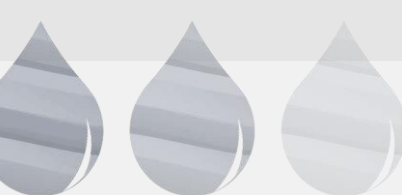
PW-39-2021

Wastewater Program and Cost Estimate Update

Thursday, September 9, 2021



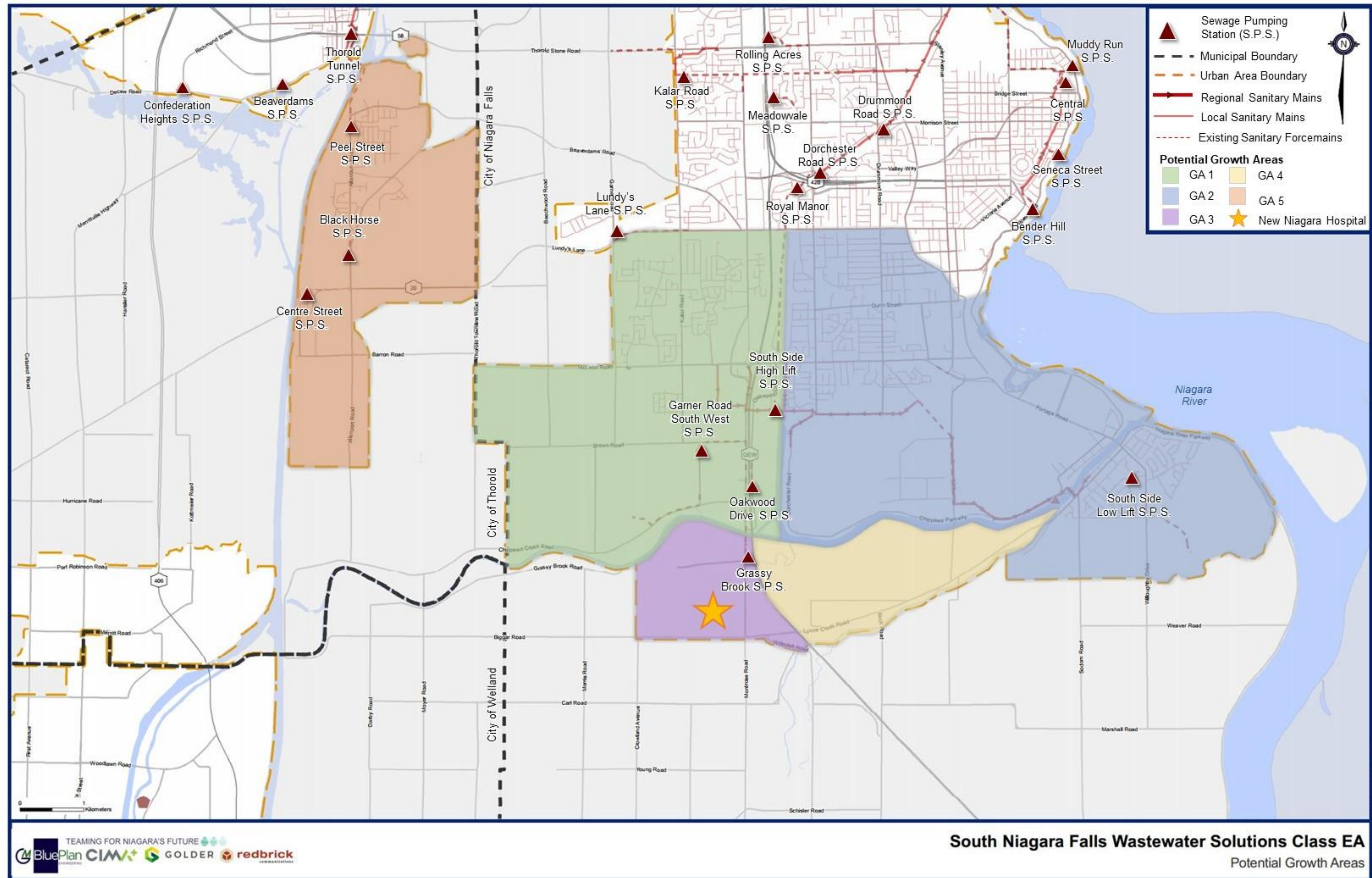
1. Project Background and Strategy Update
2. Cost Estimates
3. Financial Review
4. Key Considerations and Risk Management
5. WWTP Property Update
6. Next Steps
7. Q & A



- 2041 growth projections were developed through the Municipal Comprehensive Review (MCR) process, approved by Council and utilized in the Master Servicing Plan (MSP) Update
- The MSP developed Region-wide servicing strategies and established the Niagara Falls strategy including the new WWTP
- Niagara Falls Strategy:
  - Go North vs New Plant
  - Rationale for selection (financial, technical feasibility of expanding existing system, development pressures/growth)
  - Foundation moving forward into Class EA
- Identified need for new South Niagara Falls Wastewater Treatment Plant (SNF WWTP)
- Recommended moving forward to Schedule C Class EA



