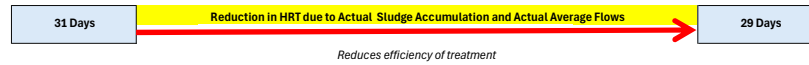


Lantz Lagoon Capacity Review / Summary
1. Physical Criteria

	Cell 1	Cell 2	Cell 3	Total
Wet Volume	28,599.1 cu m	43,953.6 cu m	72,012.1 cu m	144,564.8 cu m

2. The Hydraulic Retention Time (HRT)

3. Organic Loading Rate

Basis of Calculation	Ref. BOD Concentration (mg/L)	Ref. Flow (USGAL/DAY)	Ref. Flow (litres/day)	Daily BOD Load (kg/day)	Est. Population equivalency based on BOD loading
System Design Limit	180.00 mg/L	900,000.0 USGAL/DAY	3,406,869.0 litres/day	613.2 kg/day	9,018 - 11,356 people
Annual Average (2025, 2024, 2023)	80.72 mg/L	1,232,966.9 USGAL/DAY	4,667,285.2 litres/day	376.8 kg/day	5,540 - 6,977 people
East Hants Sewer Bylaw IO-300	300.00 mg/L	1,232,966.9 USGAL/DAY	4,667,285.2 litres/day	1,400.2 kg/day	20,591 - 25,929 people
Reduced Maximum Allowable (Recommended)	131.39 mg/L	1,232,966.9 USGAL/DAY	4,667,285.2 litres/day	613.2 kg/day	9,018 - 11,356 people

4. Organic Removal Efficiency

Basis of Calculation	Ref. Effluent BOD Concentration	Organic Removal Efficiency
Annual Average (2026)	12.30 mg/L	85%
Current Sample (2026-09-15)	5.00 mg/L	88%

5. Committed and Remaining Capacity Based on Hydraulic Retention Time (Design Flows and Population)

	Based on Design Flows (1.1 - 1.5 MUSGPD)		Based on Design Population (14,400 - 15,000 Persons)		Summary
	Percentage Committed Capacity	Remaining Capacity	Percentage Committed Capacity	Remaining Capacity	
Based on Porter Dillon	108%	-351,917.8 litres/day	63%	5,316 Persons	Flows Exceeds Design Capacity
Based on CBCL	83%	988,117.3 litres/day	61%	5,916 Persons	Flow Exceedance Anticipated between 2036 - 2041
Average of Both	95%	318,099.8 litres/day	62%	5,616 Persons	Flow Exceedance Anticipated between 2031 - 2036

6. Survey Based Sludge Estimates

	Cell 1	Cell 2	Cell 3	Total
Sludge Volume	2,325.7 cu m	2,868.8 cu m	3,625.1 cu m	8,819.6 cu m
Dry Mass (BDT)	167.5 BDT	209.4 BDT	569.1 BDT	946.0 BDT
% Occupied by Sludge	8%	7%	5%	6%
Data Validation/Source	Divotech (2026)	Divotech (2026)	Divotech (2024)	

Notes
There are discrepancies between Original Drawings, CBCL, Porter Dillon and Stantec Reports, mainly with respect to the depth of the Lagoon - which is likely the cause of the differences amongst these studies. Original Drawings: 23.5ft (7.2m) CBCL: Not Provided, but Volumes suggest depths greater than the 23.5 ft (7.2m) Max level. Porter Dillon: Not provided, but Volumes indicate Original Design Drawings were used. Stantec: Variation between Cells (1 = 5.9m, 2 = 5.6m, & 3 = 4.7m)

Wastewater Treatment Data
7. Influent Wastewater Concentration Rates

Projected Future Wastewater Concentration Rates (ACWWA 5.4.3.3.3 Design of Organic Capacity of Wastewater Treatment Plants)				Limit		Actual Wastewater Concentration Rates		
Parameter	Guideline Loading (kg/(cap/d))	Based on RVA (460 L/Cap/Day)	Based on Actual (514 L/Cap/Day)	Concentration	Source (Ref.)	Current Sample (2026-09-15)	Annual Average (2026)	Summary of Results
Phosphorus (P)	Not Specified	N/A	N/A	10.0 mg/L	Sewer Bylaw IO-300 cl. 4.3.17	2.2 mg/L	3.0 mg/L	Concentrations acceptable
Nitrogen (TKN)	0.016	34.78 mg/L	31.14 mg/L			22.0 mg/L	29.0 mg/L	No concentration limit evaluated
Biochemical Oxygen Demand (BOD)	0.08	173.91 mg/L	155.71 mg/L	300.0 mg/L	Sewer Bylaw IO-300 cl. 4.3.18	43.0 mg/L	60.7 mg/L	Concentrations acceptable
Carbonaceous Biochemical Oxygen Demand (CBOD)	Not Specified	N/A	N/A			32.0 mg/L	74.3 mg/L	No concentration limit evaluated
Total Suspended Solids (TSS)	0.09	195.7 mg/L	175.2 mg/L	350.0 mg/L	Sewer Bylaw IO-300 cl. 4.3.19	90.0 mg/L	128.4 mg/L	Concentrations acceptable
Ammonia	Not Specified	N/A	N/A			14.0 mg/L	20.0 mg/L	No concentration limit evaluated

