Montreux HOA
2020 Annual Meeting
July 8, 2020

Ponds & Waterfalls

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Montreux Lakes

- 3 Lakes (water retention ponds)

- Lakes E & H have 1 fountain, Lake F has 2 fountains

- Lake E – Frank Yandrasits
- Lake F – Jon Greene
- Lake H – Jay Willenberg

Lake Maintenance

- Fountains operate daily and add oxygen to the water

- Replace fountain light bulbs as needed

- Lake E Fountain was replaced with a smaller motor to reduce noise in Nov 2019. This resulted in less water flow and a smaller spray pattern shown here
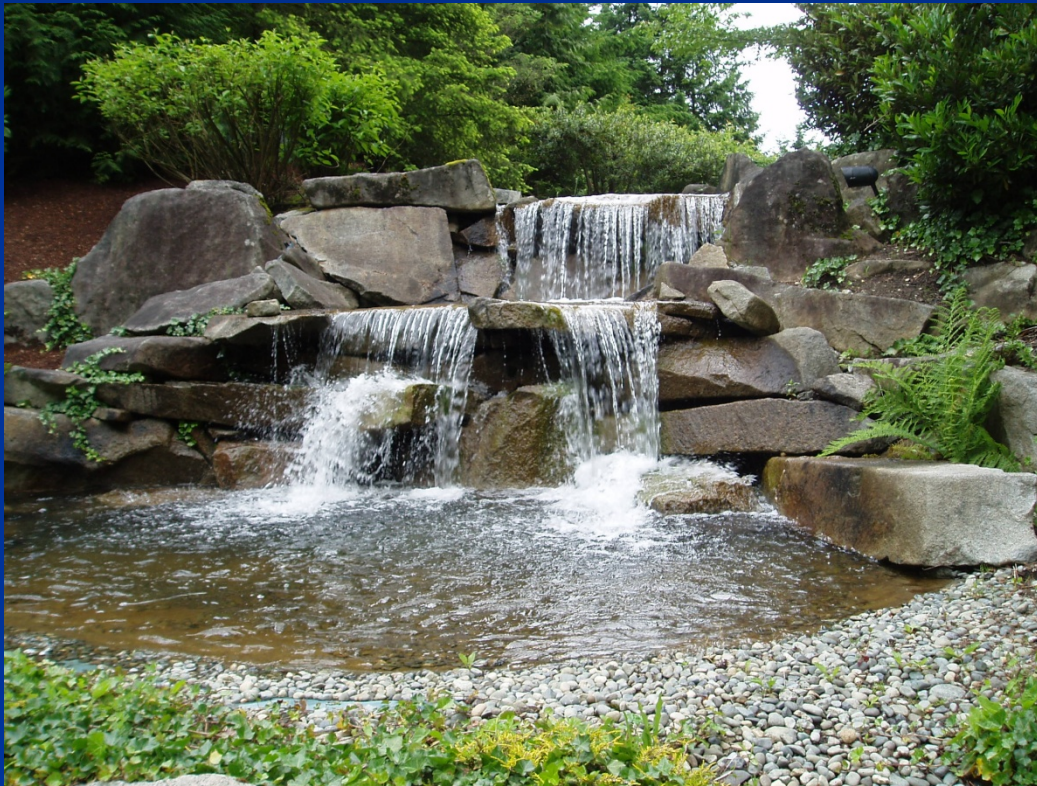
Lake Maintenance

- Chemical treatments (summer only) to control algae & water clarity

- Services provided by Northwest Aquatic Ecosystems

- 5 Treatments in 2019 totaling $5,728 included removal of pond weeds.

Montreux Waterfalls

- Small falls (facing north)

- 5 HP pump (new June 2013)

- Auto refill system froze in 2018 and a heat wire was added to the inlet pipe to prevent future freezes.

