

Gabriola Streamkeepers—Water levels and quality

Observations at Coats Marsh, Gabriola Island
—with notes on Coats Marsh Creek, East Path Creek, and Stump Farm
Streams.

References:

[RDN Coats Marsh Regional Park](#), 2011–2021 Management Plan, Appendix A.

[Coats Marsh hydrogeology](#) .

Coats Marsh RP and 707 CP Trail [Maps](#): Maps Y and Z.

Gabriola Stream and Wetlands [Atlas](#) .

Coats Marsh Species [Checklists](#) .

Coats Marsh – human disturbance of breeding and migratory [ducks and geese](#).

Coats Marsh Management - [paper on](#).

Field observations—2021 (Oct.—Dec.)

THIS FILE ([Field Observations 2021-3](#)) IS A SUPPLEMENT TO:

“[Observations at Coats Marsh, Gabriola Island](#)” File: 673.

For an up-to-date list of supplements see [here](#) .

October 4, 2021

(day 2270, 2192+78):
NanRG cum. 127.6 mm
(norm. 91 mm).

Beaver has returned to the weir pool. All syphon gate valves closed. No flow at the weir beyond a trickle from the pond leveller. No flow in Coats Marsh Creek.

If the plan were to pull the level of the lake down to the level of the top of the baffle, they'd have to drain away not much less than half of the volume that's currently there ([File 668](#), see example 3) adding another 13 metres (43 ft.) to the retreat of the shoreline.

Curious mushroom, apparently common on logging roads as were these, clustered so close together the otherwise normal-looking caps sometimes fuse together; *Clitocybe dilatata*.

October 5, 2021 (day 2271, 2192+79): NanRG cum. 132.8 mm (norm. 94 mm).

Ring-neckeds have arrived. So have numerous male wood ducks in their brand-new clobber. The hens likewise are lookers too. One or two other species including northern shovelers in their midst.

Modifications to the syphon system still being made. All gate valves closed.





October 6, 2021 (day 2272, 2192+80): NanRG cum. 132.9 mm (norm. 97 mm). RDN outer gauge 837 mm. [cal. datum: RDN outer gauge -0.113 m].

All yesterday's birds on the lake either in hiding or have been scared away. None to be seen or heard. Workers out on the dam,

highly visible from almost anywhere on the water.

More mods. Syphons running. Lots of Jubilee hose clamps seems to have been the answer. Gate valves rather elaborately clamped open, and bleed valves closed though the two outer ones lack plugs.



October 11, 2021 (day 2277,
2192+85): NanRG cum. 136.0 mm
(norm. 113 mm). Cistern -552 mm
SCB. [cal. datum: cistern

-0.185 m].

Coats Marsh Creek ponded at the
culvert with a flow less than 1
L/s so syphoning's stopped again.



Judging by the drawdown, I'd say syphons have only been running for a couple of days. The weir-pool level is becoming as if tidal. Level at the cistern now approaching the lowest I've ever measured.

Pearly everlasting, looking like a species of pussytoes (*Antennaria* sp.) but lacking clustered basal leaves. This plant is a female; you can tell because female pearlies don't spread their white petal-like bracts until seeds have formed.

Lichen on moss, *Hypogymnia* sp.?, no holdfast, hollow white lobes, an epiphyte?

No ducks on open water, but I heard some sheltering along the southeast shore where the swallows roost in summer. I'm told Mr. Beaver has been trying to stop the flow at the weir.

Visiting the marsh has become a source of anxiety, a shadow of what it once was.

October 16, 2021 (day 2282, 2192+90): NanRG cum. 185.0 mm (norm. 131 mm). RDN outer gauge 810 mm. [cal. datum: RDN outer gauge -0.140 m].

Steady rain. Coats Marsh Creek flowing but has been dry for most of this past week. Syphons open-ended; not running.

A covey of wood ducks and two or three mallards sheltering in the slough at the NE Arm outlet, but no sign of the ring-neckeds or buffleheads that are usually around in numbers this time of year.