8. Influent Wastewater Concentration Rate - Limits Comparison

					Typical Wastewater Concentrations <i>Metcalf and Eddy, Inc. (Revised by George Tchobanoglous and Franklin L. Burton) 1991</i>		
Parameter	Concentration Limit (East Hants)	Concentration Limit (Kings County)	Concentration (Berwick)	Concentration (HRM)	Weak Sanitary	Medium Sanitary	Strong Sanitary
Phosphorus (P)	10.0 mg/L	12.0 mg/L		10.0 mg/L	4.0 mg/L	8.0 mg/L	15.0 mg/L
Nitrogen (TKN)		60.0 mg/L	30.0 mg/L	100.0 mg/L			
Biochemical Oxygen Demand (BOD)	300.0 mg/L	200.0 mg/L	250.0 mg/L	300.0 mg/L	100.0 mg/L	220.0 mg/L	400.0 mg/L
Carbonaceous Biochemical Oxygen Demand (CBOD)		1000.0 mg/L		1000.0 mg/L			
Total Suspended Solids (TSS)	350.0 mg/L	200.0 mg/L	250.0 mg/L	300.0 mg/L	350.0 mg/L	720.0 mg/L	1200.0 mg/L
Ammonia					20.0 mg/L	40.0 mg/L	85.0 mg/L

9. Effluent Wastewater Concentration Rate

Parameter	Limit		Actual Wastewater Concentration Rates		
	Concentration	Source (Ref.)	Current Sample (2026-09-15)	Annual Average (2026)	Summary of Results
Carbonaceous Biochemical Oxygen Demand (CBOD)	20.0 mg/L	NSECC	5.0 mg/L	7.8 mg/L	Concentrations acceptable
Total Suspended Solids (TSS)	20.0 mg/L	NSECC	15.0 mg/L	13.0 mg/L	Concentrations acceptable

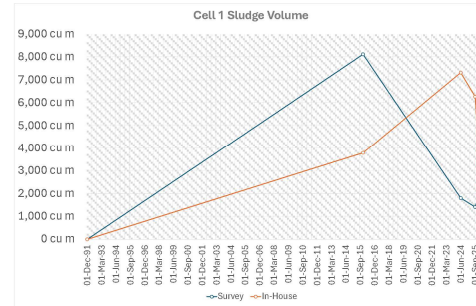
10. Theoretical Capacity of Existing Aeration System

BOD Source of Reference	Ref. BOD Concentration (mg/L)	Equivalent Maximum Hydraulic Capacity of Aeration System	Actual Current Year Average Flow	Actual Annual Average Flows (2025, 2024, 2023)	Actual Average Maximum Flows (2025, 2024, 2023)
System Design Limit	180.00 mg/L	3,814 m ³ /day	5,081 m ³ /day	4,667 m ³ /day	5,713 m ³ /day
Annual Average (2026)	80.72 mg/L	8,504 m ³ /day			
Current Sample (2026-09-15)	43.00 mg/L	15,964 m ³ /day			
East Hants Sewer Bylaw IO-300	300.00 mg/L	2,288 m ³ /day			
Reduced Maximum Allowable (Recommended)	131.39 mg/L	5,225 m ³ /day			

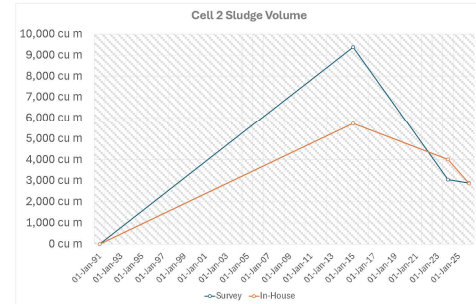
Note: Any Equivalent Hydraulic Capacity of the Aeration System that is less than the Actual Flows should be interpreted as an exceedance.

Record Sludge Data
11. Survey Based Sludge Volumes and Thicknesses

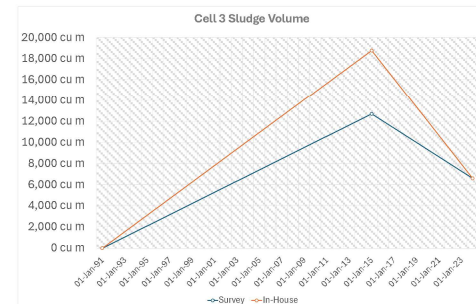
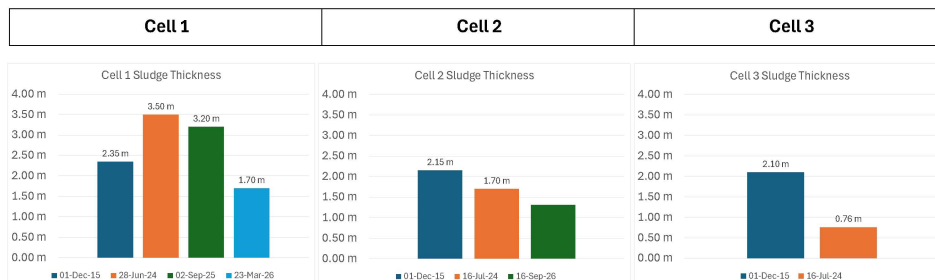
Cell 1	Date	Volume (Survey)	Volume (In-House Check)	Sludge Thickness
	01-Dec-91	0 cu m	0 cu m	0.00 m
	01-Dec-15	8,126 cu m	3,792 cu m	2.35 m
	28-Jun-24	1,805 cu m	7,323 cu m	3.50 m
	02-Sep-25	1,409 cu m	6,278 cu m	3.20 m
	23-Mar-26	2,201 cu m	2,326 cu m	1.70 m



