Lake Margaret
Water System Status Summary

LMCPC Annual Meeting

9-June-2018

Water System Highlights

Since the last annual meeting, several significant things have taken place:

- The real long-term solution for pH adjustment (to resolve lead and copper issues) has been purchased and installed. The pH is running consistently over 7.9 and rising (and is “softer”).
- We spent the majority of the budgeted money for the planned system improvements ($28K out of the planned $53K).
- Several component upgrades have been purchased and are in the midst of installation, including the new ozone systems.

Water TTV and DOH Grant

- The low pH in Q3 2016 is the cause for our current water Treatment Technique Violation (TTV) for Lead from the Washington DOH.
  - A TTV requires the water system to work with an engineer to determine the cause, and design & implement treatment system modifications.
- LMCPC applied for and was awarded a $30,000 grant from Washington DOH to address our pH and Lead TTV.
  - LMCPC was awarded the Grant in June 2017.
  - The DOH paused our award in July due to the lack of an approved Capital Budget. We were told it should be reinstated later in 2017.
  - In February 2018, the DOH then rescinded all eighteen grants to cover larger DOH loan costs.
  - Hence, the water system upgrades that were slated to be completed by the 2017 holidays were delayed until Spring 2018.

New Soda Ash pH Adjustment System

- The new soda ash pH adjustment system has been installed and is functioning now.
- The pH is now running consistently over 7.9, with our target to get to 8.2.
- Such a high pH (non-acidic) allows the pipes to continue to passivate, and in fact accelerates the process.
- Aiming for official testing to get us out of the current Washington State TTV by the Fall 2018.

New Ozone Generator Systems

- New ozone systems have arrived, and installation is planned to complete in the coming weeks.