Montreux Waterfalls

- Large falls at Newport Way entrance

- 15 HP pump delivers about 1200 gal/min

- Pumps run from 6 AM to midnight to save energy

- Automatic shut down during freezing weather to prevent water spray from making roads icy.
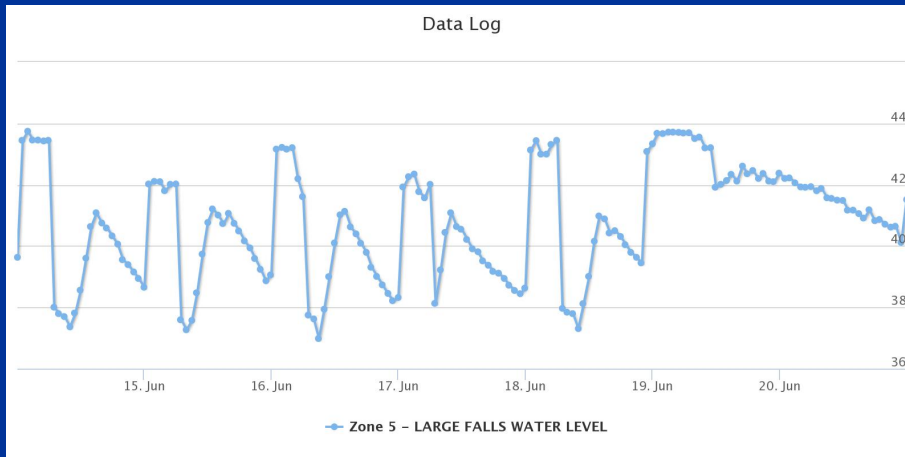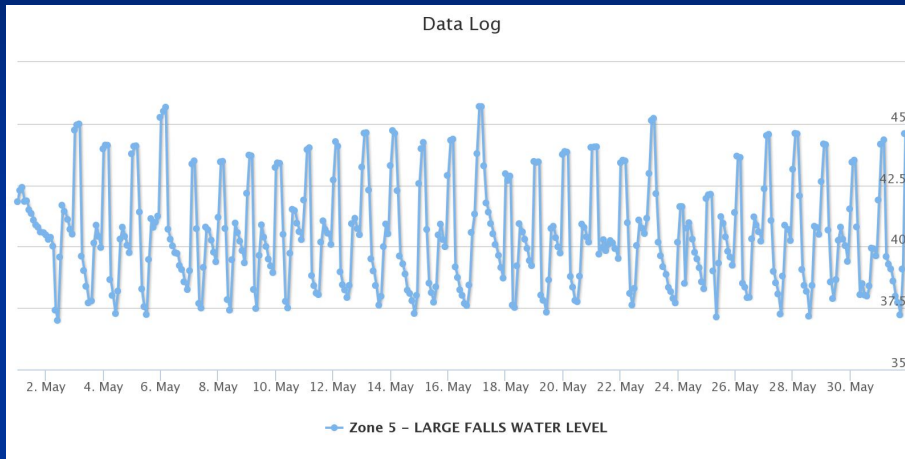
Montreux Waterfalls

- After 7 years of service the large falls pump failed 4/23/19 and pulled for repair on 5/6/19

- Reinstalled repaired pump on 6/14/19 with a 90 day warranty

- Pump failed again on 10/20/19 due to motor bearing failure

- Reinstalled repaired pump 2/21/20

Waterfall Maintenance

- Occasionally we get soapings, typically with dish soap. Suds typically last 2 or 3 days before dying away. None in 2019, but twice in May 2020.

- Rocks should be pressure washed yearly. Last done June 14, 2019
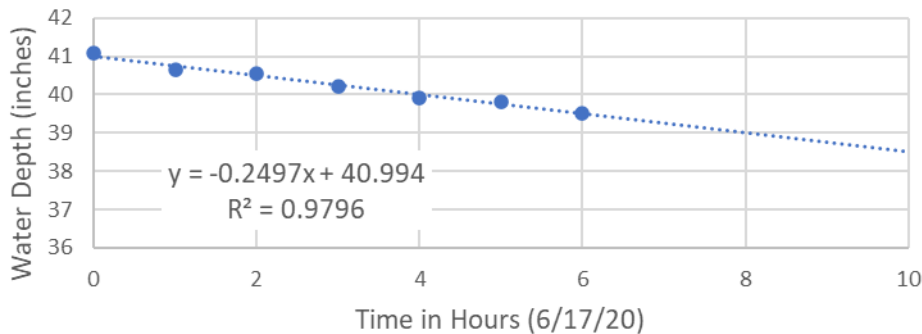
Remote System Monitoring