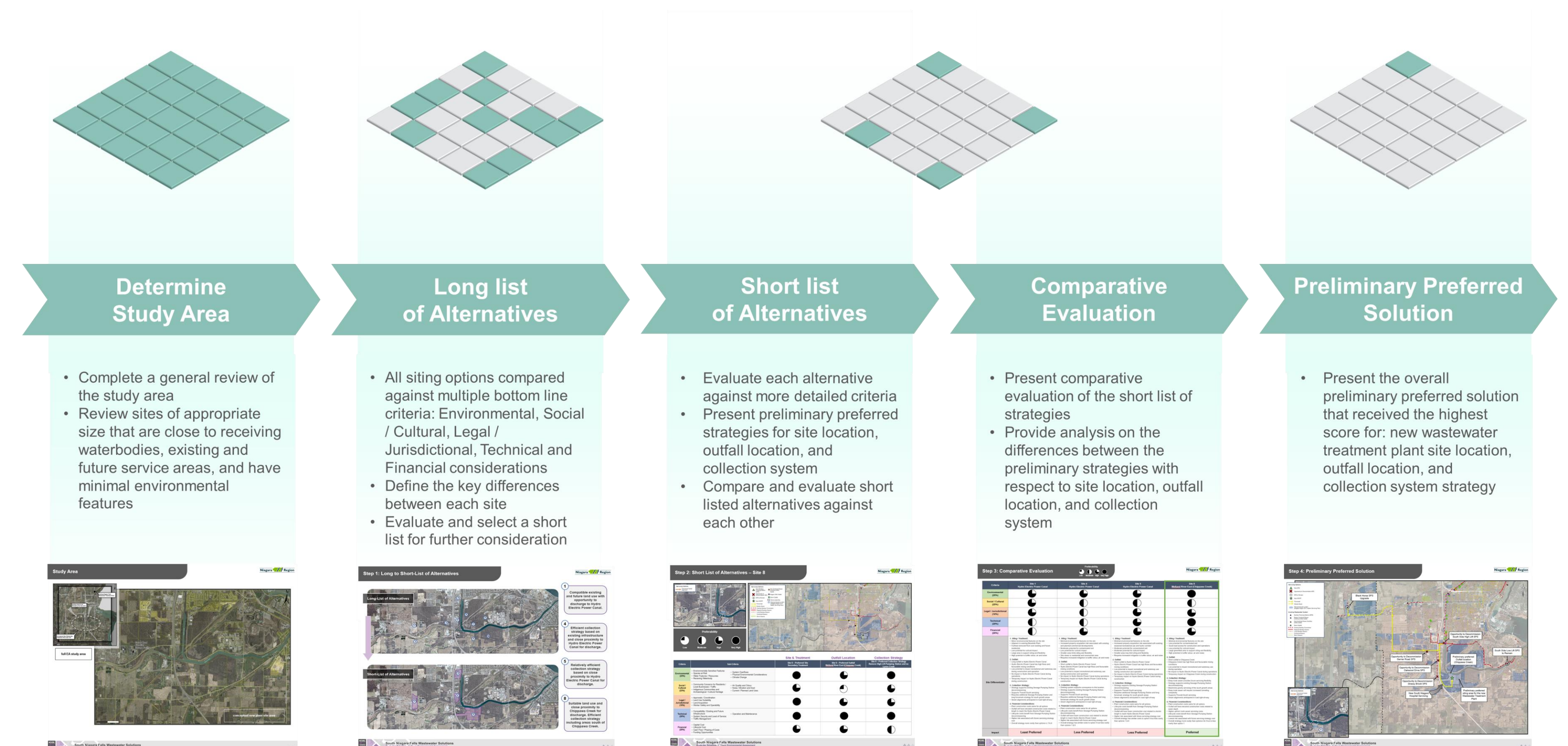
# Projected Growth





- Pre-Consultation and Stakeholder Engagement
- 3 Public Information Centres (PICs) to date, 1 more anticipated in late fall 2021
- Extensive Development and Evaluation of Alternatives

- Treatment Plant Site
- Collection System Strategy
- Outfall Location



- Presented Preliminary Preferred Solution to the Public on March 11, 2020
- Supported Preferred Solution – Moving forward with Design Concepts



