

## Memorandum



To: Lacey Kastikainen, CAO/Clerk  
Township of Macdonald, Meredith & Aberdeen Additional

From: Ryan Wilson, P. Eng.

Date: September 12, 2025

KEC Ref: 2534.02

**Re: Echo Bay Environmental Centre  
Raw Water Intake Pipe and Intake Structure Inspection**

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The purpose of this memorandum is to present a summary and our interpretation of the results from the inspection of the raw water intake and exterior of the intake pipe as well as to present recommendations for the Township's consideration.

### **1.0 Background**

In the Kresin Engineering Corporation (KEC) document titled "Environmental Centre Condition Overview (dated November 15, 2024)", it was noted that the intake pipe and intake structure were last inspected by a diver more than 5 years ago. Therefore, it was recommended that an inspection should be undertaken at the next opportunity even though there have been no indications of failure or damage to this infrastructure (e.g. elevated raw water turbidity).

The intake structure located in Lake George includes a polyethylene (PE) drum (2.21 metres in diameter), weighted down with sand bags and covered with a PE conical cover. A 508mm diameter PE riser, perforated at its top, extends upward from the drum. The intake structure is partially embedded into the lake bottom, in some 12 metres of water and its intake ports are wrapped with 20mm HDPE mesh to prevent large objects from entering the intake. Chlorine injectors are also provided at the raw water intake to facilitate protection from zebra mussel infestation.

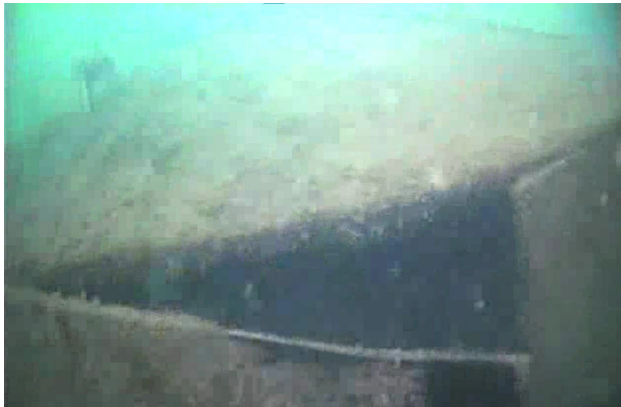
The intake pipe from the intake structure to the raw water well is a 300mm diameter fused SDR26 polyethylene pipe approximately 1,600 metres in length. The exposed section of the intake pipe is approximately 780m long and is weighed down by 0.533 x 0.533 x 0.140m concrete ballast sleeves installed approximately every 2.5m.

## **2.0 Site Work and Summary of Findings**

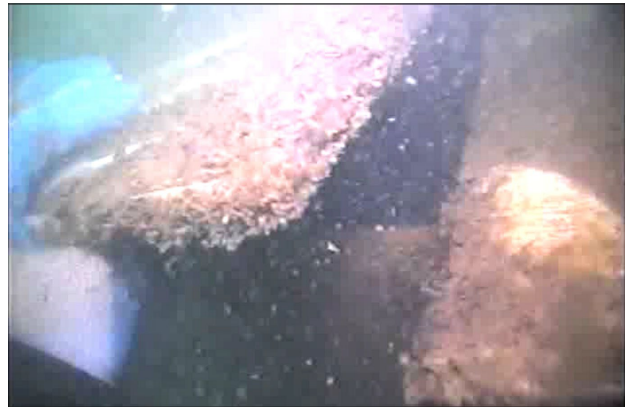
Porpealia Repair Ltd. (Porpealia) was retained by KEC to complete the exterior inspection of the raw water intake pipe and intake structure using a diving crew as well as the necessary equipment to produce an inspection video to document and record the condition of the infrastructure.

On July 25<sup>th</sup>, 2025, representatives from Porpealia, KEC and Ontario Clean Water Agency (OCWA) attended at the Echo Bay Environmental Centre to initiate the inspection work. Using a nearby boat launch, Porpealia set out to locate the raw water intake structure along with Ryan Wilson from KEC onboard to view the live inspection video and provide instructions to the diver as required.