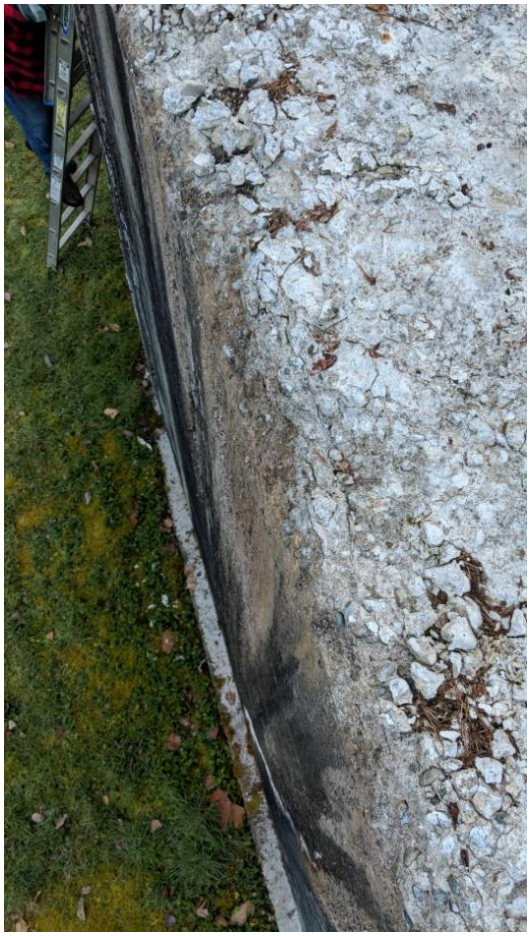
Water System Known Issues

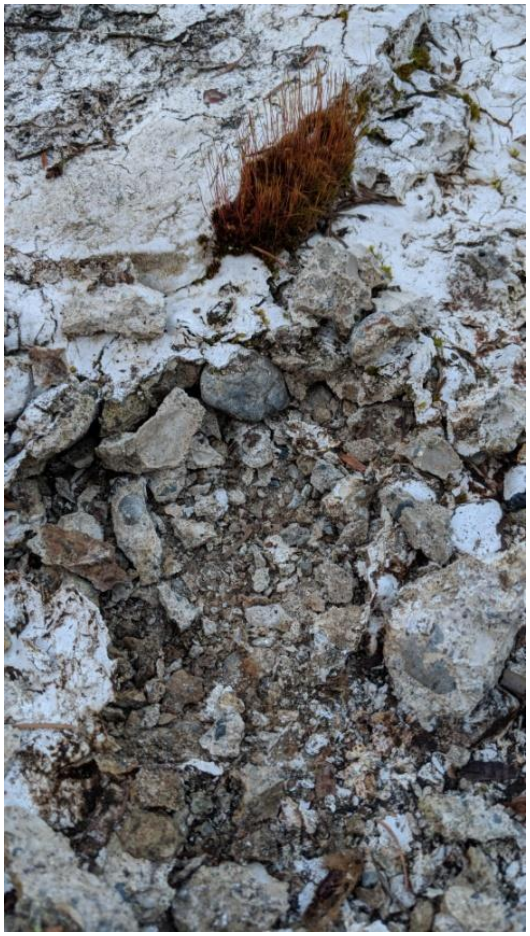
- Recently it came to our attention that the Treatment Plant roof is in need of replacement or repair. This need may be urgent.
  - The last time we had an issue with this was in 2012, and we completed a temporary repair.
  - Have received quotes and are evaluating costs and priorities.
- Additionally, we have identified that the tank will need to be replaced soon due to the age (approaching 40 years) and the overall health of the tank.

Water Storage Tank Status

- Existing Water Storage Tank is showing its age.

Water Storage Tank Roof





Existing Water Storage Tank Roof is rapidly deteriorating.

Water Storage Tank

- Our existing concrete 65,000 gallon water storage tank is showing its age.
  - Roof is quite bad, have been told that it will likely fail in the 12-18 months.
  - Replacement OR rehabilitation on the rest of the tank is coming due.
- LMCPC Board has received estimates for a tank roof repair, new replacement tank, and is awaiting final numbers for rehabilitation costs.
- New water tank quotes, including added capacity (100,000 gallon) for fire flow situations, and estimated engineering services are about $138,000.
- This roof repair has been quoted at $48,000 – we are evaluating alternatives now.
- As our available funds will not support such a large purchase immediately, we must find a way to make the existing tank limp by until we can accumulate the funds, which means another water storage tank roof repair.
- To fund the replacement tank, LMCPC board is implementing an additional fee of a $31.38 per month to cover capital improvements over the next 3 years, which will be re-evaluated after the tank replacement to more accurately reflect the system component wear and replacement in the longer term. This is set to take effect in the October 2018 billing, which will cover the usage for August-September.

Questions & Answers

Backup Slides

2017 Expenditures Status

20180609 Board Meeting

2017 LMCPC Water Treatment Plant Upgrades & Enhancements

Additional expenditures summary

Upcoming Engineering to solve Washington DOH TTV issues with pH (lead and copper)

Item	Description	QTY	Unit cost	Total cost	Source
1	Post-treatment pH adjustment with soda ash	1	$2,500	$2,500	NWS estimate, installed
2	Control loop hardware for automatic constant pH monitoring	1	$1,500	$1,500	NWS estimate, installed
3	Manganese removal system (replaces roughing filters)	1	$5,000	$5,000	NWS estimate, installed
4	Small Water System Engineering Plan	1	$4,000	$4,000	NWS estimate
5	Engineering costs to NWS	1	$13,000	$13,000	NWS estimate
	TOTAL:			**$26,000**	

Costs required to bring the second treatment path online

Item	Description	QTY	Unit cost	Total cost	Source
1	CRN5 booster pump	1	$2,120	$2,120	PumpTec quotation
2	CRN4 booster pump rebuild	1	$516	$516	PumpTec quotation
3	UV System Quartz tubes (pricing based on buying 8 tubes)	8	$168	$1,344	Ideal Horizons quotation
4	UV System Lamps	8	$162	$1,296	Ideal Horizons quotation
5	Replacement Ozone Generator from Clearwater	1	$10,000	$10,000	Clearwater quotation
6	Licensed electrician labor to install new Ozone Generator	5	$120	$600	Carl estimate
7	Labor hours to fix piping and prime/prep system (Carl & Paul)	20	$32	$640	Carl estimate
	TOTAL:			**$16,516**	