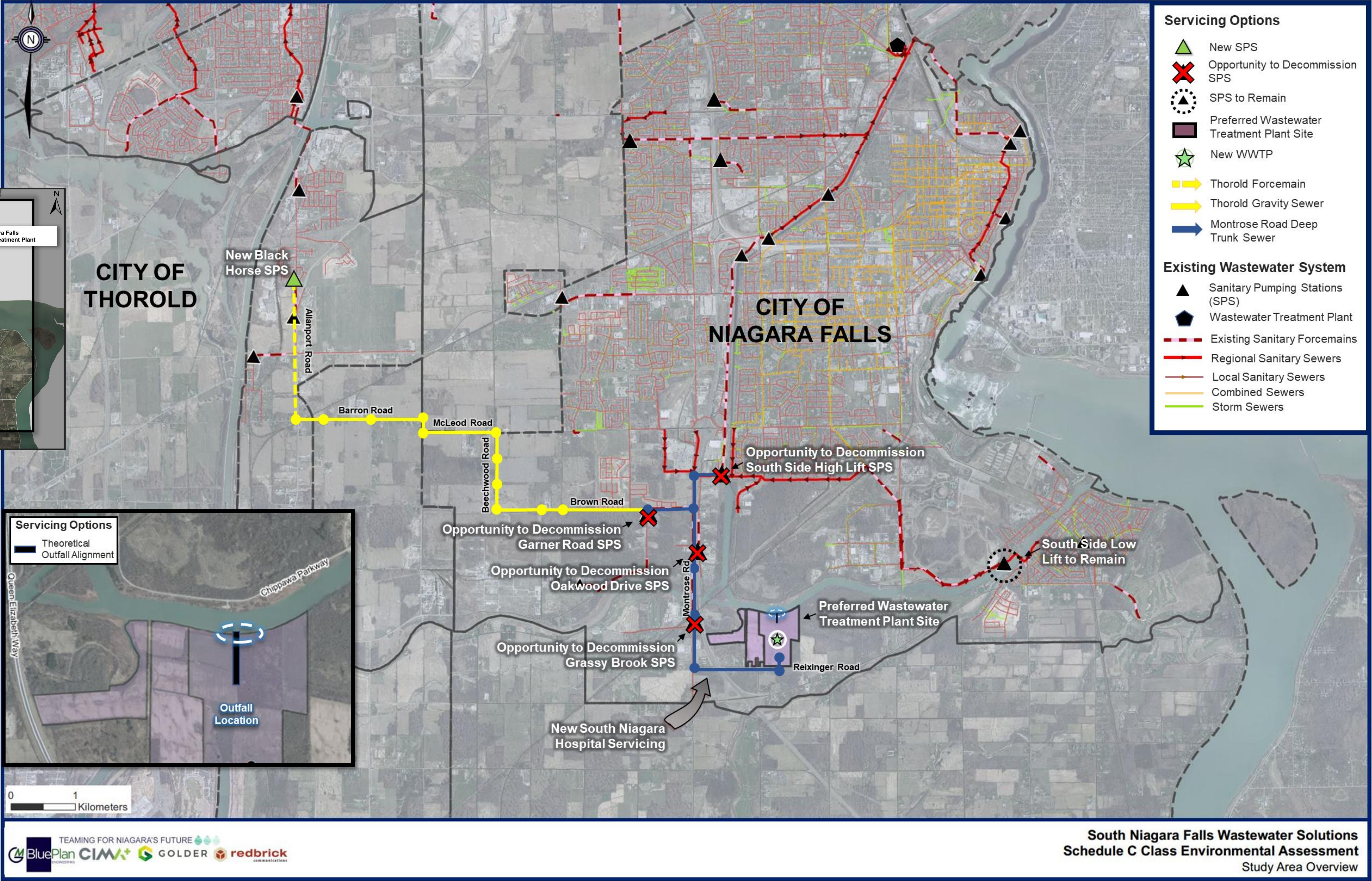


- Phase 3 of the Class EA process – summer 2020 to summer 2021
  - Completed more detailed environmental, cultural/heritage and archaeological investigations on the site and for the trunk sewer alignment
  - Completed more detailed geotechnical/hydrogeotechnical investigations on the preferred strategy
  - Addressed new archaeological information that came forward in fall 2020 related to the site
  - Confirming orientation of the facilities on the site as well as the outfall location at Chippawa Creek
  - Confirmed Montrose Road for trunk sewer alignment
  - Significant coordination and stakeholder engagement throughout Phase 3, including with the City of Niagara Falls, City of Thorold, Region Planning and Development Services, and Corporate Services
  - Minimizing risk and surprises in next steps of implementation
- Anticipate final Public Information Centre (PIC) late fall 2021
  - Update on investigations
  - Final alignments and WWTP site
  - Final technical considerations including WWTP design concept
- Complete conceptual design in late fall 2021
- File complete Class EA Environmental Study Report (ESR) with all supporting documentation in early 2022