Inspection revealed that one (1) quadrant of the PE conical cover has a loose side panel (Photograph 1) adjacent to a missing cover fastener and the 25mm diameter Schedule 80 PVC diffuser tube is no longer attached to the cover. Available as-built drawings show a total of four (4) 10mm diameter, 75mm long stainless-steel (SS) bolts with SS wire and clevis pin on top of the cover but there are only three (3) bolts visible. Also, the PE drum cover is loose (Photograph 2) as a 10mm diameter, 75mm long SS pin with SS wire and clevis pin is missing. The 50mm diameter chlorine line casing is secured to the side of the 610mm diameter PE riser pipe between the PE conical cover and drum cover. The exterior of the intake structure is coated in a layer of marine growth.



Photograph 1: Loose polyethylene conical cover

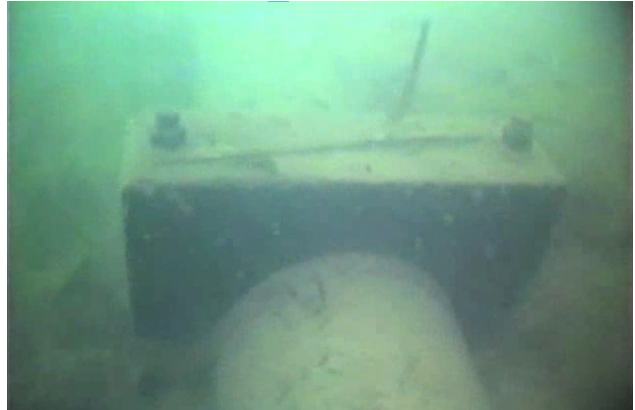


Photograph 2: Loose polyethylene drum cover

The exterior of the SDR26 PE intake pipe appears to be in good condition and is coated in a thin layer of marine growth and sediments (Photograph 3). Each concrete pipe ballast (Photograph 4) is secured with two (2) 25mm diameter threaded bolts and no missing or loose bolts were noted during the inspection.



Photograph 3: Fused HDPE intake pipe



Photograph 4: Concrete ballast

A SS strap is wrapped around each concrete ballast and secures the 50mm diameter chlorine line conduit to the south side of the ballasts (Photograph 5), which differs from available as-built drawings that show the conduit on top of the intake pipe.

Approximately 430m from the intake structure location, there appears to be a repaired section of chlorine line conduit (Photograph 6) comprising what appears to be a cloth wrap and bolted steel flat bar installed along the side of the conduit as well as sandbags nearby.



Photograph 5: Chlorine line conduit strapped to ballast



Photograph 6: Chlorine line conduit repair

Approximately 20m inshore from the apparent chlorine line casing repair location, there is a loose SS strap (Photograph 7) that the diver was unable to install back on the concrete ballast. The SS straps on the remaining concrete ballasts are secure providing some support for the conduit.

Approximately 93m inshore of the loose SS strap there is a concrete ballast is misaligned (Photograph 8) and appears to be resting on top of the 50mm diameter chlorine line casing, pushing it into the lake bottom.



Photograph 7: Loose stainless steel casing strap



Photograph 8: Crooked concrete pipe ballast

### **3.0 Conclusion**

It appears that the intake pipe is in good condition with no obvious indications of pipe wall failure or bad/poor fused joints. As noted, one of the concrete pipe ballasts is misaligned and a SS strap supporting the 50mm diameter chlorine line conduit is loose on another. The intake structure appears to be in fair condition with the exceptions being a portion of the PE conical cover has a loose side panel and fasteners on both the conical cover and drum cover are missing.

### **Recommendations**

It is recommended that the missing PE conical cover fastener is replaced and the PE conical cover panel as well as the 25mm diameter diffuser tube are both reattached to the structure. The missing PE drum cover fastener should also be replaced as well as the adjustment of the loose SS strap and realigning of the concrete ballast should be coordinated with the completion of the intake structure repairs. Additional review would occur prior to realigning the ballast to ensure that this can be accomplished without damaging the intake pipe.

### **Closure**

Please contact the undersigned if you would like to discuss the contents of this Memorandum.

Yours very truly,

**Kresin Engineering Corporation**

A handwritten signature in blue ink, appearing to read "Ryan Wilson".

Ryan Wilson, P.Eng.  
Project Engineer

2534 memo re intake inspection