TO: Board of Directors, [redacted]
FROM: Daryn Bozek, Engineering Oversight [redacted]
RE: Memo 3: System Design & Capacity Calculations – Observations and Concerns
DATE: July 11, 2025

SECTION 1: EXECUTIVE SUMMARY

This memo addresses observations related to the technical design and performance of both the potable water system and the wastewater treatment plant (WWTP) servicing [redacted]. Key issues raised include potential design shortcomings, oversights in system capacity assumptions, and technical liabilities stemming from electrical engineering and component selection. This summary is intended to prepare the board to seek accountability, remedy design flaws, and guide legal and technical evaluation of system ownership.

Key Findings:

- Potable water system may be under-designed for actual occupancy levels
- Wastewater system staged design appears incomplete (third Seacan absent)
- Critical electrical systems suffer from surge vulnerabilities
- Developer's design assumptions appear outdated or inappropriate for current density
- Immediate need to confirm full design assumptions, capacity calculations, and approval records

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SECTION 2: FULL TECHNICAL NOTES

Potable Water System:

- [redacted]Originally designed by [redacted]
- Pumps and controls installed by [redacted]
- Transfer lines laid by [redacted] during Phase 1 civil works
- System includes wells TW4, TW5, and TW7; only TW4 currently online
- TW5 reduced output; suspected blockage in mid-span of buried transfer line

- Well TW4 suffers from pump tripping due to overloads and/or slow recovery
- Design date for wells: 2005–2007; actual commissioning: ~2019–2020

Capacity Observations:

- No final verification of population density assumption is on file
- Indications suggest design assumption of **3 persons/home**
    - Homes are largely 4–5 bedrooms; actual usage = 4.5–5.5 residents/home
    - Design volume appears mismatched to occupancy realities
- If TW4 fails, no redundancy remains; this is a single point of failure

Wastewater Treatment Plant (WWTP):

- Designed and manufactured by [redacted] (Seacan-based system)
- Composed of anaerobic/anoxic tanks and aeration
- Only 2 Seacan processing units confirmed installed; third may not yet be commissioned
- Surge damage in Feb/March 2025 knocked out pumps and PLCs
- Surge protection absent or inadequate
- System has shown signs of infiltration, potentially from stormwater or groundwater

Electrical Engineering:

- Site-wide electrical design and layout by [redacted]
- Feed lines and connections managed by [redacted]
- Critical WWTP and WTP components are on [redacted]
    - This results in isolated exposure to grid faults
    - No UPS or surge suppression systems appear to be in place
    - Observed inrush currents > 3x normal levels

Regulatory & Approval Entities:

- Responsibility Agreement with Township (Municipal Responsibility Agreement or MRA) is missing

- **MECP (Ministry of Environment, Conservation and Parks)** has not received **Form 1** for ownership transfer
- Without official transfer and approvals, PVLC boards are **not yet legal owners/operators**

Prepared by:
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