Upcoming Plant improvements

Item	Description	QTY	Unit cost	Total cost	Source
1	Exhaust Fan Replacement (with labor)	1	$550	$550	Bad belt - actual cost $36.00
2	Replacement Ozone Generator from Clearwater	1	$10,000	$10,000	Clearwater quotation
3	Licensed electrician labor to install new Ozone Generator	5	$120	$600	Carl estimate
4	Labor & support hours (Carl & Paul)	8	$32	$256	Carl estimate
	TOTAL:			**$11,406**	

KEY:	Plan to do in next fiscal year 2018-19	$5K			
	Done	**$28K**	**GRAND TOTAL:**	**$53,922**	
	Plans are TBD, due to grant funding issues	$22K			

	ADDITIONS FOR NEXT FISCAL YEAR 2018-19:				
1	Temp Storage Tank roof	1		$48,000	Exploring other options
2	Treatment plant roof replacement	1		$18,000	Bids received, metal roof replacement

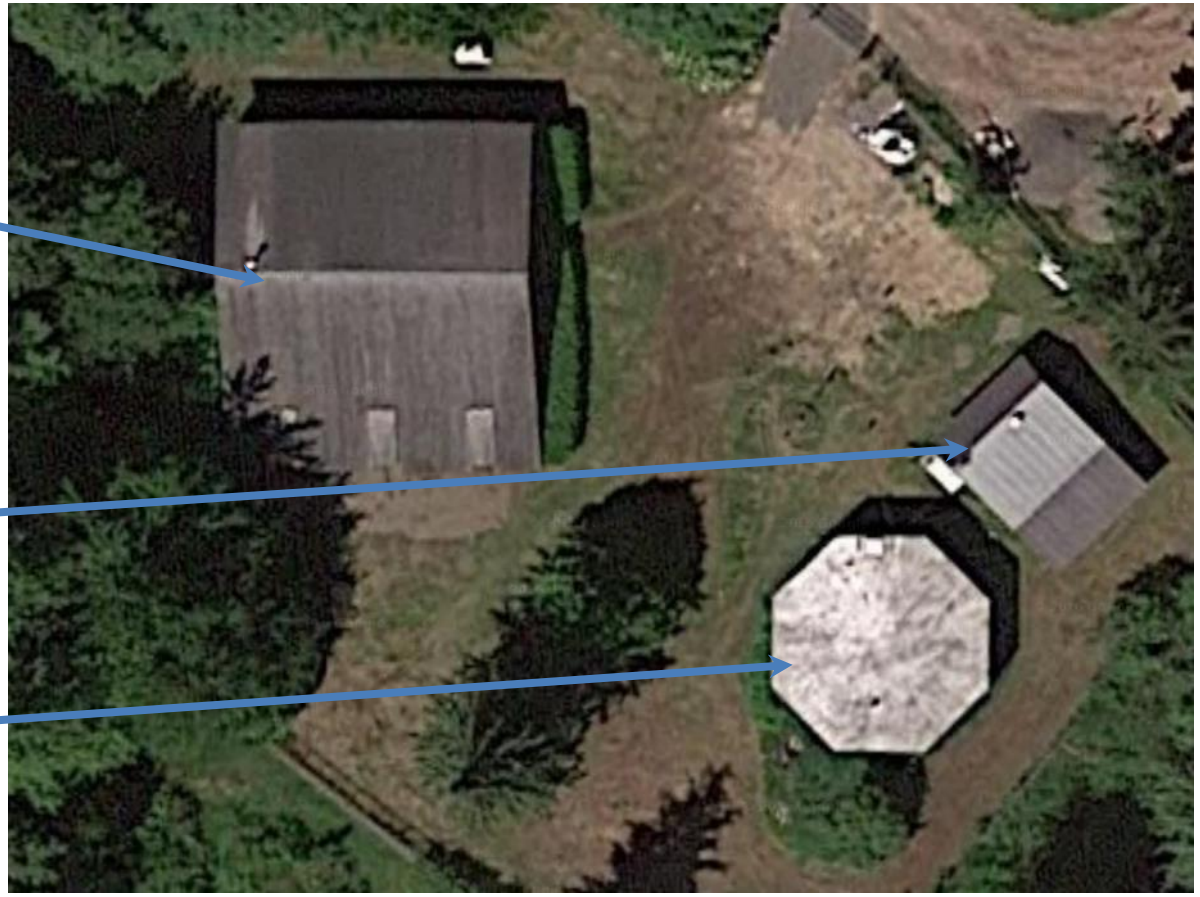
Proposed Tank Location

-Lake Margaret Replacement Water Storage Tank, preferred location.