October 21, 2021 (day 2287, 2192+95): NanRG cum. 194.2 mm (norm. 150 mm). Cistern -428 mm SCB. [cal. datum: cistern -0.061 m].





Wood ducks far off alone in beaver bay.

Watershield is rotting. Coats Marsh Creek dry. Fast changing bright blue and dreary grey days.

October 22, 2021 (day 2288, 2192+96): NanRG cum. 196.4 mm (norm. 155 mm). Cistern -405 mm SCB. RDN outer gauge 913 mm. [cal. datum: cistern -0.038 m, RDN outer gauge -0.037 m]

Maple trees putting on a show. Leaves, golden browns and yellows, some still mottled a limey green, capturing the light and then gracefully twisting and twirling like flakes of snow to carpet the ground. Pacific crab-apple trees near the water adding a blush to the autumnal colour.

Mallards, could well be transients, out in the open, splashing about, stretching and





flapping their wings and looking pleased with themselves.

Heard that wood ducks have been seen in earlier years in the winter wetlands in Randy Hollow along Little Creek in the 707CP.

No syphoning. Hopefully the misguided RDN-NTBC beaver-dam project is running short of time and money.

October 25, 2021 (day 2291, 2192+99): NanRG cum. 224.9 mm (norm. 167 mm). Cistern -332 mm SCB. RDN outer gauge 980 mm.¹ [cal. datum: cistern +0.035 m, RDN outer gauge +0.030 m]

Windy. Coats Marsh Creek dry despite the rain. Suggests the Clemson leveller is only skimming off weir-pool precipitation. Back in October 2016, [File 673u](#), there were substantial leakages through

¹ GM observations.

the beaver dam that maybe the beaver has now plugged, or maybe the lake level is currently just too low for them to have any effect.

East Path Creek and NE Arm sparsely puddled; nowhere near starting to flow. The ratio of lake-level rise to rainfall (dL/dR) in the past 14 days has been 2.7 so the catchment area is still just very local but measurably increasing.²

October 28, 2021 (day 2294, 2192+102): NanRG cum. 265.8 mm (norm. 181 mm). Weir +274 mm WPB scale.¹ RDN outer gauge 1090 mm. [cal. datum: weir -0.373 m, RDN outer gauge +0.140 m, $\Delta = 0.51$ m]

Rain, every day. Have to be careful what you say! East Path Creek starting to flow, as have

² This is a rough figure assuming no significant evaporation in winter.

the two associated springs near the Stanley Place entrance.

The ratio of lake-level rise to rainfall (dL/dR) in the past 12 days has correspondingly increased to 3.4. The growth in effective catchment area is, not surprisingly, following a quadratic rather than a linear curve and d^2L/dR^2 (the acceleration of the ratio) is currently 0.34 per day.

The syphons are flowing, starting I believe today, trying to keep up, and incidentally confounding the analysis of the lake's hydrology.

The capacity of the syphon system is by my reckoning not large. Even though there are four pipes, their nominal dimension is only 4" (100mm) which means friction losses are high.

My estimate is that the capacity is $\approx 90\sqrt{\Delta}$ L/s where $\Delta \leq 1$ m is the hydraulic head. Today, Δ is 0.51 m and falling. The estimated drainage rate currently is thus around 65 L/s,³ a drawdown rate for the lake of the order of 120 mm/day less precipitation augmented by the increasing inflow from the catchment area beyond the lake surface.

If these estimates are right, there may be days in winter when the outer lake level is rising even though the syphons are running.