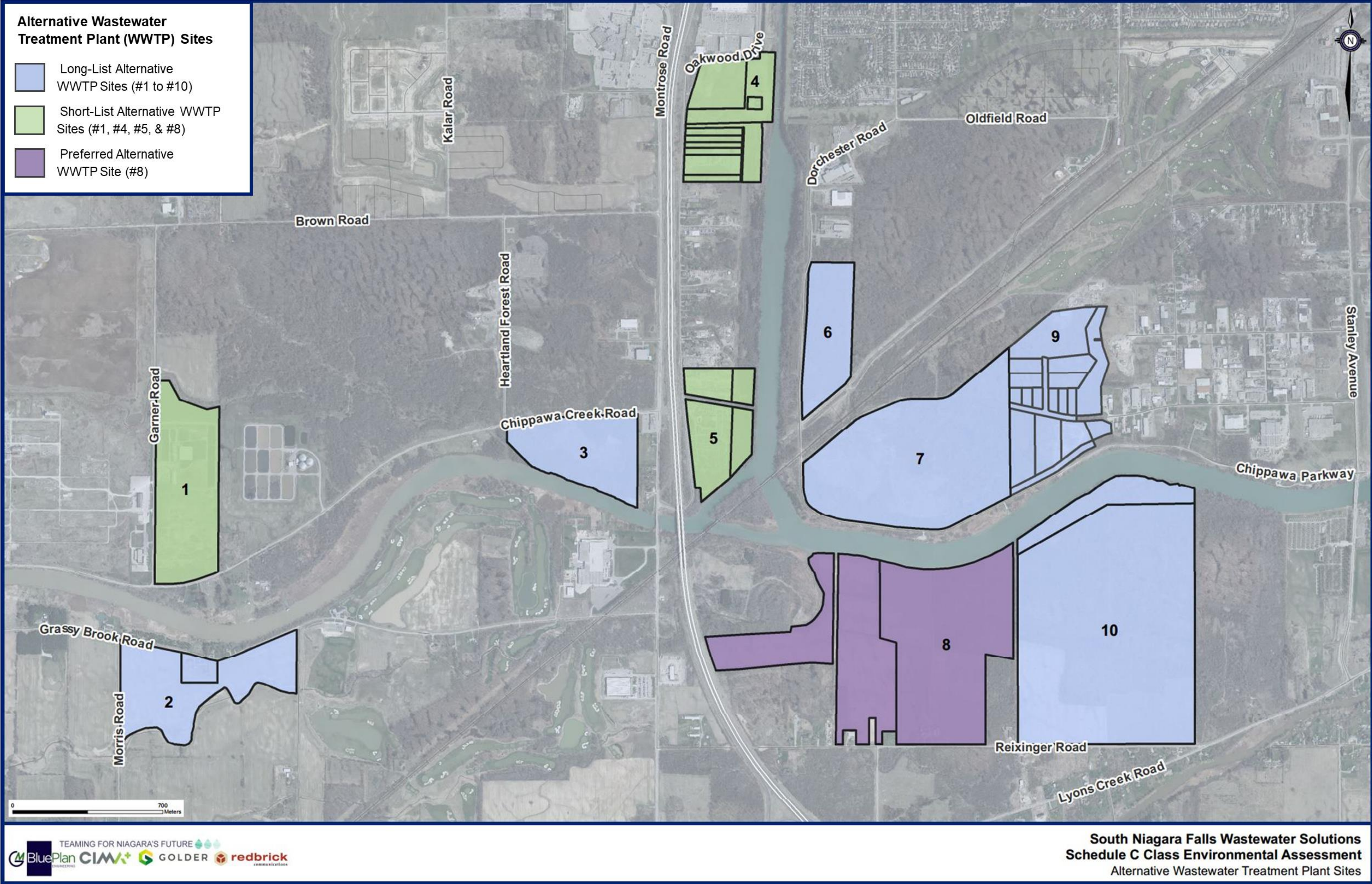


# SNFWWS Class EA Preferred Solution





# Sites Considered





# Preferred WWTP Site



Google Earth, 20

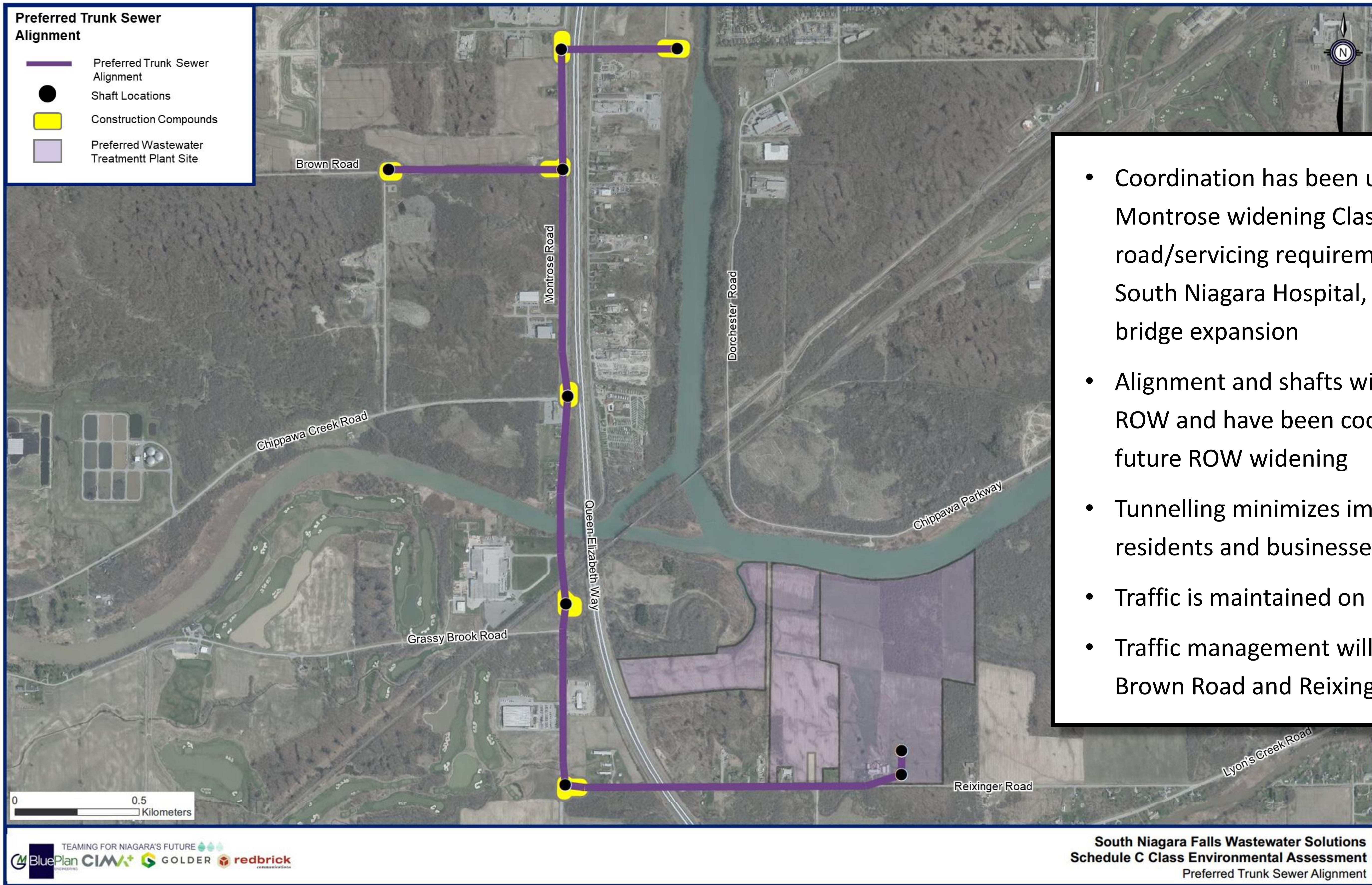
## Selection Rationale:

- In the heart of the future growth areas
- Strategic location to maximize gravity servicing to the new WWTP – cost effective collection system strategy
- Expansion flexibility, supports 2051 and beyond growth areas
- Supportive location with MECP for outfall discharge to Chippawa Creek
- Sufficient site area to work within environmental and archaeological constraints
- Manageable property costs
- Site location and sewer alignment provides for:
  - SPS decommissioning and reduced long term operating costs
  - Significant wet weather overflow reductions





# Preferred Trunk Sewer



- Coordination has been undertaken with Montrose widening Class EA, the road/servicing requirements for the South Niagara Hospital, and the future bridge expansion
- Alignment and shafts within existing ROW and have been coordination with future ROW widening
- Tunnelling minimizes impacts to residents and businesses
- Traffic is maintained on Montrose Road
- Traffic management will be required at Brown Road and Reixinger Road

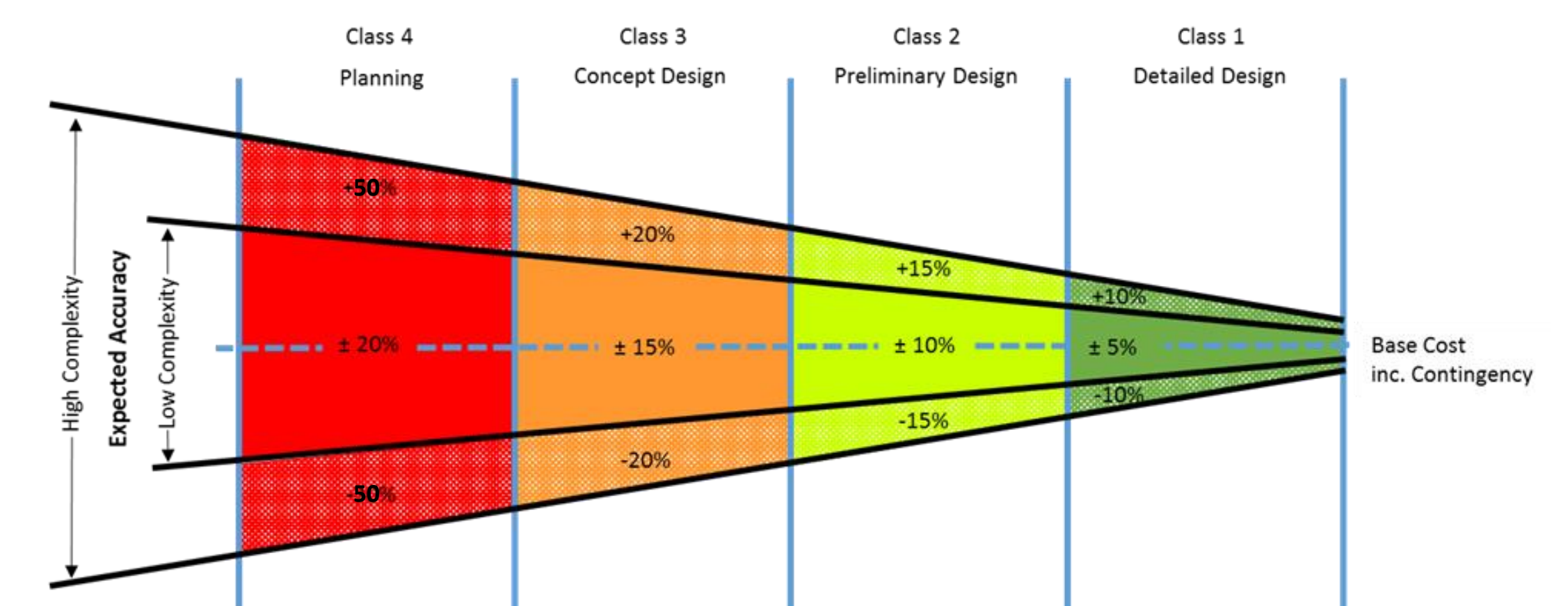




# Cost Estimation Principles and Accuracy

- Cost estimating accuracy will improve as a project moves through concept to design stages
- The MSP cost estimates are truly planning level, anticipate normal levels of complexity and constructability, and in some cases have limited information for costing
- Class EA cost estimates will start at planning/conceptual level in Phase 2 and will continue to improve in accuracy to conceptual/preliminary design level in Phase 3
- The Class EA process will result in complete refinement of the projects technically (design basis) as well as result in a more accurate budget level cost estimate

	Estimate Class	Estimate Class Description	End Usage / Major Deliverables	Accuracy Range (+/-)	
				Low Complexity	High Complexity
<b>D</b>	Class 4	Planning Cost Estimate	Concept Screening; justification for project planning funding. Minimum information requirements.	20 → 50	
<b>C</b>	Class 3	Concept Design Cost Estimate	Basis for budgeting and approvals.	15 → 20	
<b>B</b>	Class 2	Preliminary Design Cost Estimate	Used for project cost control during design; initial detailed estimate.	10 → 15	
<b>A</b>	Class 1	Detailed Design Cost Estimate	Final cost review in preparation for construction; tender ready.	5 → 10	





- Unit rates
  - Specific project review
  - Reference to previous/ongoing Region projects
  - Industry benchmark
  - Include construction as well as internal/external engineering costs etc
  - Contingency
  - Current year dollars
  - Phase 2 and Phase 3 constructability and certified cost estimating reviews
- 
- Class EA Phase 3 Cost Estimate has resulted in increased costs compared to Sept 2020





- Moving from conceptual Phase 2 information to more detailed information under Phase 3
- Program Cost Increase from \$325.10M to \$399.64M (\$74.55 or 19% increase) from previous 2020 estimate
- Some component estimates have increased while others have decreased
- Ensuring review and discussion at each point of program update and cost update