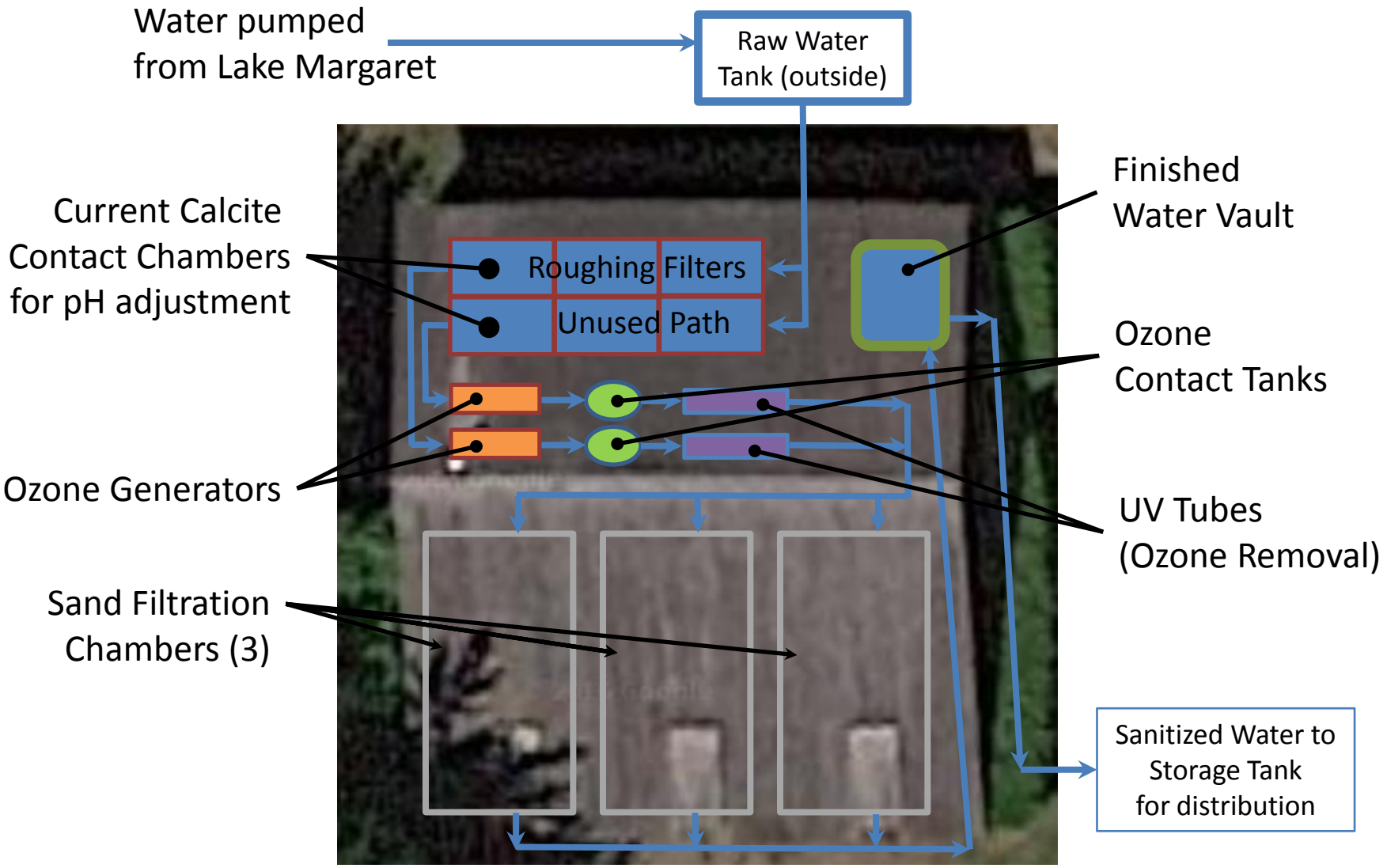
-Will allow old tank to be utilized while new tank is built.