- Pump control panel permits real time monitoring of:

  PUMP POWER (amps)
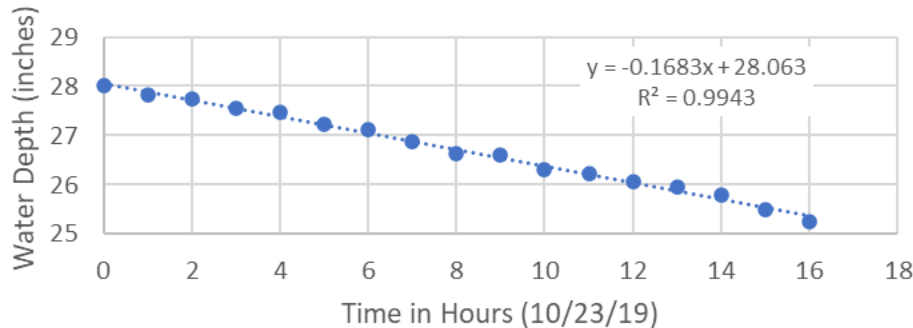 WATER LEVEL (inches)
  TOTAL WATER (gal.)
  AIR TEMPERATURE

- Monitoring system was upgraded August 2019 to log all system parameters on an hourly basis. This allows us to evaluate water loss from evaporation and leaks.

Water Consumption

Large Falls Pump ON (No Rain)
Water Depth (inches) vs Time in Hours (6/17/20)
$y = -0.2497x + 40.994$
$R^2 = 0.9796$

Small Falls Pump ON (No Rain)
Water Depth (inches) vs Time in Hours (10/23/19)
$y = -0.1683x + 28.063$
$R^2 = 0.9943$

- Recent monitoring has shown that the large falls is losing about 2 gal/min (0.17%) when the pump is running and a little less than 1 gal/min when the pump is off. This works out to 3,850 gallons/day without rain

- The small falls loses only 0.25 gal/min (0.06%) about 300 gallons/day without rain

Water Loss in Waterfalls

Small Falls

- 400 gallons/minute
- 24,000 gal/hour

- Average daily loss due to evaporation for waterfalls is about 1% of hourly flow or 240 gallons per day