- Most significant impact: geotechnical conditions (soils) in the area for the WWTP site as well as the trunk sewer alignment
  - Prevalent across the Study Area
  - Impacts WWTP foundation – requires piles
  - Impacts trunk sewer tunnelling constructability
  - \$20M increase at the WWTP (9% increase), \$15M increase for the trunk sewer (16% increase)
- Better detail from the conceptual design of the new WWTP
  - Reflects best practice review, staff review, and project team workshops.
  - Overall site and facility optimization to provide long term benefit for operation and maintenance, consideration for green / energy applications while being mindful of project budget.
  - Sizing of some elements to support future expansions.
  - Areas that contributed to the additional costs (represents \$15M or 7% increase) include:
    - Optimal sizing for the inlet pumping station, headworks, digestion, and disinfection
    - Waste Activated Sludge (WAS) thickening for improved operations
    - Enhanced road network, RV station and hauled sludge facility to support Region-wide activities





- MSP undertook a cost benefit evaluation of the Go North vs New Plant options
- In 2017, the New Plant was selected as preferred
  - Better ongoing financial risk management (capacity phasing, greenfield construction)
  - Greater flexibility and ability to service long term growth
  - More efficient and cost effective post period capacity
  - Avoids difficult and costly construction related to existing infrastructure within urban developed areas as well as site constraints at the existing Stanley Ave WWTP
- SNF strategy provides broader benefit:
  - Supports servicing and mitigating system issues in Niagara Falls, including North NF and Chippawa, and Thorold South
  - Frees up capacity for NOTL and St. Catharines

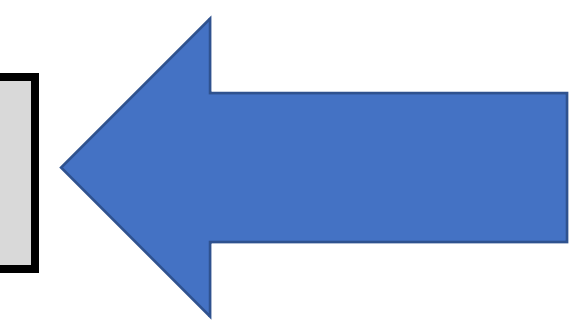


- Given the enhancements to the strategy and change in cost estimates, the cost benefit evaluation was reviewed under the Class EA
- The South Niagara Falls (SNF) strategy reflects updated principles compared to the 2017 review
  - Greater emphasis on wet weather management, environmental protection and overflow control
  - Greater emphasis on longer term planning for servicing – ensuring flexibility for growth beyond 2051
  - More information for servicing needs – South Niagara Hospital, Thorold South and Niagara Falls growth areas
- Cost Benefit Analysis
  - Go North alternative was reviewed at a high level to better understand alignment opportunities and Stanley Ave WWTP expansion options
  - Similar conditions influencing the SNF cost increase as well as constraints related to the trunk sewer alignment and Stanley Ave WWTP site would increase the Go North costing
  - The current review indicates that the cost gap between Go North and SNF has narrowed
  - The evaluation validates the rationale to implement the SNF strategy
  - The Region's independent project advisor actively commented, reviewed and supported the updated cost benefit analysis
- The planning work under the current Master Servicing Plan and the development interest indicates that the proposed location for the sewer alignments and the WWTP under the SNF strategy facilitate and support the Region's long term vision
- Council endorsed the SNF strategy in 2017. The detailed analysis completed to date plus the continued interest and progress in South Niagara Falls demonstrates this was a good decision.

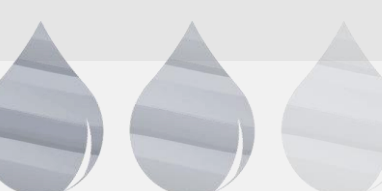


# Gross Cost Comparison (in millions)

Project	Revised Estimates	Prior Estimates	Difference
SNF WWTP	\$ 247.66	\$ 192.65	\$ 55.01
New South West Trunk Sewer - South Niagara Falls	107.82	85.34	22.48
New South West Trunk Sewer	19.61	9.77	9.84
Black Horse Sewage Pumping Station	5.91	4.39	1.52
<b>Project Additions</b>	<b>\$ 381.00</b>	<b>\$ 292.15</b>	<b>\$ 88.85</b>
New SNF WWTP Outfall	5.74	10.63	(4.89)
Black Horse Forecemain	3.32	12.73	(9.41)
<b>Project Reductions</b>	<b>9.06</b>	<b>23.36</b>	<b>(14.30)</b>
Peel Street SPS Upgrades and Forcemain	5.92	5.92	-
South Side High Lift Pumping Station Decommissioning	0.63	0.63	-
Garner, Oakwood, Grassy Brook SPS Decommissioning	1.14	1.14	-
McLeod Road Overflow Diversion	1.89	1.89	-
<b>Projects With No Changes</b>	<b>9.58</b>	<b>9.58</b>	<b>-</b>
<b>Total SNF Projects Budget</b>	<b>\$ 399.64</b>	<b>\$ 325.10</b>	<b>\$ 74.55</b>



