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Water Intake Pipe and Screen Inspection
Conducted for Sunshine Coast Regional District
At Ruby Lake, Sunshine Coast, B.C.

Introduction

Pelagic Technologies Inc. conducted an underwater visual inspection of the Sunshine Coast Regional District's Ruby Lake intake pipe and screen on April 22nd, 2015. Pelagic Technologies Inc.'s (PTI) dive inspection field team consisted of Glenn Hafey, Kevin Swoboda and Ben Zander.

This intake pump station is located off Sunshine Coast Highway at the Northern end of Ruby Lake. The pipe extends approximately 30m from the pump house on shore and terminates at a depth of 14m.

During the inspection the pump system was shut down and locked out. Lock outs consisted of both electrical and physical locks. The lock out was conducted by the diving supervisor and Don Murray from the SCRD. The locks remained in place until the inspection was complete.

Observations

The entire length of the pipe was inspected for any indication of a structural breach. An inspection video was taken and has been submitted to the SCRD simultaneously with this summary report.

Overall the pipe is in sound condition and appears to be functioning as per the original design. The intake screen was free of debris and algae build-up. Although the pipe is in good condition with no observed breaches, there are a couple locations where there is a potential for additional stress on the pipe. This is solely caused by log debris, either the pipe passing over an accumulation of logs or a log positioned above the pipe. Although these situations are not ideal it appeared that this situation has been like this for sometime and there were no obvious indications that the logs would shift. The only log recommended for removal (if deemed necessary) is the log positioned above the pipe.

Details of the inspection findings of the pipe are categorized in the Table 1 below, from the start (at the pump house on shore) to the terminus of the pipe. Details on the intake structure are listed in Table 2, from the 90 degree turn of the pipe.

In addition to the inspection of the existing structure, the dive team surveyed the adjacent areas for a potential new site and pipe track. This was conducted in order to move the pipe away from the neighbouring property. In conjunction with the SCRD staff member onsite (Don Murray) a potential new pathway was chosen and then surveyed. This pathway was positioned at a 45 degree angle left of the pump house, moved towards the float at the site and then turned offshore parallel to the original pipe run. This track was surveyed down to a depth of 18.2m. This distance and depth appeared to be suitable both for proximity to the neighbouring properties as well as an acceptable depth to allow maintenance work in the future.

This alternate pathway transits over some log debris, the majority of which could remain in place. There are 2 logs which would need to be cut and moved in order to attain a proper pipe lay. If a new pipe is entertained, it is highly recommended to use an HDPE Schlair pipe with an appropriate wall thickness.

An underwater video was taken, both of the existing structure as well as the alternate pathway survey dive. This has been submitted on a separate flash drive. In addition the terminus of the existing pipe and the end point of the alternate pathway survey were recorded with GPS and input into a Google Earth file. An image of this is shown on Page 3.

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Table 1 - Pipe Notes	
Distance (m)	**Observations**
0 - 13	Pipe is buried from pump house through the foreshore area
13	Pipe becomes exposed and a label reading the following was observed: 6” IPS SDR 20, PVC 120 160psi HI-Impact
18.8	PVC joint
23	Pipe in contact with log underneath
24.8	PVC join; pipe sitting on log but noted to be suspended 1.5m above lake bed; pipe angle steepens to approximately 15 degrees
25	Stainless steel, 4 bolt, repair clamp; clamp 200mm in length butted up to a PVC join
29	Pipe passes under a log with 1.5m clearance below the log and above the lake bed; the log diameter was 900mm
30	PVC joint
36.6	Val-matic silent check valve present (6” diameter)
37.4	Pipe takes a 90 degree elbow upward at a steel support base which is securely sitting within the sediment

Table 2 - Intake Housing Notes	
Distance (m) From 90° bend	**Observations**
0.4	Stainless steel, 2 bolt, clamp of length 200mm which splices in a different diameter of pipe from the elbow to the screen
0.8	Flange face with 9 bolt (3/4 inch) configuration but only 4 bolts present; leads to intake screen Intake Screen dimensions 900mm vertical by 400mm by 400mm consisting of a top and bottom of plywood and multiple layers of fine stainless steel mesh screwed into place

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Screen shot of Google Earth layout

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