Cell 2	Date	Volume (Survey)	Volume (In-House Check)	Sludge Thickness
	01-Dec-91	0 cu m	0 cu m	0.00 m
	01-Dec-15	9,378 cu m	5,730 cu m	2.15 m
	16-Jul-24	3,058 cu m	4,011 cu m	1.70 m
	16-Sep-26	2,896 cu m	2,869 cu m	1.31 m



Cell 3	Date	Volume (Survey)	Volume (In-House Check)	Sludge Thickness
	01-Dec-91	0 cu m	0 cu m	0.00 m
	01-Dec-15	12,705 cu m	18,779 cu m	2.10 m
	16-Jul-24	6,594 cu m	6,591 cu m	0.76 m

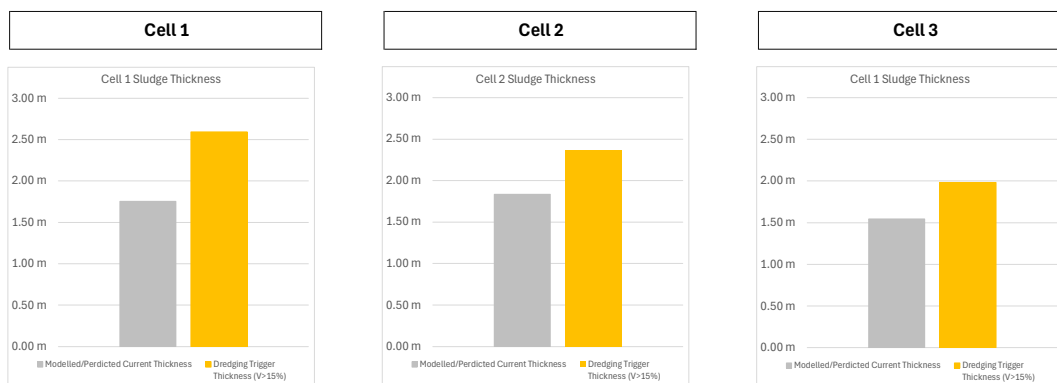

12. Survey Based Cell Sludge Thicknesses


Desludging Planning

13. Forecasting / Projecting Sludge Accumulation (Using Linear Regression Through Available Sludge Data)

Cell	Long-term Trend	R ²	Confidence in Linear Trend	Latest Measured Thickness	Modelled/Projected Current Thickness	Dredging Trigger Thickness (V>15%)	Planning Trigger Thickness (V>13%)	When to Start Planning?
Cell 1 (Pre-Dredging 2026)	0.101 m/y	0.99	Good	3.20 m				
Cell 1 (Post Dredging 2026)	0.101 m/y	0.99	Good	1.70 m	1.75 m	2.59 m	2.36 m	6.1 Years
Cell 2	0.046 m/y	0.62	Moderate	1.31 m	1.84 m	2.36 m	2.13 m	6.5 Years
Cell 3	0.037 m/y	0.35	Low	0.76 m	1.55 m	1.98 m	1.75 m	5.6 Years

14. Forecasted Sludge Thickness vs Triggers



15. Forecasting / Projecting Sludge Volumes (Using Linear Regression Through Available Sludge Data)

Cell	Modelled/Projected Current Thickness	Confidence in Linear Trend	Equivalent Sludge Volume	Dry Mass (BDT)	% Occupied By Sludge
Cell 1	1.75 m	Good	2431.81 m ³	175.1 BDT	8.5%
Cell 2	1.84 m	Moderate	4559.69 m ³	332.9 BDT	10.4%
Cell 3	1.55 m	Low	8210.13 m ³	1,289.0 BDT	11.4%

16. Forecasting Budget Tool

Description	Unit	Quantity	Estimated Price	Total
Mobilization	Flat Rate	1.00	\$ 60,145.00	\$ 60,145.00
Process: Dredging and Dewatering	BDT	209.40	\$ 718.75	\$ 150,506.25
Transportation and Disposal	MT	997	\$ 309.25	\$ 308,362.94
Sludge Survey	Flat Rate	1.00	\$ 10,000.00	\$ 10,000.00
Sub-Total				\$ 529,014.19

Comments:
 1. Prices from GFL 2026 Desludging Project were amplified by 15%
 2. Metric Tonne Conversion assume 21% Dryness
 3. You just need to adjust the target BDT Quantity for the "Process: Dredging and Dewatering"

17. Waste Water Demand Projection