Project estimates are based on costs indexed to the year of expenditure





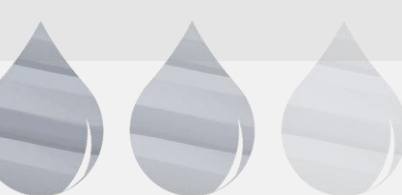
# Incremental Impacts to Financing

Project	External Grants	DCs (Debt)	Debt	Total
New SNF WWTP	\$ 36.67	\$ 6.03	\$ 12.31	\$ 55.01
New South West Trunk Sewer - South Niagara Falls	-	26.52	(4.04)	22.48
New South West Trunk Sewer	-	7.38	2.46	9.84
Black Horse Sewage Pumping Station (SPS)	-	1.00	0.52	1.52
New SNF WWTP Outfall	-	(3.24)	(1.65)	(4.89)
Black Horse Forecmain	-	(8.16)	(1.25)	(9.41)
Peel Street SPS Upgrades and Forecmain	-	(0.29)	0.29	(0.00)
<b>Total SNF Project Incremental Funding</b>	<b>\$ 36.67</b>	<b>\$ 29.24</b>	<b>\$ 8.64</b>	<b>\$ 74.55</b>

**Total Debt \$ 37.88**

The net increase of \$74.55 million to the project budgets is to be funded by:

- External Grants - \$36.67M
- Debt - \$37.88M
  - \$29.24M of debt recovered by DCs
  - \$8.64M funded through rate requisition





As per policy, the operating budget impact to fund additional debt and operating costs for capital works needs to be approved in the same year as the capital works are approved.

- In the 2021 Operating Budget, a placeholder to accommodate the plant operations and the debt repayment costs was included in the amount of \$9M. This was funded from a reduction in the transfers to WW reserves.
- Debt charges and plant operating costs will not be required to be paid until the debt is issued and the plant is operational (2026/2027).
- Until the funds are needed for debt charges or the cost of operations, they can be used to fund other WW capital projects.





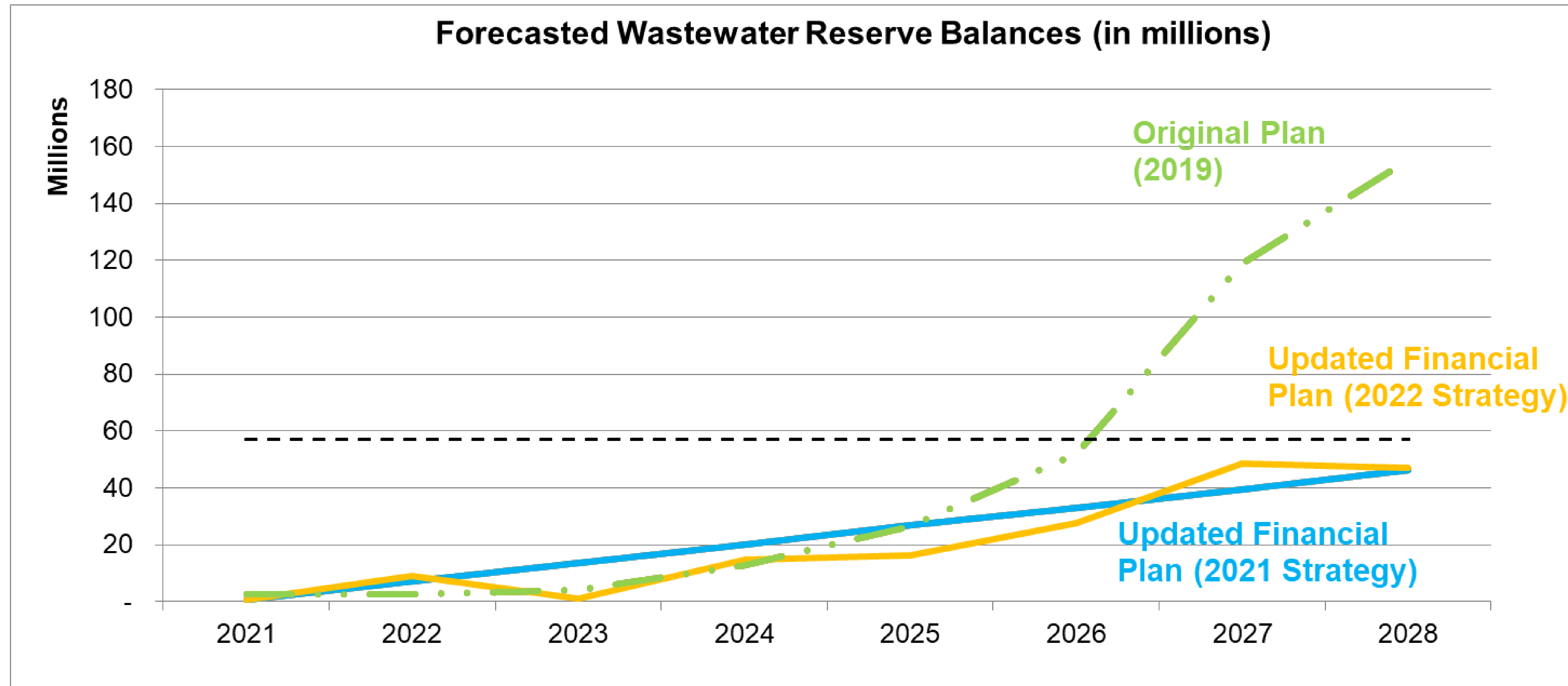
# Operating Budget Impacts (in millions)

Description	2022 Financing Strategy	2021 Financing Strategy	Variance	Notes
Annual Debt Charge Budget (net of DC recovery)	\$15.0 - Debt <u>(10.6) - DC</u> \$4.4	\$12.5 - Debt <u>(\$8.7) - DC</u> \$3.8	\$0.6	<ul style="list-style-type: none"><li>Increase in placeholder required to fund additional project debt</li></ul>
Transfer to WW capital	\$12.2	\$12.8	\$(0.6)	<ul style="list-style-type: none"><li>Reduction required to offset additional debt charges of SNF projects</li></ul>

To accommodate the additional debt required, the placeholder for debt charges will increase by \$600K, and offset by a reduction in the transfers to reserves.