- Our small falls is losing 300 gal/day – 1.25 times the average water loss (splashing)
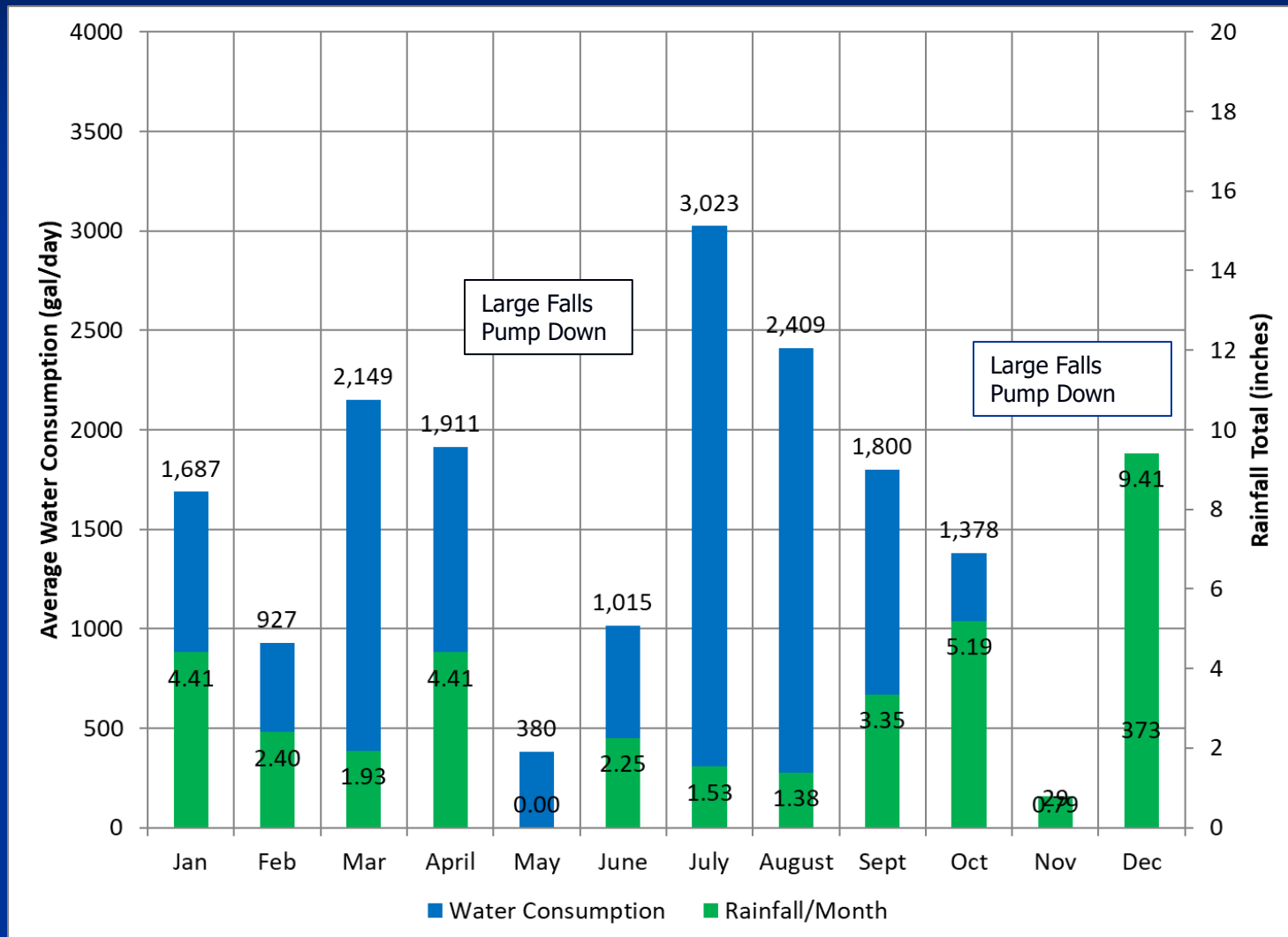
Large Falls

- 1,200 gallons/minute
- 72,000 gal/hour

- Average daily loss due to evaporation for waterfalls is about 1% of hourly flow or 720 gallons per day

- Our large falls is losing 3,850 gal/day – 5.3 times the average water loss (leaks)

Water Leak Detection

- There was a leak found in the west side pond that was repaired in 2012.

- Recent leak monitoring has shown that 1 gal/min is leaking into the small falls - so not lost

- Overgrown brush along the east side shown here was thought to be a leak, but subsequent testing proved that no water loss is occurring here

- Still searching to find the main leak

2019 Monthly Water Use

Ponds & Waterfalls
Repairs & Maintenance 2019

Item	Cost (2019)
Upgrade Monitoring System	$3,700.00
Repair Fountain Lights	$2,520.21
Pump Removal & June Repair	$4,100.00
Waterfall Pressure Washing	$1,298.03
Summer Pond Treatments	$5,728.00
Total Repairs & Maintenance	**$17,346.24**

Ponds & Waterfall Expenses

Item	2019 Cost
Repairs & Maintenance	$17,346.24
Water* ($90.99/mo.)	$1,091.94
Falls Elec.* ($324.83/mo.)	$3,898.00
Grand Total	**$22,336.18**

*Note: water and electric costs were low in 2019 because large falls was out of commission for 124 days

Ponds & Waterfall Summary

- Total of 5 ponds and lakes with 6 pumps to maintain

- Homeowners living on the lakes report problems to me

- All systems are working fine, but water leaks in large falls is still an issue we need to solve.

Questions?