October 29, 2021 (day 2295, 2192+103): NanRG cum. 265.8 mm (norm. 185 mm). Weir +488 mm WPB scale.¹ RDN outer gauge 1000 mm.¹ [cal. datum: weir -0.159 m, RDN outer gauge +0.050 m, $\Delta = 0.21$ m]

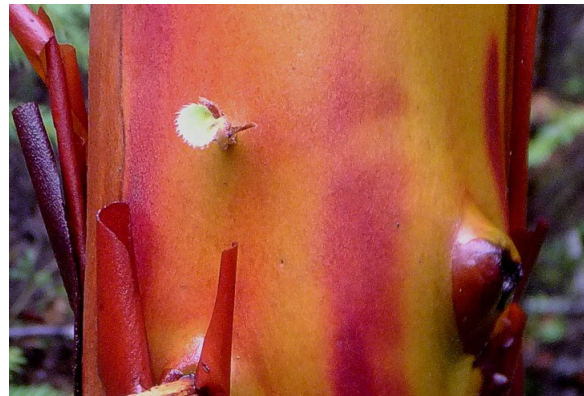
³ The 8" (200mm) Clemson pond leveller's capacity when fully submerged is ≈ 40 L/s.

October 30, 2021 (day 2296, 2192+104): NanRG cum. 265.8 mm (norm. 190 mm). RDN outer gauge 985 mm.¹ [cal. datum: RDN outer gauge +0.035 m]

October 31, 2021 (day 2297, 2192+105): NanRG cum. 265.8 mm (norm. 195 mm). RDN outer gauge 990 mm.¹ [cal. datum: RDN outer gauge +0.040 m]

Rain in October plentiful; 38% above long-term month's average. Total for the first ten months of this year now just a mere 10% below average.

November 1, 2021 (day 2298, 2192+106): NanRG cum. 271.2 mm (norm. 199 mm). RDN outer gauge 1000 mm.¹ [cal. datum: RDN outer gauge +0.050 m]



Both the NE Arm and SE Arm wetlands dry. East Path Creek not flowing but ponded. Covey of ducks still around, ID uncertain, but they're not ring-neckeds.

Syphon flow weak.

November 2, 2021 (day 2299, 2192+107): NanRG cum. 309.5 mm (norm. 204 mm). RDN outer gauge 1100 mm.¹ [cal. datum: RDN outer gauge +0.150 m].

Little Creek running gently as it approaches the Three Gates Trail. Buffleheads are on Nelders Pond and in False Narrows so they should also be at the marsh.

Syphon flow continues but appears weak.

November 4, 2021 (day 2301, 2192+109): NanRG cum. 335.8 mm (norm. 214 mm). Weir +511 mm WPB scale. RDN outer gauge 1301 mm. [cal. datum: weir -0.136 m, RDN outer gauge +0.351 m, $\Delta = 0.49$ m]

Rain, lots, 70mm in the first four days of the month. Running strongly are: Coats Marsh Creek; East Path Creek, culvert at East Path more than 50% capacity; NE Arm wetland outlet flooding East Path; and Stump Farm Number 1 Stream at culvert carrying outflow from Canary Grass Meadow.

All ducks on the lake at the moment are extremely sensitive to human disturbance. Best to stay away.

November 5, 2021 (day 2302, 2192+110): NanRG cum. 342.8 mm (norm. 219 mm). Weir +518 mm WPB scale.¹ RDN outer gauge 1400 mm.¹ [cal. datum: weir -0.129 m, RDN outer gauge +0.450 m, $\Delta = 0.58$ m]

Stump Farm Number 2 Stream is running gently. I suspect this creek was consigned to be just logging-road drainage long ago. It has no surface connection to the lake.

Standing water in the NE Arm wetland, which is alive with croaking frogs.



An old cluster of *Lycopodium pyrifolium*.

Small patches of sky more deeply blue than usual. Enough rain to wash out the aerosols? The rain, despite its heaviness has an April-showery nature which seems to be new for this time of year. A succession of troughs and ridges? ...or fast moving fronts?

November 6, 2021 (day 2303, 2192+111): NanRG cum. 353.5 mm (norm. 224 mm). Weir +527 mm WPB scale. RDN outer gauge 1445 mm.¹ [cal. datum: weir -0.120 m, RDN outer gauge +0.495 m, $\Delta = 0.61$ m]

Very gloomy sky, like dusk, but a good day at the lake. Ring-necked ducks and buffleheads arrived in numbers. Mostly drakes visible,

in good spirits, pleased to see open water and the lake level as high as is normal in the fall. Awaiting the start of the courting season.

Only two of the four syphons seem to be working. Spillways in the beaver dam only trickling suggesting the 950 mm calibration may be low given the measured height of the dam was +451 mm on Sept. 25, 2021.

From afar look's like the beaver's been trying to plug the syphons, defeated of course by the wire cage.





The ratio of lake-level rise to rainfall (dL/dR) in the past six days has increased to 6.0 with (partial?) syphoning.

November 8, 2021 (day 2305, 2192+113): NanRG cum. 386.4 mm (norm. 234 mm). Weir +549 mm WPB scale.¹ RDN outer gauge 1480 mm.¹ [cal. datum: weir -0.098 m, RDN outer gauge +0.530 m, $\Delta = 0.63$ m]

A new adjustable sluice for the weir, and an up-sizing of the downstream 24" culvert leaving the beaver to control the outer lake level is what we need now.



November 11, 2021 (day 2308, 2192+116): NanRG cum. 407.1 mm (norm. 250 mm). Weir +559 mm WPB scale. RDN outer gauge 1517 mm. [cal. datum: weir -0.088 m, RDN outer gauge +0.567 m, $\Delta = 0.65$ m]



The jet stream is right overhead, the weather is cluttery, and the lake is full to the brim.

The spillways on the beaver dam are working; but it's hard to tell whether the syphons are.



Willows along the berm preparing for winter.

Weir-pool level is high, but the deck is not flooded,⁴ and there's a torrent of water on its way to Hoggan Lake.

Everything looking comfortable, and it's spotting with rain again.

November 13, 2021 (day 2310, 2192+118): NanRG cum. 455.0 mm (norm. 261 mm).

The leaves of the alders, distaining the lambent yellowing of those of other deciduous small trees and shrubs,



are holding their green as they always do, all the while becoming increasingly blotched with the dark coffee-brown colour of dead ones.

The NNE Arm pond beside East Path full but not crossing the trail. Standing water in the SE Arm Wetland but no continuous flow down into it from the High Point Meadows and McGuffies Swamp.

Sometimes confusion and turmoil among the all-shades-of-grey clouds; low misty ones mizzle and drizzle; others a little higher up steadily pour; on the dark horizon you can see over there, it's chuckin' it down; while still others, depending on which direction you look, just veil the blue. What my grandfather would call good grawin' (growing) weather.

Beaver reported missing for several days prior to Nov. 11.

⁴ The lowest point of the deck is at +0.045m CWB (SE corner).



November 14, 2021 (day 2311, 2192+119): NanRG cum. 532.8 mm (norm. 266 mm). Weir +656 mm WPB scale. [cal. datum: weir +0.009 m]

Rain; breaks when the light peeps in; then rain again.

Rain 125 mm in just the last two days.

"Christopher Robin didn't much mind what the weather did, as long as he was out in it."

November 15, 2021 (day 2312, 2192+120): NanRG cum. 549.7 mm (norm. 272 mm). Weir >914 mm*. RDN outer gauge 1631 mm. [cal. datum: weir >+0.267m*, +0.292m**, RDN outer gauge +0.681m, $\Delta \approx 0.4m$] * over the top of the scale. **GM estimate +11.5 inches deck.

Highest water ever seen.

Water flowing strongly over the whole length of the deck of the weir. At the downstream edge of

the top of the concrete $\approx 5''$ (127 mm) deep.

The inundation of the weir has raised the width of the sill from its normal 2 ft.(0.6 m) to an effective 18 ft.(5.5 m), 20 ft.(≈ 6 m) if you include water flowing round the two ends of the concrete. As a result of this near-tenfold increase, the weir-pool level rate-of-rise has been curtailed.

The berm is not looking threatened.