- Increase to debt is offset by a reduction in transfers to reserves, however the current project estimate does not alter the 2021 reserve strategy.
- Capital reserves are estimated to reach \$47M by 2028 vs. target of \$57M





- Further initiation of the capital budget for future phases is contingent on external grant funding confirmation
  - Staff is still advocating for external grant funding to support the project (estimated at \$145M with budget increase)
- Staff continues to monitor debt impacts on the S&P ratio and ARL
  - Total approved debt for the Region inclusive of these changes is within limits:
    - ARL estimated at 9.74%; limit is 25%
    - S&P ratio, which includes LAM debt as well, estimated at 116%; limit is 120%





# Development Charges – Region Wide

DC Type	Current	Previous SNF Impact	Revised SNF Impact
Single	\$4,946	\$6,647	\$7,221
Apartment 2+Bdrm	3,434	4,614	5,013
Apartment Bach/1 Bdrm	2,040	2,741	2,978
Other multiple	3,603	4,842	5,260
Spatial Care	1,807	2,513	2,730
Commercial (sq foot)	3.55	4.77	5.19
Industrial (sq foot)	1.48	1.99	2.16
Institutional (sq foot)	2.54	3.41	3.71
<b>Increase % on WW DC Only</b>		<b>34%</b>	<b>46%</b>
<b>Increase on Total Res DC</b>		<b>8%</b>	<b>11%</b>
<b>Increase on Total Non-Res DC</b>		<b>10%</b>	<b>13%</b>

- Based on the 2017 DC Study the estimated impacts to 2022 DC Study from the SNF Budget are:
  - 11%** increase to residential development charges
  - 13%** increase to non-residential development charges





- The Class EA has established an optimized strategy that balances the needs for the plant, the outfall and collection system
- Meets the capacity needs for growth and addresses current limitations
- While costs have increased since the MSP, the long term strategy is enhanced and other efficiencies and cost savings have been gained
- The updated wastewater strategy that will provide improved level of service, enhanced ability to address wet weather flows, and greater flexibility for efficient servicing in the future
  - Incoming trunk sewer is at a depth to support servicing of broader growth areas including the Chippawa area
  - Trunk sewer is located to support future servicing east of the QEW, west of the QEW and other potential growth areas
  - Trunk sewer sizing will support managing wet weather flows to the plant (storage)
  - South Thorold infrastructure located to efficiently service future growth
  - The strategy will reduce wet weather overflow volume to the environment by over 60%
- Reduction of existing Operation and Maintenance costs from SPS Decommissioning
- Reduction of Lifecycle costs (sustainability upgrades, major maintenance/rehabilitation/replacement) from SPS Decommissioning





- Site Investigations still require completion
  - Some Stage 2 archaeological assessments are still remaining. Further detailed field investigations will be completed to support the detailed design.
- Design and Construction approach for the trunk sewer will be developed to manage risks and provide competitive bidding
- Final Designs will be completed in the subsequent phases – design concept has been sufficiently moved forward at this stage
- Cost Uncertainty with respect to materials, equipment and overall market conditions – COVID-19 related, difficult estimating out to year 2027
- Property Acquisition
- Risk Management Plan and Risk Registry have been utilized throughout the project process





- Multiple bottom line criteria evaluation and risk assessment resulted in the recommendation for the new WWTP and outfall pipe to be constructed solely at 6811 Reixinger Road. Utilization of the full property at 6811 Reixinger Road allows the Region to:
  - Provide the maximize buffer from existing and future neighbouring properties
  - Ensure available land is secured now for future expansion beyond the planning horizon
  - Optimize WWTP layout and process configuration within the preferred site
  - Minimize the required archaeological remediation and impact to environmental features.
  - Coordinate the property purchase with a single land owner
  - Address MECP property set back requirements





- An accredited property appraisal has been completed
- Open discussions with the property owner have been undertaken to date
- Regional staff will be providing the owner with an offer
- If the offer is not accepted by the owner, Regional staff with external legal counsel will request to initiate formal expropriation proceedings to acquire the property
  - 3<sup>rd</sup> party adjudicated process
  - Helps finalize price
- Region staff and the property owner have made continued effort to work through the process and acquire the land amicably
- The property appraisal value for the preferred WWTP site is within the approved property budget. Final property purchase costs are not yet known. Staff will reengage Council as necessary throughout the property acquisition process.
- Recommend clarity on property status before filing Class EA document. Final property transfer required prior to 2024.





- SNF WW Program is a significant infrastructure program for the Region
- Multi-generational project, “100 year” investment
- SNF WW Program provides benefit to multiple municipalities
- The infrastructure is strategically located to support key planned and future growth areas
  - South Niagara Hospital
  - Active development interests
- A sustainable financial plan has been established to deliver the program
  - Balancing funding, DC, budget impacts
  - Region can continue to support ongoing capital programs and future budgets
  - Achieving goal of cost estimate transparency/clarity and understanding full program costs
  - Acknowledge that scope and costing will continue to be refined/updated as the process moves through detailed design and tendering
- There is a greater understanding of project risks and constructability at the Class EA stage of the program
  - Greater level of effort now to minimize surprises later during design and tendering
- Continued development of project plan and risk management plan
- Class EA process has been positive and successful to date
- Critical component of the Region’s Strategic Plan and “How We Grow”





# Class EA Process Next Steps

## Schedule:

