Fishhawk Lake Construction FAQs

October 15, 2018
Fishhawk Lake Reserve and Community

1. *What was the result of the grant and loan applications to the Oregon Water Resources Department and the Oregon Water Enhancement Board in the spring of 2018?*

None of the applications were funded unfortunately. The limited funds went to eastern Oregon for irrigation projects designed to save millions of gallons of water and to cities replacing lead water pipes. These projects were ranked higher than ours understandably. Only 8 of 20 applications were funded before funds were depleted.

2. *What are the project priorities?*

The Oregon dam inspector has mandated that two projects be completed within the next year:

a. Re-lining of the current underdrain which shows signs of wear and erosion of the corrugated steel.
b. Construction of the emergency spillway to meet federal and state standards to prevent floods from overtopping and destroying the dam.

3. *What other projects are planned to upgrade the dam?*

a. Construction of a gated spillway on the current drop drain to provide better control of water flow in high water events, to substantially improve the water quality, and to fully meet federal and state flood control standards.
b. Construction of a new fish ladder that meets federal and state standards.

4. *What is the East End Dig?*

The east end of the lake where Fishhawk Creek empties into the lake is where the bulk of the sediment that flows down Fishhawk Creek accumulates as it enters quieter waters. In high water events the large rocks under the bridge were washed away, undermining the bridge, exposing and eroding its foundation, and contributing to the build-up of sediment into an "island". Erosion has also uncovered sewer pipes in the area. The existing stream bed contributes to these issues. Columbia County has inspected the bridge, is aware of the serious issues there and is paying the cost of replacing the rocks under the bridge. FLRC must pay for the other required rehabilitation and sediment removal.

5. *What is the solution for the East End problems?*

A professional hydrologist with the AKS engineering firm is examining the area and the data that have been collected. Once that report is received, the recommendations will be shared with the community.

6. *Are the East End and Dam projects related in that both address the silt build-up that has decreased the lake's water capacity by half over the last 50 years?*

Yes, sediment and silt deposited over the years is a problem for all dammed up waters as the natural flow of the stream is disrupted. Despite dredging 50 tons of silt out of the lake each summer, one high water event can replace that entire amount and more. A solution is needed that will re-establish a more natural flow of the stream that still exists in the lake and pull the sediment and silt away from the east end, washing it down stream. Engineering models (see the video online at http://youtu.be/YDpzd5GNrGcat) have shown that a gated spillway in the current drop drain will create a pathway with a strong pull for the water, sediment and silt to move through the dam and downstream, pulling the colder water and debris from near the bottom of the lake. The current drop drain only takes warmer water from the top of the lake while the silt and sediment sink to the bottom.

7. *If the BOT decides to only do the two projects mandated by the State, what will be the result?*

Re-lining the 30 inch wide culvert underdrain will prevent failure of this underdrain system which allows the release of water from the lake that does not go over the top of the drop drain. This relatively small drain can be used to lower the lake level in anticipation of a high water event but due to its size, it is limited in how much water can be lowered.

Building the emergency spillway will help protect the lake from flooding and will save the dam should an extreme weather event occur.

Neither of these updates will address the build-up of sediment in the lake. With the lake's diminished capacity to hold water, the risk of flooding is greater as the lake cannot absorb large amounts of inflows. The dredging has been shown to be ineffective in keeping up with the build-up of sediment and silt.

8. *What are the benefits of the gated spillway in the drop drain?*

The emergency spillway is a safety measure to prevent the dam from being destroyed by a flood situation. The gated spillway is a control mechanism that allows a preemptive draw down of the lake in addition to adding the capacity to meet and exceed the State standard of 2 board feet of freeboard. In fact, the gated spillway will significantly contribute to the flood prevention and control of the lake, making the emergency spillway a fail-safe addition.

The gated spillway will draw sediment entering the lake, enabling much of it to pass through the lake and dam downstream where it is needed to rebuild stream beds that have been lost due to the restrictions of the dam. This is not only important for sediment removal but it also significantly decreases the danger of flooding as the lake capacity will be increased. Increasing the depth of the lake will improve water temperatures, decrease turbidity and increase oxygenation of the lake and downstream water, which in turn significantly contribute to a healthier environment for fish and wildlife.

9. *Why do we need a new fish ladder?*

Several species of cold water fish reside in Fishhawk Creek and Lake, including Coho Salmon, a federally protected species in danger of extinction. As the lake temperature and turbidity have increased and the oxygenation has decreased (documented by Solutions Committee data for 7 years), environmental conditions for the sustainability and survival of these

species do not meet healthy bio-environmental standards. One study found the number of protected Coho Salmon in Fishhawk Creek above the lake at 1.0 per square meter. Below the dam, there were only 0.1 Coho Salmon per square meter, a 90% loss.

The current fish ladder contributes to the inability of the fish to make it either up or down the ladder safely. In 50 years, science has informed fish ladder design to make it easier for different species, with different means of travel, to survive their movement from lake and stream to ocean and return, whether they are adult or young fish.

The new fish ladder, running parallel with the emergency spillway will also provide another means of flood control.

10. What does the sequence of construction require?

Work this summer and fall on the dam projects involves topographical surveying, technical inspection work at the drop drain spillway, bathymetric surveys around the drop drain, subsequent concrete integrity testing and engineering design work for the emergency and gated spillway. This work leads to the completion of construction engineering to allow for the anticipated construction in 2019.

Note that all the dam projects converge at the downstream side of the dam: the underdrain, the drop drain, the emergency spillway and the fish ladder. Thus, while the emergency spillway and underdrain are the priorities for 2019, the gated spillway and fish ladder need to be coordinated and preliminarily planned at the same time to address the wetlands and the outfall into the spilling basin on the downstream side of the dam.

Further, the emergency spillway and fish ladder run parallel to each other and cross Northshore Drive at the north end of the dam. It is anticipated that significant dollars, and time can be saved, as well as the inconvenience for Northshore residents if both the emergency spillway and a portion of the fish ladder can be constructed at the same time.

11. When will the lake need to be drawn down?

The spillway projects need to be coordinated with the east end project, as the lake will need to be drawn down to construct both projects. Regulations restrict the duration and time frame in which this work can be performed, which is from the 1st of July through August. All contractor services, equipment and materials must be in place at that time. There can be no delays as this is an exceptionally short period of time to complete these projects.

If funding is available, the emergency spillway and the re-lining of the underdrain are planned for July and August of 2019. The east end project must also occur during this period. The Solutions Committee will be pursuing grant applications for the gated spillway with the anticipation that it can be constructed in 2020, followed by the fish ladder in 2021.

12. So, what is the cost of all these projects?

The projected cost of the dam upgrades include:

Emergency Spillway	$300,000-$500,000+
Re-lining Underdrain	$50,000-$70,000+
Gated Spillway	$300,000-500.000+
Fish Ladder	$700,000-$900,000+
East End Dig Out	>$50,000 - ???

The range is from roughly $1,350,000 to $1,970,000. Note that these estimates are without all the detailed facts being known. The design work currently underway will significantly refine several of these estimates. Actual costs may be less or more than these numbers as a number of factors are unknown, such as:

Donated materials lowering the cost
Unexpected conditions increasing the cost
Construction delays increasing the cost
Equipment costs increasing or decreasing
Weather delays increasing costs
Permitting requirements increasing costs

13. Since we did not get the grants to help offset the costs, what is the cost per billable lot?

Please note that how these costs will be financed is not known currently. Factors such as successful grant applications, one-time versus incremental assessments, in-kind materials or gifted amounts will all influence how the work is paid.

There are 250 billable lots in the Fishhawk Lake community. Using the largest estimate, this would be $7880 per lot. The lowest estimate would be $5400 per lot. But please remember that the answer to how these costs will be financed is not known currently. The amount will be very different if it is financed over one year or 30 years. For example, the $7880 over 30 years is $263 per year. The $5400 over 30 years is $180 per year.

14. How would these costs be financed?

The Board of Trustees, the Finance Committee and the Solutions Committee have met and begun discussions to answer this question. Some options include:

A construction loan for the full amount.
A construction loan for some portion of the amount.
An assessment of the members with some form of extended payment schedule over many years.
An assessment of the members for the full amount due at a specified time.
A line of credit to be drawn down as needed.
Multiple assessments for each of the multiple projects.
Reserve dues payments increased to meet the cost of the construction over a 30 year time frame based on the results of a new reserve study being conducted this fall.

And there are likely other scenarios that will evolve over the next couple of months as these discussions progress, as consultation with banks, financial and HOA experts continue.

The best answer to this question at the moment, is **no one knows the answer** as **all the facts are not in yet.**

15. How will I know what decisions are made by the BOT?

The very best way is to attend BOT meetings on the second Saturday of each month. Alternatively, read the posted minutes of each meeting.

The BOT and Finance Committee will be seeking input from HOA members through surveys and meetings, so your opinion is important and we want to hear from you. Please take a few minutes to respond to surveys. When you see a meeting posted, please attend.