Numerous spillways over the beaver dam but no sign of any looming failure. Whether the syphons are working or not has become irrelevant.

The only downstream structure affected is a 24-inch culvert that is submerged and forcing water to circle harmlessly around it



through the woods. The log cabin is dry and not in danger.

No measurement of the flow in Coats Marsh Creek at the Marsh

Trail culvert, but it's more than anything I've ever measured, meaning it's more than 500 L/s.

[estimated 565 L/s File:673,c15]





Coats Marsh Creek culvert outlet at the Marsh Nov. 15, 2021

I think it's worth quoting here a response I received on November 3, 2021 from Richard Brazier, Professor of Earth Surface Processes at the University of Exeter. His response was to my

enquiry as to whether he had more to add to his comment that data collected up until 2019 in the UK had found that catastrophic failure in well-established, low-order channels is "rare".

"I would still stand by this statement and indeed reinforce it as we rarely see beaver dam failure at our study sites and when we do, it is on higher-order, high-energy stream/river systems during times of flood.

"Even in these cases, we most often see partial failure, where a notch in the beaver dam fails, and is subsequently repaired the following evening by the beavers. This is because beaver dams are very coherent structures, far more so than the analogous dams that we humans construct, which of course we rarely, if ever, maintain.

"Considering the system that you refer to, which is a low energy lake system, in my opinion, especially given the maturity of the dam, the chance of any catastrophic failure is non-existent. The chance of partial failure is also very low and thus I would not consider there being any enhanced risk to infrastructure downstream, above and beyond the 'normal' risk that such a system might afford to any infrastructure that is in place.

"On this point, it is often the case that the risk to infrastructure, including culverts, roads, bridges etc... is due to the inadequate design of older infrastructure that renders it less resilient to the rainfall:runoff regimes that we currently experience, and perhaps even more so to the regimes that we will experience under climate change scenarios.

"Ironically, beaver dams can enhance the resilience of such structures, as we prove in the attached paper from earlier this year which demonstrates natural flood management, protecting villages downstream of beaver sites, by the beaver dams themselves."



November 16, 2021 (day 2313,
2192+121): NanRG cum. 549.7 mm
(norm. 277 mm).

Jet stream and atmospheric river
have moved on south, the
temperature has dropped, the
barometric pressure has gone up,
the rain has stopped, and the sun
has come out.

Stabilizing the level of the lake
during storm events depends on the
outflow matching the inflow.
Drawing the lake level down in
normal times is not only
destructive to the ecology, it
takes little time for storm water
to restore the lake to its natural
level regardless of the activities
of the syphons. An adjustable
sluice gate engineered to match
the storm water inflow, which is
from several sources, is what we
need above all. An inadequate
outflow capacity causes the weir-
pool level to rise potentially

threatening the berm and lowering the hydraulic head of the syphons making their contribution irrelevant. Fortunately the present design of the weir greatly helps in curtailing the rise in weir-pool level by making the whole width of the weir available for discharge when the Clemson leveller and the 2-foot wide, 2-foot deep gap above the baffle are not enough.

Seen flowing strongly today were East Path Creek, culvert submerged; NE Arm spillway on East Path; NNE spillway (W2N in File:668); upper East Path Creek at the inflow to the SE Arm wetland coming down from the High Point Meadows. Available photographs similar to those taken in flood conditions in previous years.



Along the edges of well-trod trails, seed-leaves (cotyledons) sprout, but ash alders, their branches bared, know in the months to come, they may rue their alacrity.

November 17, 2021 (day 2314, 2192+122): NanRG cum. 550.0 mm (norm. 283 mm).

Weir 579 mm WPB scale.¹

[cal. datum: weir -0.068 m]

Flooding abated.
Beaver still absent.

November 19, 2021
(day 2316, 2192+124): NanRG cum. 561.4 mm (norm. 294 mm).

Weir +536 mm WPB scale.⁵ RDN outer gauge 1522 mm.