Backup Slides
From 2017 Annual Meeting

LMCPC Water Treatment Facility



Treatment Plant Block Diagram



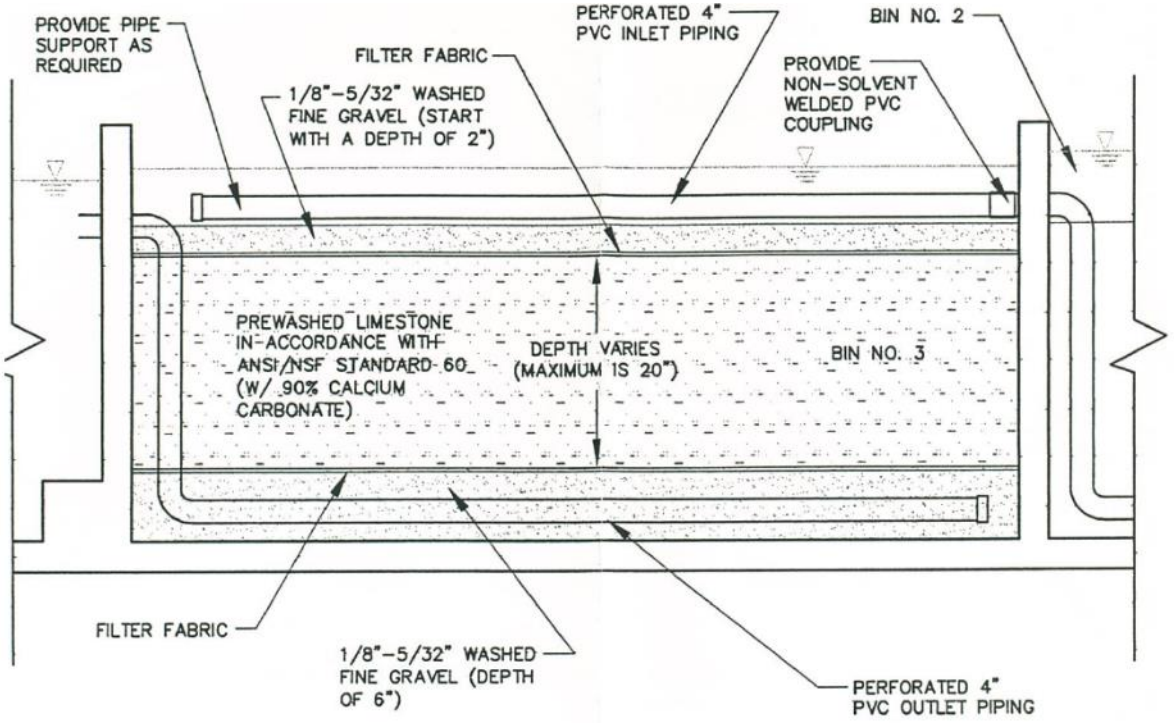
Inside the Treatment Plant

Roughing filters (2 separate paths)

Last chamber is the calcite contact chamber, for pH adjustment

Ozone generators (2, rectangular) and contact chambers (2, cylindrical), with the UV ozone destruct units (2, small rectangular boxes in front of contact chambers).

Calcite Contact Chamber



Currently, the 20” thick layer of limestone in the 3rd chamber of the roughing filters is worn out

Identified a source for replacement; logistics in-process.

Kudos to Dex Burlingame for engineering a pH treatment system that needed no maintenance or additional materials for 16+ years

DOH Advice for Residents

1. Should you have copper piping and/or lead solder in your home (built pre-1987), or just have a concern or aren't sure, simply running the water until the temperature changes (about 30-45 seconds) brings the lead and copper levels down to near ND.

2. After exposure of pipes to acidic (low pH) water, there is a period of "passivation" that occurs, lasting some 3-6 months, where the copper and lead solder re-develop a protective coating. During passivation, some leaching of copper and lead can occur.

3. The DOH classifies pH as a secondary water quality measure. Drinking acidic water in the ranges where our water has tested has been shown to have no ill effect on your health (your stomach fluid pH is 100-1000 times more acidic).