[cal. datum: weir -0.111 m, RDN outer gauge +0.572 m, $\Delta = 0.68$ m]



⁵ The scale reads higher than the sill level because the beaver has been consolidating debris into a dam. Height estimate ≈ 40 cm.

November 22, 2021 (day 2319, 2192+127): NanRG cum. 563.4 mm (norm. 311 mm). Weir +517 mm WPB scale. RDN outer gauge 1483 mm. [cal. datum: weir -0.130 m, RDN outer gauge +0.533 m, $\Delta = 0.66$ m]

Sill level = -640+125 = -515 mm.

Ducks, some buffleheads and ring-neckeds, not a lot tho' and seemingly all drakes.

No sign of the beaver. Some log movement but not characteristically organized, possibly a result instead of the storm.

November 24, 2021 (day 2321, 2192+129): NanRG cum. 567.7 mm (norm. 323 mm). Weir +509 mm WPB scale. RDN outer gauge 1448 mm. [cal. datum: weir -0.138 m, RDN outer gauge +0.498 m, $\Delta = 0.64$ m]

Overcast; shades of grey but with holes of blue. Gusty wind souging in the canopy, mimicking the sound of a fast-approaching downpour.

Ring-necked ducks, less than ten, sheltering uneasily along the shore at the east end. The open water dispiritingly vacant of wildlife. Birds in the woods quiet; Pacific wrens in the bush and ravens overhead; mostly that's all.

Water still flowing from the NE Arm wetland and, although crossing East Path, doing so sub-surface. Beaver activity at the weir? Maybe. Don't think so. Hard to judge.

Syphons reported to

have been running as designed.

November 28, 2021 (day 2325, 2192+133): NanRG cum. 621.0 mm (norm. 346 mm). RDN outer gauge 1482 mm. [cal. datum: RDN outer gauge +0.532 m]

Overcast, still and quiet. Frogs and sea lions at Harmac all that's to be heard. All creeks running.



Buffleheads in the weir pool, females and juvenile males with incomplete white hoods. Missed gauge-reading so as not to disturb them; level not changed much.

November 30, 2021 (day 2327, 2192+135): NanRG cum. 624.6 mm (norm. 358 mm). Weir +555 mm WPB scale. RDN outer gauge 1530 mm. [cal. datum: weir -0.092 m, RDN outer gauge +0.580 m, $\Delta = 0.67$ m] Rain in November again plentiful; 104% above long-term month's average (a bit more than double).





We have only had a wetter November in two of the last 75 years; 1983 and 2006. Total precipitation for the first eleven months of this year now +11% above the long-term average.

The marsh is done with fall. Green is now the *colore di questi giorni*. Only an occasional shrub like this 'giant' dwarf rose (*Rosa gymnocarpa*) signalling that so far this winter, it's not just been wet, it's also been pretty mild.

December 5, 2021 (day 2332, 2192+140): NanRG cum. 639.3 mm (norm. 388 mm). Weir +521 mm WPB scale. RDN outer gauge 1440 mm. [cal. datum: weir -0.126 m, RDN outer gauge +0.490 m, $\Delta = 0.62$ m] Light frost; just enough to quieten the frogs who've been imagining it's spring. Very few waterfowl; unusual for the time of year. One mature female bufflehead all that was clearly

seen. Several bike tracks across the clearings from the Marsh Trail down to the wetland shore. The "nature-reserve" status of the park continues to fray.

December 9, 2021 (day 2336, 2192+144): NanRG cum. 648.9 mm (norm. 413 mm). Weir +521 mm WPB scale. RDN outer gauge 1370 mm. [cal. datum: weir -0.126 m, RDN outer gauge +0.420 m, $\Delta = 0.55$ m] So dull and dark are some November days. Yesterday, the lake, a mirror, no wind to ruffle the surface. Today, brighter. Seen, just one juvenile bufflehead, two mallards, and a small hard-to-spot flock of about ten ring-neckeds. The continuing syphoning is drawing the level down to where summer watershield is showing.

The beaver believed missing for a month now. No sign either of the swans that have been reported to be on the island.



Chocolate-brown alder leaves underfoot and clusters of tawnied bracken in the bush marking the end of another year. Grey lichens tingeing green in the shafts of sunshine piercing the gaps between the trunks of the trees.

Orange jelly (*Dacrymyces chrysospermus*), likes to party after heavy rain.

Feathers of a robin or possibly a towhee, left by a hawk, likely a Cooper's hawk, as it prep'ed its dinner. Often seen.

December 15, 2021 (day 2342, 2192+150): NanRG cum. 715.5 mm (norm. 449 mm). Weir +552 mm WPB scale. RDN outer gauge 1528 mm. [cal. datum: weir -0.095 m, RDN outer gauge +0.578 m, $\Delta = 0.67$ m]

Lake deserted except for the small tight-knit group of ring-neckeds. No beaver.

Lake back up to a perfectly normal winter level despite the syphons. This is because its

catchment area is expanding as the fractured-sandstone aquifers fill up and, as a consequence, run-off into the lake increases. There's now a flow down from High Point Meadows into the SE Arm wetland, Appleyard Ponds, and into East Path Creek and its two springs.

Little Creek is now flowing across the Three Gates Trail.





Arbutus berries, like glowing embers from warmer days, seemingly scarce this year, but not entirely absent

A prince! No such luck. Very fresh-looking but a *Leucopaxillus giganteus*, its 'gigantic' cap a startlingly 10-inches (25cm) across.

December 18, 2021 (day 2345, 2192+153): NanRG cum. 748.0 mm (norm. 468 mm). Weir +568 mm WPB scale. RDN outer gauge 1552 mm. [cal. datum: weir -0.079 m, RDN outer gauge +0.602 m, $\Delta = 0.68$ m]

Slushy snow, air about 5°C, drifting mist masquerading as ground-level clouds with a promise of bright sunshine higher up. Like the bottom of a low-altitude ski resort in spring. Numerous spillways in the beaver dam are just beginning to flow. Syphoning appears to be not serving any useful purpose. Weir



deck is dry and the berm is showing no hint of stress.

No wildlife seen; yet, Nelders Pond, Farrow Spring, Commons Pond, and Dicks Swamp all have winter-resident waterbirds.





We won't be seeing the real impact of the syphoning system until next April when, if it's not shut down,

it starts draining the lake's reserve of water that it relies on to get it through the dry season.



December, late-afternoon, three days before the end of this tropical year. Nature's light at the end of a tunnel?

December 22, 2021 (day 2349, 2192+157): NanRG cum. 778.1 mm (norm. 493 mm). Weir +547 mm WPB scale. RDN outer gauge 1525 mm. [cal. datum: weir -0.100 m, RDN outer gauge +0.575 m, $\Delta = 0.67$ m]

No wildlife seen on the water. Geese and ducks overhead.

Beaver still absent, so no routine maintenance being done on his dam.

RDN focus appears to be on the integrity of the concrete weir, but nothing more about their syphoning plans made public.

December 30, 2021 (day 2357, 2192+165): NanRG cum. 822.6 mm (norm. 541 mm).

Lake frozen over and snow covered. Wood ducks and one or two female buffleheads sheltering in what open water there is. Had to take extra care not to alarm them.

Snow-clad trees around Stump Farm appearing as sentinels from a Harry Potter tale. Magical.

December 31, 2021 (day 2358, 2192+166): NanRG cum. 822.6 mm (norm. 548 mm).

Precipitation, including snow, in December normal; just 5% above long-term month's average.

Total precipitation for the year +10% above the long-term average, nothing statistically unusual as an annual average but monthly totals have been 'interesting'. These days, we are getting more rain on average in the spring and again, especially in the fall, noticeably less rain in summer, and a trendless amount of precipitation in winter.







Sky a medley of ragged crystal white and moisture-laden icy grey clouds. Welcome to Canada, new year!

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